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The University of Southern Mississippi

TEACHER PREPAREDNESS FOR  
TEACHING AND ASSESSING DEPTH OF KNOWLEDGE

by

Shelly Rankin Holmes

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

May 2011

ABSTRACT

TEACHER PREPAREDNESS FOR TEACHING AND  
ASSESSING DEPTH OF KNOWLEDGE

by Shelly Rankin Holmes

May 2011

In the state of Mississippi, students in grades 3 through 8 are required to take an annual assessment, called MCT II, in Language Arts, Mathematics, and, more recently, Science. The results of this assessment may cause punitive consequences for each school and school district. State leaders have become increasingly concerned with student performance and accountability. Therefore, they have redesigned this assessment to accommodate a more challenging curriculum and to ensure alignment with national standards. The unanswered question is whether or not we have adequately prepared teachers for the increase in rigor and depth of knowledge for this assessment. A questionnaire was completed to ascertain teachers' perception of their preparedness for the MCT II. This questionnaire contained questions relative to a teacher's university preparation for education, on-the-job professional development, and teaching strategies and techniques. Quantitative data were analyzed using descriptive statistics, and hypothesis testing was conducted to test the null hypotheses. Hypotheses testing resulted in the decision that: (a) teachers perceive that their own preparation and knowledge of critical thinking has no relationship to their ability to transfer that knowledge to students; (b) teachers perceive that there is no significant relationship between the way they were taught to teach and students' ability to employ the use of critical thinking skills.

Quantitative tests were calculated using a multiple regression and a level of significance of .05. Results were significant at  $F(9, 187) = 1.936$ ,  $p = .049$ ,  $R^2 = .085$ . Teachers perceived their preparation for teaching and assessing critical thinking skills did not adequately prepare them to prepare their students for the MCT II. Recommendations are that teachers should engage in activities that develop their own utilization of critical thinking skills in order that they may be able to transfer that knowledge to their students. In conclusion, the results indicated that there is not one significant predictor of students' ability to employ the use of higher-order thinking skills.

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A Dissertation  
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## TABLE OF CONTENTS

ABSTRACT .....	ii
ACKNOWLEDGMENTS .....	iv
LIST OF TABLES.....	vii
CHAPTER	
I.    INTRODUCTION.....	1
Background	
Statement of the Problem	
Purpose of the Study	
Research Questions	
Hypotheses	
Definition of Terms	
Delimitations	
Assumptions	
Justification	
II.   LITERATURE REVIEW.....	20
III.  METHODOLOGY.....	46
Overview	
Research Design	
Participants	
Instrumentation	
Archival Data (Mississippi Curriculum Test Second Edition)	
Teacher Perception (Questionnaire)	
Procedures	
Data Analysis	
IV.  RESULTS.....	55
Description of the Participants	
Tests of Hypotheses	
Teacher Perception of Preparedness	
Summary	

V. SUMMARY.....	65
Summary of Procedures	
Summary of Major Findings	
Results	
Conclusions	
Discussion	
Implications and Recommendations	
APPENDIXES .....	73
REFERENCES.....	80

## LIST OF TABLES

### Table

1.	Description of the Participants .....	56
2.	Means and Standard Deviations for the Teacher Perception of Preparedness Questionnaire.....	58
3.	Pearson Correlation: Teacher Perception of Preparedness and School QDI.....	60
4.	Mean Scores of Teacher Perception of Indicators of Preparation for MCT II.....	63

## CHAPTER I

### INTRODUCTION

#### Background

Historically, teaching was viewed as an uncomplicated occupation that was highly sought after by females. Women believed they could continue to maintain their homes and families along with a career in education because of the work hours. Additionally, many consider teaching a noble profession which provides a sense of autonomy and control over a captive student body (Ng, 2006). The love of educating young minds was also a driving force for many passionate teaching candidates.

However, teaching yields a modest amount of respect from the community. This is in large part due to the lack of material benefits. The profession rarely receives the admiration and appreciation it deserves attributable to a lack of monetary compensation. According to Payne (2000), families who live in poverty, value material possessions. They do not esteem teachers highly simply because of the notion that teachers are not adequately compensated financially for the job.

While there are many negative aspects that lead to the degradation of teachers, there are also many facets that regard teachers in a positive manner. Ng (2006), describes what he calls “school teacher dignity” as a result of the “community’s attitude towards a teacher and the nature of her work, and the social respect given a teacher who follows her calling to teach whereby she reaches students and instills in them a love of learning which reflects a reward structure that de-emphasizes the acquisition of extrinsic rewards in favor of “physic rewards” (p. 361). Those “physic rewards” are exactly what teachers

need in order to maintain a sense of satisfaction which prevents stress and burnout (Ng, 2006).

Ng (2000) further asserts that many teachers feel that the mandated curriculum through standardized testing and accountability inhibit their ability to devote sufficient time to creating engaging lessons and building relationships in order that they may experience the intrinsic rewards gained by motivating their students to learn. They consider hands-on activities and student initiated projects that are interesting and necessary for student engagement, obsolete due to the increasing demands for accountability. This causes many teachers to fear losing the freedom to be creative as well as develop creative thinkers.

Many teachers feel as though they will have to resort to an “authoritarian” classroom management style and coerce students to learn and participate in class rather than developing and maintaining relationships that foster learning. Schools are social organizations that are shaped by school leaders, administration, teachers, students, parents, and the community. Every organization has an embedded culture that is fashioned by interpersonal relationships within the organization. Those relationships may be impacted by various extenuating circumstances. Accountability is an example of how organizations are shaped by external factors. It has shaped the social organization of schools (Ng, 2006). While the accountability model should be symmetrical; whereas, all stakeholders assume equal responsibility for the outcome of standardized testing, it maintains a top down structure. The students’ test scores are used to determine teacher and school effectiveness.

Thus, many schools experience difficulties retaining teachers due to the increasing pressure of accountability. The tremendous pressures associated with measuring a school's success according to the accountability model set by state regulations interfere with the ability to build relationships between teachers and teachers with students. Teachers feel compelled to be the best according test scores which create tension and competition among teachers. Most teachers feel a sense of urgency with regard to covering all the standards whether adequately or inadequately in order to expose all children to material that will be tested.

The stress of improving test scores is more evident in schools in which there are more students whose families live in poverty stricken areas and those schools who serve disproportionate number of minority students. Generally, these schools experience difficulties recruiting and retaining high caliber teachers. Some districts have offered various incentive programs and monetary rewards in effort to attract high quality teachers into these areas. These rewards may prove successful with recruiting teachers, but lack the ability to maintain superior teachers in schools with students who are in dire need of good quality teachers. It is most difficult to retain teachers in these schools due, in part, to the overwhelming stress of accountability associated with standardized testing (Ng, 2006).

The No Child Left Behind (NCLB) Act of 2001 requires higher performance standards in Reading and Mathematics with annual testing in grades 3 through 8. Since its implementation, state leaders have become increasingly concerned with the performance and accountability in our schools. Consequently, educational leaders have

been charged with the enormous task of creating a more challenging curriculum to ensure alignment with national standards and that all students receive a high-quality education. Furthermore, each school district has had to reconsider its current curriculum and its alignment with state standards with the aim of meeting national requirements.

American education is constantly evolving: the only aspect that remains constant is the fact that it is ever changing. Our nations' leaders are consistently working to ensure that our boys and girls are afforded the highest quality education and that it is consistent throughout the nation. In the past few years, educators have been faced with many challenges in order to provide the best education for our students. These challenges include the transition from a more skills-based approach to learning to the integration of technology to a curriculum that is geared more towards teaching and learning higher-order or critical thinking skills (Marzano et al., 1995). With each paradigm shift, it is essential to provide adequate training for teachers. The most recent transition to fostering students' critical-thinking skills is much more difficult to teach and assess. Is the education that novice teachers receive sufficient to teach and assess critical-thinking skills? Is there a relationship between teachers' preparation in or background knowledge of critical thinking and their ability to teach those skills?

Hursh (2005) shares that states are not only required to assess all students but also to disaggregate test scores for subgroups of students which include: race, economically disadvantaged, gender, and special education. The test scores from each group must be compared to the state's testing requirements to determine whether the group is making annual yearly progress (AYP). Schools face significant sanctions if they fail to meet

AYP. If a school fails to meet AYP for two consecutive years, they will be identified as “in need of improvement” and parents will be given the option to transfer their children to a higher achieving school. Schools failing to meet AYP for three consecutive years must provide “supplemental services in the community such as tutoring, after school programs, remedial classes or summer school” funded by the students’ school (Hursh, 2005, p. 608). Schools who fail to meet AYP for the fourth consecutive year must either replace the entire school staff or implement a new curriculum. According to the United States Department of Education (USDE), failing schools will be responsible for “decreasing management authority at the school level, appointing an outside expert to advise the school, extending the school day or year, or reorganizing the school internally” (Hursh, 2005, p. 608).

For this reason, state leaders have become increasingly concerned with academic performance and accountability in our schools. Consequently, educational leaders have been charged with the enormous task of creating and providing students with a more challenging curriculum to ensure alignment with national standards. Each school district has been urged to review their current curriculum and its alignment with state standards with the aim of meeting national requirements. This realignment is vital for the improvement of our nation’s schools in order that we adequately prepare our students to compete in the global economy and to meet the workforce requirements (Law & Kaufhold, 2008).

The No Child Left Behind (NCLB) Law has overwhelming support from Congress because of the condition of the educational system during this time. There is a

dire need for change in education due to the repercussions for society particularly in the business world. Many students graduating from high school are not adequately prepared for the workplace. Therefore, federal and state policy-makers devised a plan to hold teachers and students accountable for teaching and learning. This plan involves teaching and assessing specific standards established by the local states. In order to determine the effectiveness of teaching and learning, students are assessed annually in grades 3 through 8. This assessment is developed by state school leaders to establish more uniformity within the state which is the premise behind creating statewide standards and methods of accountability (Anderson, 2001).

In recent years, the complexity and difficulty of this assessment has increased drastically. The assessment has transformed from MCT to a MCT II – a more complex version. This increase has created more pressure for teachers, parents, and students. Accountability causes systems to rate teacher effectiveness for teaching the curriculum and students' understanding of the curriculum based on these assessments. This way of measuring teacher and student success has been deemed an unfair practice by many because there are many extenuating factors that contribute to low student performance that are not directly related to knowledge of the curriculum.

Gunzenhauser (2007), believe that a degree of external pressure for student performance may significantly increase student achievement. This pressure fosters school accountability. It encourages schools to self-reflect and causes them to take ownership for their own achievement. They further assert that there are two distinct types of accountability: internal and external. Internal accountability can be described as

the values and expectations that determine the relationship between an individual's actions and the school's results. Schools with a strong sense of internal accountability have clearly defined high expectations for all students, they know exactly what students should learn and what those learning outcomes should be, and they are able to adequately assess students' progress towards the common goal. These schools have developed cohesive teams who work together to devise a clear and precise vision for their school. This type of accountability which is focused chiefly on student achievement rather than test scores as a measurement of success is an essential tool for success in schools. Many schools with weak internal accountability still find themselves in compliance with external accountability without the support and effort of all teachers. Although their compliance may have been minimal, they were able to avoid imposed sanctions. This practice is referred to as "compliance without competence." External accountability may be described as the "demands placed upon schools and school districts, with the current context dominated by the high-stakes accountability systems" (Gunzenhauser, 2007, p. 494). A single test score is used as the only indicator of success as opposed to using multiple indicators of success such as: availability of resources, quality of instruction, and test scores. Furthermore, tests should be developed and generated by parties with no interest in student performance outcomes in order to insure validity (Gunzenhauser, 2007).

In addition to curriculum alignment, the state of Mississippi has examined current instructional practices and concluded that it is necessary that teachers increase the rigor in the classroom. Ding and Sherman (2006), have concluded that there is a direct

relationship between teacher quality and student learning and teachers have a significant impact on student achievement. They asserted that teachers have been accustomed to being given objectives from the state that must be taught during the school year along with a set of terms that must be utilized so that students would be able to demonstrate mastery of the objectives on the state test.

This set of terms is known as Benjamin Bloom's Taxonomy. There are three levels of Bloom's cognitive domains that are subdivided into six groups: knowledge, comprehension, application, analysis, synthesis, and evaluation. Knowledge is the simplest form and evaluation is a more difficult form of understanding (Booker, 2008). Teachers are expected to use this terminology during instruction and in lesson planning to ensure that students are exposed to the different levels of understanding. For many teachers, the first two levels of knowledge and comprehension are the easiest to teach and for the students to understand. Therefore, a majority of the instruction and assessment in the classroom is comprised of factual questions yielding primarily students who could merely regurgitate facts. Many teachers' beliefs are consistent with the idea that memorization is equivalent to learning. This type of approach to teaching and learning inhibits the application of knowledge and fails to maximize the use of critical thinking skills (Law & Kaufhold, 2008).

Gelder (2008) believes that teaching critical thinking skills is among the most important goals in education. For this reason, it is necessary that we improve our educational system in order that we may develop better teaching practices with respect to teaching critical thinking skills. He further contended that critical thinking skills must be

acquired and are difficult to do so because humans prefer things that make sense. However, in order to attain these skills, one must possess “lower-level” skills such as the recognition of words. Yet, mastery of the lower-level skills is not sufficient; one must be able to combine those skills to compose a complete point. He further contends that the acquisition of critical thinking skills is not attained overnight. This is a process that takes a great deal of practice. Teachers are misguided in their belief that a single lesson or activity will develop critical thinking skills. On the contrary, this skill may not be mastered in one school year. As with any other skill, it is important that we realize that it is important to practice this skill daily. It is a skill that cannot be taught in isolation; but an explicit part of the curriculum (Gelder, 2008).

As a part of the recent reform efforts, it has been determined that Bloom’s Taxonomy is no longer sufficient for students to acquire higher level, critical thinking skills necessary to perform satisfactorily on the state test. As a result, Norman Webb (1999), a scientist, created the Depth of Knowledge (DOK) which is similar to Bloom’s Taxonomy in that there are levels of thinking and understanding that must be mastered, but there is much more critical thinking required in this model. This model has only four levels: (a) recall, (b) basic reasoning, (c) strategic thinking, and (d) extended thinking which are assigned a numeric value of one (1) being the lowest to four (4) being the highest based on the complexity of the question or problem.

In 1948, a group of examiners developed a Handbook which consisted of a standard vocabulary that was intended to measure exactly what a test item is intended to measure. In recent years, this handbook (Bloom’s Taxonomy) and Depth of Knowledge

(DOK) have been combined, according to Anderson and Krathwohl (2001), to incorporate new knowledge into how students develop and learn; also how teachers plan, teach, and assess. Therefore, a revision to the original (Bloom's) handbook was developed in order to accommodate the design and implementation of the accountability programs.

School leaders and educators in the state of Mississippi have been trained in-depth by either Norman Webb or a representative. According to Webb, educators maintain differing opinions regarding the DOK levels of created questions because there is no concrete evidence that a specific set of questions constitutes a particular DOK level. Questions that reflect DOK levels one and two are relatively easy to create while questions that replicate DOK levels three and four are much more difficult to teach and assess. This study will be used to determine the extent to which teachers feel prepared to teach and assess higher –order thinking skills; which in turn, will cause educational leaders to reexamine teacher preparation programs at universities and professional development. It seeks to determine the most significant indicator of teacher preparation for teaching and assessing critical thinking skills.

The idea of standardized testing dates as far back as the 7<sup>th</sup> century when job applicants, in China, were required to write essays. In 1845, Horace Mann started a trend of testing in the United States with Spelling, Geography, and Math tests. By the 20<sup>th</sup> century, a large number of educators began to embrace the testing trend. In 1905, Alfred Binet developed the intelligence test. This created a tremendous shift in society in which people were no longer judged by race or wealth, but by merit; however, eventually it was

determined that testing should be used to measure learning rather than intelligence (Matthews, 2006).

There are many concerns with the educational system today with regard to the recent onset of accountability as measured by standardized tests. Standardized testing has created such a narrow curriculum that the test determines exactly what is taught in the classrooms. Therefore, teachers have become preoccupied with developing lessons and creating assessments that are directly correlated with what is presented on standardized tests that little to no time is devoted to the development of creative and analytical problem solvers. Furthermore, there is an immense pressure that causes educators to be so consumed with success as determined by standardized tests that they may resort to cheating and/or other unethical practices to protect themselves from negative consequences (Ng, 2006).

Testing is not a new concept. According to Perrone (1991), the testing frenzy spiraled upward shortly after 1965 when states began to use standardized testing to evaluate and measure student progress due to the increase in state and federal resources available to schools. This practice became much more prevalent with the accountability movement beginning in the 1970s when annual testing began to establish “gains” in achievement. Consequently, educating students has become a matter of producing successful outcomes on standardized tests, which has compromised our teaching of higher order thinking skills and deeper levels of understanding (Perrone, 1991).

Matthews (2006) notes that the history of the teaching and assessing critical thinking skills is derived from many different sources from ancient Greece to the launch

of the Soviet satellite, Sputnik, which augmented a greater need for improvement in our schools. Most notably, Socrates is well known for testing students through questioning that inspired further conversation about the question rather than yielding a correct answer to the question.

Matthews (2006) further contends that during the Socrates era, many educators considered it a responsibility to inspire students to think critically rather than regurgitate a correct answer to a question. This belief caused a great shift in our educational system from teaching skills to teaching students to think critically to arrive at an appropriate response. However, before teaching higher order thinking skills, the students must master fundamental skills. Booker (2008) wrote that Plato believed that a student could not think critically without first mastering “conventional wisdom” which is essential for higher-order thinking (p. 347). Our reliance on the expectation of our students to think critically without regarding basic facts greatly hinders students from competing internationally.

Over the decades, testing has been used as an economical tool to measure various aspects of our educational system, such as the effectiveness of teachers and schools and the rigor of the curriculum. At the turn of the century, educators held to a firm belief that all students could learn if they were properly taught to do so; however, this belief faded quickly as a large number of students performed poorly. Astoundingly, the responsibility for this poor performance is based on students’ inability to retain instruction rather than the teachers’ inability to provide a quality education. Ralph Taylor’s work on behavioral objectives impacted the era of testing in that it challenged test-developers to

consider the thought processing of all students rather than harping on simply covering the content. So, he combined both content and behavioral components into objectives which laid the foundation for Benjamin Bloom's Taxonomy (1956).

Popham (2004) strongly urges educators to use tests as a tool to measure (a) curricular goals; (b) how best to alter instruction to meet the needs of the students; and (c) if the instructional strategy was successful. He believed that our nations educators have been under tremendous pressure for quite some time and even more so since the accountability movement. There is an increasing demand to produce reliable confirmation, which is often produced in the form of test results that our school teachers are performing satisfactorily in our public school systems. If test scores are favorable, teachers are generally praised and may receive monetary rewards. On the other hand, if test scores yield unsatisfactory results, teachers are viewed as unsuccessful.

In 1922, Edward Thorndike stated that the task of education is to make changes in human beings. For mastery in this task, it is necessary to provide definite and exact knowledge of what changes are made and what ought to be made. Many believe that it is important to provide formative assessments in order to raise student achievement. However, standardized tests do not yield the necessary information to help teachers determine what to teach for their students to be successful. For this reason, teachers do not see the value in this type of assessment. Another reason that teachers may not value this type of assessment is that they lack the proper training necessary to develop and interpret standardized tests (Bailey & Heritage, 2006). Many teachers need training in effective evaluative practices regarding the quality of published assessments as well as

their own created assessments. An implication for teacher preparation is to train them to create and integrate meaningful assessment into instruction (McMillan et al., 2000).

One of the important ways to ensure that teachers are successful is to provide adequate training in the colleges of education. NCLB has had a major impact on teacher education programs with respect to the following areas: program entrance, program experience, and student teacher experience. The programs are admitting a majority of prospective teachers who are white females from suburbs with parents who have attended high school or some college and have no experience with inner city children or children of color. NCLB requires teachers to be highly qualified by having a bachelor's degree and passing a subject area test that limits the definition of qualified to content knowledge and yields no substantiation of producing credible evidence of an effective teacher. Is there a correlation between teacher knowledge and/or preparation and student achievement?

Furthermore, potential teacher education students are anxious about having to take a test because they are either returning students or were not educated well enough themselves to pass the program. Therefore, much time is devoted to studying, practicing test-taking skills, and overcoming the distress of taking the test rather than preparing for the classroom experience. Finally, the student teaching experience often has a negative impact as prospective teachers spend a majority of their time observing stressed out teachers who seem overwhelmed with the insurmountable pressures of the job requirements and those who have forgotten the real joys of teaching (Selwyn, 2007). According to D'Aniello (2008), educational reform movements call for an increased need

for change in certain aspects of our current teacher education programs and a great need for further research in the area of teacher preparation programs.

Heitzmann (2008) believes that case studies should be an integral part of the teacher preparation program at universities and colleges. He contends that it provides prospective teachers the opportunity to gain knowledge and insight about the events that often occur during the school day. This interest spawned in the 1980s when the Carnegie Forum on Education and the Economy Task Force on Teaching as a Profession (1986) suggests that students of teaching should be exposed to the “case method” which illustrates a plethora of teaching problems which students should be able to recognize, understand, and reflect on them appropriately. One of the major advantages to this method is that it causes students of teaching to utilize higher order thinking skills, which will prove beneficial when attempting to teach this concept to future students.

Renan Sezer (2008) conducted a comparative study on the effects of integrating critical thinking skills into a teacher preparation course. The results indicated that adding this critical thinking component to one course could “have positive effects on student attitudes” (Sezer, 2008 p. 354). Thus, one could conclude that utilizing critical thinking skills in teacher preparation programs may have a positive effect on the teachers’ ability to teach those skills to students.

#### Statement of the Problem

Accountability has caused a tremendous shift in the field of education with regard to its curricular requirements. The rigor of the curriculum has dramatically increased in the past few years. Many teachers were not adequately prepared in colleges, universities,

and/or professional development for this drastic increase. They were thrust into the classroom with a new curriculum with little to no adequate training for teaching the standards in more depth and at a higher level. Not only were they inadequately trained to teach at higher levels but were also unprepared to effectively assess the standards at a level that would produce higher order thinking. Even if they are trained for teaching and assessing, they are ill-prepared for using the assessments effectively. Should educators be held accountable for that which they have not been properly trained? The purpose of this study is to provide information that will be useful for teacher preparation programs to determine the extent to which they are sufficiently training novice teachers to teach and assess higher order thinking and to use the data efficiently to drive instructional practices.

#### Purpose of the Study

This study is designed to ascertain whether or not teachers are adequately prepared to teach and assess for the Depth of Knowledge (DOK) required by the Mississippi Curriculum Test Second Edition (MCT II). The purpose is to explore teacher preparation colleges and professional development and determine their effectiveness on teachers' preparation for DOK.

#### Research Questions

1. Is there a relationship between teacher's preparation in or background knowledge of critical thinking and their ability to teach those skills?
2. Is there a correlation between teacher knowledge and/or preparation and student achievement?

3. What is the most significant indicator of teacher preparation (standardized testing of students, frequent participation in professional development, college courses)?

#### Hypotheses

H<sub>1</sub>: There is a relationship between teachers' preparation and background knowledge and his/her ability to teach those skills.

H<sub>2</sub>: There is a relationship between teacher knowledge and/or preparation and student achievement.

H<sub>3</sub>: Standardized testing, teachers' participation in professional development, and college courses are significant indicators of teacher preparation.

#### Definition of Terms

*Accountability*: measureable proof that teachers, schools, districts, and states are teaching students efficiently and well , usually in the form of student success rates on various tests (MDE, 2008).

*Adequate Yearly Progress (AYP)*: the measure by which schools, districts, and states are held accountable for student performance under Title I of NCLB. AYP includes separate measures for both Reading/LA and Math in addition; the measurement must apply not only to the students on average, but also to four "subgroups": economically disadvantaged students from major racial and ethnic groups, students with disabilities, and students with limited English proficiency. To make AYP, at least 95% of students in each of the four subgroups, as well as 95% of students as a whole, must

take the state tests, and each subgroup of students must meet or exceed the measurable annual objectives set by the state for each year (DOE 2001).

*Assessment (Educational)*: “any procedure for gauging the process of a student in acquiring and mastering educational knowledge and skills” (Wolf, 2007, p. 691).

*Bloom’s Taxonomy*: “a standard vocabulary for indicating what an item was intended to measure” (Anderson, 2001, p. xxvii).

*Critical Thinking*: “the disposition to provide evidence in support of one’s conclusions and to request evidence from others before accepting their conclusions (Edelman & Hudgins, 2001, p. 334).

*Depth of Knowledge (DOK)*: levels of thinking that must be mastered but there is much more critical thinking required in the model which has only four levels: recall, basic reasoning, strategic thinking, and extended thinking (Webb, 2001).

*Economically Disadvantaged*: is a term used by government institutions in for example allocating free meals to a student who is a member of a household that meets the income eligibility guidelines for free or reduced-priced meals (Payne, 2005).

*Higher-Order Thinking*: the learning of complex judgmental skills such as critical thinking and problem solving (“Higher-Order-Thinking,”n.d.).

*School Improvement*: A school that does not make AYP for two consecutive years, as AYP is defined by the State’s accountability system, must be identified for school improvement (MDE, 2008).

*Standardized Test:* is a test designed in such a way that the questions, conditions for administering, scoring procedures, and interpretations are consistent and are administered and scored in a predetermined, standard manner.

#### Delimitations

The study was delimited to include only teachers in coastal Mississippi schools. Furthermore, it requires participation from teachers who teach MCT II tested subject areas in grades 3-8.

#### Assumptions

One assumption is that the respondents will provide an appropriate and honest response to all questionnaire items.

#### Justification

This study benefits colleges of education because it provides valuable information regarding their teacher preparation courses. They may use the information gathered to make more informed decisions about how best to prepare novice teachers to teach, assess, and utilize assessment data for instructional planning. It is also beneficial for schools and school districts (i.e., administration, teachers, and students) in preparation for professional development. The data gathered may be used as a guide to plan future professional development sessions that better prepare teachers to utilize instructional strategies that will foster and develop critical thinking skills necessary for student success as determined by MCT II.

## CHAPTER II

### LITERATURE REVIEW

Selwyn (2007) states that the primary reasons that people express an interest in teaching is because of their love for children and the desire to help them become successful life-long learners. Since NCLB and the tremendous pressures of accountability, many feel that this desire is stifled by demand to teach only the part of the curriculum that will be assessed annually. Furthermore, student teachers are subjected to strenuous testing in order to be accepted into the teacher education program. Not only are these potential teaching candidates deterred prior to entering teacher education programs, but they are also hindered once they enter the program. The experiences they gain as student teachers are a great hindrance for many potential teaching candidates.

Selwyn (2007) further contends that NCLB undermines what aspiring and current teachers know about teaching and learning. Not all students are on the same level in one classroom nor do they learn at the same rate. Furthermore, there is not one measure to determine the success or failure of the acquisition of knowledge. Teachers must utilize a variety of strategies to teach a concept for learners to have a better chance of understanding; however, NCLB has instituted a test for all children designed a standard measurement for student achievement that is also used to rate schools. Moreover, if schools fail to meet annual growth, they face severe sanctions.

Teacher candidates are prohibited from entering into the field of education because of the examinations they are subjected to in order to successfully complete the program. There are tests that potential teaching candidates must pass prior to entering the

program. There are also tests that they must pass after successfully completing their course work in order that they may receive certification. This series of testing creates problems for many teaching candidate. Among these problems is the major demographical divide between the teachers and their students. Typically, white women who are monolingual, not familiar with minority students, and whose parents were high school graduates are the ones who are able to successfully complete the assessments necessary to enter the teaching profession (Selwyn, 2007).

The media has often referred to aspiring teachers who fail to pass the required teacher certification testing, as idiots. More specifically, in the state of Massachusetts, over half of the test takers successfully passed the examination. Among the 29 African American students who took the test, none of them passed it. Many citizens were alarmed who would not have ordinarily been concerned with teacher qualifications. Many would agree that the teacher education institutions are a primary determining factor of the quality of our schools. For this reason, teacher education programs have been under attack for many years (Melnick & Pullin, 2000).

Matching teachers with like students does not necessarily mean that those students will automatically be successful. On the other hand, there are strong implications that there are positive affects for African American students. Tuerk (2005) cites evidence to suggest that teachers' subject-area knowledge is one of the most significant factors necessary to increase student achievement. Yet, those schools with an overwhelming majority of minority students include a high percentage of inexperienced and non-certified teachers who are not teaching their area of expertise (Selwyn, 2007). It

is difficult to recruit and retain high quality teachers in high poverty schools. This failure to recruit and retain may be attributable to the novice teachers' inability to relate to those students. For this reason, many knowledgeable teachers experience difficulty maintaining order and structure in their classrooms in order that they may effectively deliver instruction.

Another hindrance for prospective teachers is the "highly qualified" clause in NCLB. This means that all teachers must be "highly qualified" for the subject area in which they teach. In order to become highly qualified, candidates complete a bachelor's degree in elementary education, obtain a valid teaching license/certification by passing the praxis tests, and pass a basic skills and subject area test. In many states, potential teaching candidates are not permitted into the teacher education program without having passed the basic skills test. Many believe this test is the "gatekeeper" which keeps a certain group from entering into the profession (Selwyn, 2007, p. 127).

However, many studies suggest that the assessment of the quality of a teacher cannot be determined by a pencil-and-paper test. There is no evidence to imply that the material assessed is valuable in determining an effective teacher. There are many qualities and characteristics that are significant predictors of effective teachers which include appreciation of diverse cultures, ability to build relationships, and aptitude for acting as liaison for home and school connection. Nonetheless, these particular skills and abilities are not assessed on the required tests (Selwyn, 2007). While it is essential for teachers to have the knowledge and intellect necessary to cultivate life-long learners, it is as important for them to be able to develop and maintain relationships with students and

parents. When students know that you care and are genuinely concerned about them, they are more likely to be successful.

It is not only the strenuous series of testing that inhibits potential candidates, but it is also the arduous requirements of NCLB are keeping many them from entering teacher education programs. Many candidates declined to apply for fear of the requirements to become highly qualified. Statistics indicate that 30% more Caucasians are meeting the requirements than African Americans and Hispanics. There are potentially great teachers who are over looked simply because they are unable to pass the pencil-and-paper test required to enter teacher education programs. Unfortunately, the teacher candidates whose characteristics resemble those of the test makers are more successful on the tests than are those candidates who do not. The assumption is that the tests that teachers take to enter the program are culturally biased. This assumption is based on statistics which indicate that more Caucasian Americans successfully complete the tests than African Americans and Hispanics. This may create a potential problem in many areas of the country in which a majority of our students are minority while our teachers are not (Selwyn, 2007). While it is not necessary for students to have teachers who are of the same race, evidence suggests that it is beneficial with regards to building relationships essential to promote student achievement.

Teacher candidacy requirements lack the capability to determine whether or not a candidate has the characteristics necessary to be successful in the field of education. Recent studies provide evidence to support the notion that graduates of teacher education programs feel that there should be a better measure of teacher candidacy. Assessments

should measure those qualities that reflect effective teachers such as “getting along with kids” and an understanding of cultural diversity. There should be some component in the requirements that allow for assessment of a candidates ability to relate to their students and parents. In many cases, there are those highly intellectual individuals who are good test takers with no social skills and lack the ability to relate to children and their parents. On the other hand, there are those who are not good test takers who would make good teachers because of their capacity for dealing with people (Selwyn, 2007). Teaching is a service-oriented profession and should be treated as such. However, many would agree that with standardized testing of candidates and students it has become too data driven.

Many teacher candidates experience tremendous testing anxiety, especially those who were not afforded a high quality education of their own and those who are returning students with careers and families. Therefore, much class time is devoted to establish teachers with good test-taking strategies rather than allowing them practical classroom experience. However, this practical experience is precisely what cultivates good teachers. Unfortunately, there is a great deal of valuable instructional time spent on preparing candidates to be successful on tests. This has become the practice because teachers understand the importance of testing and therefore must create skilled and more confident test takers (Selwyn, 2007).

Furthermore, teaching candidates should be exposed to more practical experience. They should spend more time in the schools. In this way, they will gain valuable knowledge with regard to the environment and culture necessary to nurture academic success. Yet, this experience may present another hindrance for potential educators. It is

equally as discouraging for student teachers to recognize the discomfort within the schools due to the tremendous demands on accountability. Teachers exhibit a tremendous amount of stress and unhappiness due to the demands that have been placed on them with standardized testing. It is evident in many schools that teachers have lost their enthusiasm and motivation for education. They attribute this loss to the pressures of the accountability movement. Because of this pressure, many teachers are neglecting to cultivate and nurture those creative and higher order thinking skills that create life-long learners. They have turned to teaching the test and good test taking strategies. This practice has suppressed students' desire to seek understanding and develop problem solving skills. While the students' creativity is stifled, teachers are also subjected to teaching a programmed curriculum eliciting programmed responses from their students. Most often, student teachers observe classrooms filled students completing worksheets and overworked teachers who struggle to remember the reason they entered into the profession (Selwyn, 2007).

Student teachers are entering into a drastically changed profession that has created teachers and administrators whose primary mission is to increase test scores. It is virtually impossible for many student teachers to gain practical experience in the schools because school administrators concern with test scores. School administrators and teachers feel the pressure to maintain good test scores and are not as willing to relinquish control to practicing educators especially in those schools in which the test scores are low. Those schools who fail to raise and maintain test score and meet the requirements of Adequate Yearly Progress (AYP) will not take the risk of having student teachers. This is due to

their perception that the classes that have student teachers might receive lower scores on the standardized test (Selwyn, 2007) because certified teachers are not in control of the learning. Oftentimes, student teachers are encouraged to develop hands-on creative lessons that encourage students to take an active role in their own learning. Classroom teachers are hesitant to use creative lessons for fear that students will not be able to transfer the knowledge in order to be successful on the standardized test.

Student teachers are also dismayed at many decisions made by school administrators because of the increasing demands on standardized testing and accountability. For example, Social Studies and the arts are essentially eliminated from the curriculum at the elementary school level because they are not tested. Students are no longer allowed a recess because of poor test scores and time-on-task requirements. Schools are becoming less and less welcoming for students as they are frustrated, angry, and fearful of the possible penalties of low test scores (Selwyn, 2007).

Selwyn (2007) suggests that, eventually, teacher education programs will be connected to test scores and student performance. Colleges and universities will track graduates and their test scores to determine the effectiveness of the teacher education program. In this way, they will be able to use data to possibly redesign and/or restructure the program so that they produce more successful educators. Successful educators who are not only successful in passing tests, but also those who are able to transfer knowledge effectively to their students by using good quality direct instruction. Many fear, though, that teacher education may basically become null and void as the curriculum becomes more scripted and standardized. This will create the assumption that anyone with general

content knowledge and minimal training can teach students to become successful test takers.

It is important for teachers to utilize creativity and help students understand the benefits of active learning. However, it is equally as necessary for students to test on knowledge gained during instruction. Wolf (2007) suggests that educational assessment is an integral part of education and is an essential process for “acquiring and mastering educational knowledge and skills” (p.691). Students must be tested in order that educators may determine areas of proficiency as well as deficits. This aids educators in lesson planning and delivery of instruction. Regular assessment of students serves many purposes such as providing a focal point planning instruction; providing parents with meaningful insight regarding their children’s academic abilities; and it teaches students important test taking skills.

Regular assessments allow teachers to make informed decisions about instruction. It helps them seek out and determine students’ strengths and weakness with a particular concept or skill. Thus, teachers are able to modify the lessons for enrichment and/or remediation purposes. Accountability forces our educational system to be held responsible for performance outcomes. Schools are liable for the student achievement. They must use assessment data to determine best practices for their students. Otherwise, they face severe sanctions based on the results of testing (Wolf, 2007). If students do not perform well on state assessments, schools face penalties such as loss of employment.

Wolf (2007) believes testing to be a valuable asset to education if frequently utilized properly. The skills and concepts that presented on tests are the same skills and

concepts that should be the central focus of instruction. Teachers should use the data as the driving force behind instructional strategies. When used properly, assessment data can be a great tool for lesson planning. If students a majority of the students did not correctly answer many of the same questions, then those skills should be covered again in a different manner. On the contrary, teachers who do not utilize the data effectively expend much of their energy and time on teaching and learning concepts that students may have previously mastered. So, teachers should use assessment data to determine on which skills they should focus more emphatically.

Students tend to perform better on standardized assessments if they have more experience with them. Repetition and practice makes permanent. Teachers should frequently expose students to a variety of skills, daily, so that they may be ingrained in students' memories for recollection. Furthermore, regular assessment relieves test anxiety and reduces confusion and unfamiliarity. Many feel as though students should test more often so that it becomes a part of their natural routine. Additionally, it is a good practice to regularly assess students on skills learned throughout the school year. They should be exposed to and assessed frequently on all skills so that those skills become embedded in their minds. In contrast, if students are never assessed for acquisition of knowledge and skills and/or have no consequences for failure, especially those students who lack the fundamental skills, they are promoted and unprepared to handle more challenging material (Wolf, 2007).

Many teachers feel frustrated with standardized testing. They feel it is unfair to be held accountable for students' performance on standardized tests. The requirements of

NCLB hold schools and teachers responsible for how well their students perform on the test. This is considered by many as an unfair practice because there are many external factors that contribute to students' academic success or lack of on assessments. For example, many do not believe that assessments are "equitable, appropriate, and purposeful" (Herrera & Murry, 2006, p. 191) especially for minorities and English Language Learners (ELL). Teacher education programs are not adequately preparing its students to understand the vast needs of ELL students. In fact, many pre service teachers do not receive training regarding cultural diversity that will aid in teaching diverse students. Consequently, it is unmerited to hold teachers accountable for that which they have not been properly trained and/or provided the necessary professional development and support (Herrera & Murry, 2006).

A great deal of time is dedicated to test taking strategies and other related tasks and lack of emphasis on preparing productive citizens. This dedication is relative to the political pressure placed on a struggling educational system in effort to effectively evaluate school systems and forcing them to demonstrate student knowledge on assessments. Standardized tests are commonly referred to as "high stakes tests." Many educational decisions such as teacher pay and school funding are based on the results of state assessments. For this reason, it is believed that there are potential negative effects on student achievement and personnel decisions (Mulvenon et al., 2005). Schools make some poor decisions regarding how to best educate students based on the assessment data including eliminating non-tested subject areas because they are considered non-essential

to the curriculum. They are deemed non-essential because the information in those subject areas will not be presented on state tests.

Many studies reveal that countless teachers, administrators, and parents have reported tremendous pressures to raise test scores. Furthermore, there is an insurmountable amount of research about the negative effects of testing. Teachers feel that testing stifles their creativity because far too much class time is devoted to test preparation. This causes teachers to display frustration and dismay. Surprisingly, reports indicate there is no significant relationship between teachers' negative attitude and student achievement. Regardless of the adversarial opinions of the staff concerning testing, the school climate has little to no negative effect on student achievement. Conversely, teachers who are confident in their teaching ability and in the subject area in which they teach have a positive effect on student achievement (Mulvenon et al., 2005). Those teachers who maintain a positive attitude with regard to teaching and assessments are those who have developed an understanding for the purposes of assessment and accountability. Whereas, those teachers who have not received adequate preparation and support for using assessment to drive instruction feel frustrated and maintain negative attitudes towards teaching.

There is a definite lack of instruction in teacher education programs for testing and measurement. Many teachers are leaving colleges and universities with no understanding of assessments and how to effectively use data for instruction. In order to create good teachers, there needs to be more formalized instruction and development in understanding standardized testing in teacher education programs. The more knowledge

the teachers gain regarding testing, the more they will be able to utilize the data to improve instruction. This knowledge will also help teachers better communicate results to parents. Many teachers are not well versed in interpreting data and are unable to relay information to parents. In many cases, school administrators lack the ability to articulate the data so that parents understand immediate issues that affect student learning (Mulvenon et al, 2005). The reason that many administrators cannot properly communicate the data to students and parents is that they too are unable to interpret and articulate the data.

It is imperative that schools are knowledgeable about how to interpret the data to parents and the community. State assessments have transformed tremendously and it is important for those parents who have become frustrated with education to understand the reason for the current shift in education. One of the purposes of this shift is to encourage students to become problem solvers. In order for students to become good problem solvers, they must be encouraged to think for themselves. Not only should they be able to think for themselves, but they must also be able to make good informed decisions to solve problems. Good thinking can best be described as the ability to compare, interpret, observe, summarize, and classify which can be transferred to any discipline. The workplace in all disciplines is demanding more and more that graduates think smarter. It is the responsibility of schools to educate students in a manner in which they may be able to use good thinking, or critical thinking, skills. Unfortunately, many schools are not encouraging students think critically (Pithers, 2000). Teachers attribute this inability to

cultivate critical thinkers to the fact that the curriculum has become some-what prescribed and scripted in this accountability movement.

There is a huge misconception, however, that critical thinking is a concept or skill that can be taught. Quite the contrary, it is the ability to discover problems worthy of research and delve deep into understanding of the knowledge necessary to support findings. Most educators are unclear about how they are supposed to teach students critical thinking skills. Consequently, educators are naturally perplexed about how to properly assess critical thinking. Since there is much confusion about what critical thinking actually is, many school leaders tend to provide training on teaching problem solving which is not going to teach students to think critically (Pithers, 2000) especially if teachers are uncertain about what critical thinking looks like. The training teacher education programs and school districts provide do not necessarily lend itself to a better understanding of critical thinking for teachers. This study seeks to determine if there is a correlation between teacher knowledge and/or preparation and student achievement.

Critical thinking is a means of teaching and learning and is not necessarily a skill that can be taught as it is a process of thinking that must be developed. Historically, there has been a great deal of research regarding teacher behaviors that inhibit the development of critical thinking skills. Examples of hindering critical thinking include: explaining and demonstrating a concept or skill without giving students the opportunity to explore the topic by asking probing questions or asking a great deal of questions that require a simple regurgitation of basic facts. He describes students who have difficulty developing critical thinking skills are those students who exhibit the following characteristics: those

who have trouble with reading comprehension, who are impetuous, who are excessively reliant, and those who simply view being intellectual as a waste of time (Pithers, 2000).

Teacher education programs and school districts should focus on more meaningful professional development that encourages teachers to reflect on current educational practices and teaching strategies that prohibit students' ability to think critically. Additionally, it should focus more on the way teachers conceive the process of teaching and learning. Empirical researchers advocate a strong relationship between the way teachers think and the way they teach students. He describes two conceptions of teaching: teacher-centered and student-centered. The teacher-centered approach is comprised of teachers who simply impart knowledge, while the student-centered approach is more about facilitating and promoting intellectual dialogue that leads to a deeper understanding (Pithers, 2000).

Prior to the increasing demand of NCLB, not all students were required to take standardized tests. Those students who were identified as "at risk" of failure and those who were in special education were perceived as incapable of learning the material covered on tests. Subsequently, accountability systems have become more inclusive in that the education of all students was more closely examined. For this reason, many administrators attempted to "beat the system" by placing students in and out of special education programs in efforts to avoid testing those students. During this time, there was no mandate for subgroups; therefore, many students who were struggling to learn were being placed into special education programs so their test scores would not adversely affect the school's test results. Consequently, there were too many students who were not

progressing well within the general education curriculum and were given an individual education program (IEP) and being placed into special education programs. This caused mass confusion in the field of special education which led to a reauthorization of the Individuals with Disabilities Education Improvement Act (IDEIA, 2004). Today, all students, regardless of academic proficiency and/or deficiencies, are a part of assessment and accountability (Elliot, 2007).

Because of the tremendous pressures associated with NCLB, many districts continue to look for loopholes such as moving students in and out of programs in order to keep a low number of students tested within certain subgroups so that those students' test scores will not count against them for the purposes of accountability. Not only has testing had a negative impact regarding educational decisions, but it has also negatively impacted instructional practices. Many educators and administrators are concerned with and devote all their time teaching and drilling the material for the test. Unfortunately, there is still an alarming number of students continuing to perform poorly on the tests. It is the responsibility of teacher preparatory institutions to provide meaningful courses and school administrators to provide adequate professional development sessions that will offer more effective teaching strategies.

Professional development should encourage educators to reflect on current practices and to grow professionally. Furthermore, in order to receive the most benefit from providing professional development, it should be relevant to teacher observations/evaluations and teachers should be involved in the process of selecting professional development topics. Reflection has proven to be an important aspect of

education that aids in student achievement. Teachers are encouraged to reflect specifically on lessons that were not successful and redesign their lessons that will encourage student success. This study seeks to ascertain the most significant indicator of teacher preparation that encourages student achievement. Is standardized testing of students, frequent participation in professional development, or college courses significant factors that attribute to teacher preparation for student achievement?

Professional development continues to be an important factor in teacher preparation. However, one must also consider the preparation teachers receive prior to entering the profession. The credibility of teacher education programs has been a national concern for many years. These issues are in direct relation to the public perception of the program. The controversy can be specifically linked to the history of the teacher education programs. Historically, teachers' quality was determined by their successful completion of the teacher education program. Candidates who were able to successfully complete the requirements of the program were typically viewed as better teachers than their counterparts who struggled to meet the requirements. However, a candidate's ability to meet the requirements of the program does not make him/her a good teacher. Since then states have increased the curriculum and testing standards in effort to increase the rigor in teacher preparation (Melnick & Pullin, 2000).

Many educational groups have sought to change the perception and rigidity of teacher education programs. These groups devised initiatives that will cause the education of aspiring teachers to be more "intellectually solid" and to create more "defensible standards" of measure for entry into the profession. Many states have yielded

to more prescribed curricula to ensure proper teaching and learning in this era of standardized testing (Melnick & Pullin, 2000).

Furthermore, states are concerned with the role that the federal government plays with regard to teacher education programs and accountability. Title II of the Higher Education Reauthorization Act of 1998 requires reform in the areas of teacher licensure and certification requirements as well as alternatives to the traditional teacher education and state certification requirements. These reform efforts have also limited access to federal funding for those institutions in which students are performing poorly on the required teacher tests (Melnick & Pullin, 2000).

Much emphasis has been placed on the intellectual ability of teacher candidates; however, there is another prevailing issue with regard to the diverse background of teachers. The diversity of our students will continue to change within the next few years. Unfortunately, there are various factors contributing to the limitations of diversity among our educators. More specifically, it is very difficult for minority students to pass the required examinations for entrance into teacher education programs. It is even more difficult to recruit and retain teachers in areas with a large population of minority students. This is in large part because the perception of those schools is very negative. These schools are not afforded the resources similar to their counterparts. Typically, those schools are in areas of high poverty and crime. For these reasons, it makes teaching and learning much more difficult (Melnick & Pullin, 2000).

The consensus is definitely that teacher candidates should be held accountable to high standards in their knowledge of basic skills and subject matter as with any other

profession. Nonetheless, the controversy will continue if standardized testing is used as a measure of teacher competency. These tests must be fair and equitable in order to be used as a measurement of an effective teacher (Melnick & Pullin, 2000).

Standardized tests are not only used as a tool to measure teacher candidate effectiveness, but it is also used to measure teacher effectiveness, to gauge student achievement, and the overall school districts' effectiveness. However, many would agree that entirely too much emphasis is placed on just the standardized test and that school officials should also consider other data in conjunction with the test when making decisions with regards to school improvement. Data alone will not remedy the inequities in the field of education, but should become a catalyst for improving the curriculum, instruction, and professional development. It can be used as a nexus amongst teaching, learning, and the community (Cooley & Shen, 2008).

As in many other professions, data is used to make many decisions in the field of education which is not a new concept. However, the way in which the data is solely utilized for accountability purposes defeats the purpose of testing. The purpose should be to utilize the data to make informed decisions about teaching and learning. Furthermore, to use the data for accountability, to meet state requirements, detracts from the fundamental nature of the teaching and learning process (Melnick & Pullin, 2000).

In order to use data more effectively to improve the quality of education there are several issues that must be addressed and corrected. The first issue is that the data obtained from standardized testing is not a true indication of student learning. There are many extenuating factors that contribute to achievement results. These factors include

student mobility, students' mental capacity during testing, school and classroom distractions which may contribute to a decline in student achievement (Melnick & Pullin, 2000).

It is important, however, to recognize the importance of using student achievement data in conjunction with other data to enhance student learning. It is only when data is used along with attendance, discipline, and other essential school data that school reform can truly take place. Most school leaders use test scores as the determining factor for teacher effectiveness without considering other factors that influence student learning. It is essential for school leaders to realize that student achievement data is only one piece of the puzzle that cannot be used in isolation to improve curriculum and instruction (Melnick & Pullin, 2000).

Secondly, many administrators are using data gathered from standardized test scores as a tool to determine whether or not students are learning rather than using it to determine what students need to learn. It is being used more for accountability purposes as opposed to using it to improve teaching and learning. The use of data for accountability purposes has political implications which are placed in preference to addressing the process of teaching and learning. It is necessary that school leaders focus more on data "for" learning instead of data "of" learning (Melnick & Pullin, 2000).

Thirdly, teacher education programs fail to meet the needs of potential teaching and administrative candidates. Research indicates a lack of collaboration between teacher universities and K-12 schools. As a result, there is an endless cycle of ineffectiveness which inhibits student learning because universities fail to adequately

prepare teachers and administrators to address the needs and complex challenges of K-12 schools (Melnick & Pullin, 2000).

There must be open and honest dialogue between universities, school teachers, school leaders, state leaders, and K-12 schools. There is a common goal improving student achievement; however, there is minimal cooperation regarding the methods of such attainment. Establishing this communication will enhance the development and effectiveness of teacher education programs which will in turn produce effectual teachers who are well prepared for the challenges and demands of K-12 schools (Melnick & Pullin, 2000).

What is more, teachers and administrators are inundated with an abundance of data without the proper guidance on how to effectively use it. Many lack the time and knowledge to sort through and analyze the data with the amount of testing that occurs. In direct relation to the proliferation of testing, teachers are not provided adequate time during the workday for which to analyze data. Some teachers will use their free time to analyze the data, but many will not sacrifice the additional time at the end of a stressful workday (Melnick & Pullin, 2000).

Research has indicated that principals and teachers are frustrated with district administration and state leaders with regard to state and district level testing processes and data analysis. Additionally, there is tension among principals and teachers because the pressure of accountability questions teacher efficacy. However, complaining about accountability is not the medium through which school improvement will occur. School

leaders must understand and use the data as a diagnostic tool as an assessment of current programs and to determine why students are not learning (Melnick & Pullin, 2000).

There has been on-going debate about whether or not teachers are adequately prepared by teacher education programs. The real question is what teachers should know in order to adequately teach in K-12 schools. What they need to know is as different across educational levels as it is across subject areas. Research has indicated a specific need for teachers to be better prepared academically to teach K-12 standards. Beginning teachers should not only possess an in-depth knowledge of the subject area they teach, but they should also have a good understanding as to how to properly deliver instruction. There is a definite problem with teachers' lack of training and acquisition of sufficient "academic background" for the subject in which they teach. This lack is a major cause for concern because there is explicit evidence that suggests a relationship between teacher quality and student achievement. To date, the only measure of teacher quality is a score on a standardized test. However, teachers who achieve greater scores on examinations for teacher education programs are typically more effective (Stotsky, 2006). The question is: Is there correlation between teacher knowledge and/or preparation and student achievement?

There has been a tremendous concern about whether or not teacher education programs adequately prepare, retain, and create effective teachers. Many reform groups have largely focused their efforts on strengthening teacher preparatory programs by increasing the rigor of the coursework, providing more intense strategies to meet the needs of diverse learners, and offering more practical field experiences. Evidence

suggests that these efforts may create teachers who feel better prepared, more effective, and remain in the profession (Chung et al., 2002).

One major problem is that school districts are lowering their admission requirements due to budget restraints to hire new teachers without prior preparation. Unfortunately, these ill-prepared teachers are concentrated in those schools with a majority of minority students from poverty-stricken areas. Moreover, these teachers who are mainly emergency certified are teaching students in poor teaching conditions which is a huge contributor to low student performance and success (Chung et al., 2002).

Additionally, teachers' perceptions of preparedness are a colossal contribution to student achievement. A recent study examining the perceptions of teachers regarding their preparedness indicates that certified teachers felt better prepared than those teachers who are noncertified and/or obtained the alternate route certification. However, neither group of teachers felt adequately prepared to use technology or meet the needs of diverse learners. Graduates of exemplary teacher education programs felt considerably more prepared (Chung et al., 2002).

The perceptions of certified as opposed to noncertified teachers varies immensely with regard to student learning. Certified teachers feel more responsible for ensuring student learning than their counterparts. Noncertified teachers believe that "students fail because they do not apply themselves," their peers are more influential than their teachers, and their performance in school is largely attributed to their home environment so teachers have little to no influence (Chung et al., 2002, p. 290).

Graduates of teacher education programs felt significantly more prepared than those teachers who received alternative route certifications regarding their knowledge of curriculum and ability to meet individual needs of students. Likewise, they felt inadequately prepared to deal with the daily teaching tasks like planning instruction, teaching subject matter, using instructional strategies, and differentiating instruction. Conversely, alternate route certified teachers felt better prepared to use technology than their counterparts. The premise is that those who had occupations prior to entering the teaching profession were able to use technology more effectively due to their practical experience in other fields (Chung et al., 2002).

Critics agree that teacher education programs are an ineffective way to prepare teachers for entry into this demanding profession. As a matter of fact, many teachers do not feel adequately prepared for many tasks involved in the field of education. While there are massive efforts to improve teacher education programs, there is little to no evidence that improving the quality of these programs will improve teacher quality. Until significant efforts are made to improve the quality of instruction in teacher education programs, students will continue to receive poor instruction from inadequately prepared teachers who are unable to help them learn. As society strives for more accountability in K-12 education, there is a definite need for a shift in teacher preparation programs (Chung et al., 2002).

A recent study was conducted to assess teachers' perceptions of high stakes testing and its effects on teaching and learning. Teachers reported expending a great amount of effort on material that will be covered on the test. They feel a great deal of

pressure to improve student performance on standardized tests by using methods that contradict their training and beliefs about good teaching. The most common methods of test preparation that teachers often engage in with their students is correct way to fill in the test answer sheet, teaching only those topics that will be covered on the test, and using practice test material from other states and/or previous years (Abrams et al., 2006).

Studies suggest that the accountability movement and increasing emphasis placed on standardized tests are intended to motivate teachers and students to optimal levels of achievement. Quite the contrary, it has had an opposite effect on both teachers and students. Testing increases anxiety, stress, and fatigue on the part of the teachers as well as the students which can have detrimental effects on student performance. Furthermore, teachers do not believe that results on these tests and providing rewards and sanctions based on student performance will increase the quality of instruction in the classroom (Abrams et al., 2006).

One of the primary reasons for accountability and standardized testing is to improve the quality of instruction throughout the nation. The standardized tests are developed so that students are encouraged to utilize higher level thinking skills. However, a major concern for many educators is that they have not been properly trained and/or educated on the appropriate way to nurture and develop critical thinkers. Many theorists believe that developing thinking skills is creating critical thinkers. But, to categorize critical thinking as a skill that must be learned is to demean the value of critical thinking as a process that involves much more than becoming “proficient” at thinking. It involves a certain degree of know-how, good thinking, and the willingness to

do so (Bailin et al., 1999, p. 270). This study is designed to verify if there is a relationship between teachers' preparation in or background knowledge of critical thinking and their ability to teach those skills. Are we preparing teachers to nurture critical thinkers and to meet necessary educational goals?

Educational goals are often categorized into three parts: knowledge, skill, and behavior. Typically, critically thinking is infused into the skill category which implies that it is a "generic and discrete operation" (Bailin et al., 1999, p. 270). However, this ability to think critically is erroneously separated from the development of knowledge which is paramount to the development of critical thinking. One must possess the background knowledge prior to understanding the concept well enough for critical thinking to occur. Furthermore, one must be knowledgeable in order to become a proficient critical thinker (Bailin et al, 1999).

The educational implications are that teachers and administrators alike are not confident in their abilities to ascertain exactly what critical thinking looks like and how to teach it to ensure student achievement on standardized tests. Although there is no consensus, there are three procedures that researchers have identified as analogous to critical thinking: inquiry, problem solving, and decision making. It should be the goal of all educators to promote critical thinking by teaching them to perform the aforementioned tasks well by perpetual practice (Bailin et al., 1999).

Educators should seek to employ more activities that will development and enhance students' ability to think critically. To promote the development of critical thinking skills, teachers should use activities that include strategies that incorporate "open

mindedness, fair mindedness, the desire for truth, an inquiring attitude and a respect for high-quality products and performances” (Bailin et al., 1999, p. 281). Moreover, there are a plethora of teaching strategies that may be used in this development such as direct instruction, modeling, creating a learning environment conducive to the inquiry process. Students should be provided frequent opportunities to explore meaning and engage in meaningful dialogue specific to learning. They should be allowed to practice the skill of critical thinking; not for repetition of the skill, but in order to apply the skill in a variety of contexts (Bailin et al., 1999).

## CHAPTER III

### METHODOLOGY

#### Overview

There are teachers whose students consistently excel regardless of their race, ethnicity, or environmental circumstances. There are those teachers who are not bewildered and dismayed by the insurmountable amount of educational opposition their students face with regard to language barriers, single-parent families, and environmental pressures. These teachers are not perplexed about how to increase student achievement (Hilliard, 2000).

In lower achieving schools, teachers are often confused about how to effectively teach all students. They are consistently engaged in negative conversations about student attendance, lack of motivation, and lack of parental involvement and support. Conversely, more effective teachers converse about their goals and reflect on current instructional practices with regard to trials and errors. The latter are those educators who successfully increase student achievement for all students. Those students who are exposed to good teaching by well-prepared teachers will unequivocally excel over their counterparts. Good teachers have high standards for all students. It is appropriate; however, to raise the question of whether or not those “high standards” are derived from high stakes standardized tests. Many would argue the opposite and that the solution is to give students teachers who are well prepared to promote high standards of learning (Hilliard, 2000).

The Mississippi Department of Education (MDE) has undergone a massive reform with regard to teaching, learning, and assessing. Many educators, community leaders, and parents contend that the tested material does not necessarily equate to high standards; however, for the purpose of this study, the questioning techniques used on the Mississippi Curriculum Test II are considered higher level questioning. Therefore, the intent is to ascertain the preparedness of teachers for teaching and assessing higher level thinking by using an experimental study. The researcher compared the most recent scores from the Mississippi Curriculum Test Second Edition (MCT II) in grades 3 – 8 in schools where teachers have had extensive professional development and training in Webb's Depth of Knowledge in the past two years and those who have not been adequately trained in teaching and assessing for higher-order thinking skills and/or received training prior in the year 2007 or before. The first year that the MCT II was administered was used as the baseline data.

### Research Design

According to the Mississippi Department of Education (2009), under the new accountability model students are assigned one of four levels based on their performance on MCT II: *basic, minimal, proficient, and advanced*.

The independent variable is the amount of training or professional development regarding teaching higher order thinking skills. This training may have been received at each school site via professional development in Depth of Knowledge or the college preparation courses regarding higher order thinking skills. The time frame in which teachers received the training will also be a factor. The dependent variable is the school's

Quality Distribution Index (QDI). Student scores make up this QDI which should vary based on teachers extent of preparedness for teaching and assessing for MCT II standards as well as the time frame in which they received this training. Schools receive levels/ratings based on their QDI. The levels are: STAR, High Performing, Successful, Academic Watch, At Risk of Failing, and Failing. School levels will also be used as they are determined by a compilation of student scores. Students scoring in the “advanced” category obtain three points, a “proficient” score receives two points, a “basic” score receives one point, and a “minimal” score receives no points towards a school’s QDI. Therefore, the more “advanced” and “proficient” students a school has the better the QDI which denotes more prepared teachers and students who are critical thinkers.

#### Participants

Participants in this study were selected from various school districts within the state of Mississippi. The researcher sought permission from principals of schools within the state along the gulf coast that administer the MCT II (See Appendix C). The intent was to obtain participation from teachers in K-8 schools who are responsible for teaching tested subject areas: language arts (reading and writing) and math, who have and have not been trained by DOK professionals and/or in teacher preparation courses to teach and assess for the increased rigor of the state assessments in the last two years (since implementation).

#### Instrumentation

After 1965, states began to use standardized testing to evaluate and measure student progress due to the increase in state and federal resources available to schools. In

the 1970s, this practice became much more prevalent with the accountability movement when annual testing began to establish “gains” in achievement (Perrone 1991).

Furthermore, Matthews (2006) notes that this testing frenzy was derived from different sources including the launch of the Soviet satellite Sputnik which created a greater need for improvement in our schools.

Popham (2004) believes that the United States has been under tremendous pressure for quite some time and even more so since the accountability movement. There is an increasing demand to produce reliable confirmation that teachers are performing satisfactorily in school systems. This confirmation is most often produced in the form of test results.

#### Archival Data (Mississippi Curriculum Test Second Edition)

The Mississippi Curriculum Test Second Edition (MCT II) was used as one instrument to measure teacher preparedness. This test is designed to measure students’ annual growth. More recently, the rigor of this particular assessment was increased to encourage the usage of higher order thinking skills. Students in grades 3-8 are required to take this annual assessment in the areas of language arts and mathematics. The purpose of using this source of data for the study is to determine whether or not the students attained the necessary skills and knowledge to score at the “advanced” and/or “proficient” level which is used as one indicator of being taught at higher levels of thinking.

In 2008, the Mississippi Department of Education (MDE) used Norman Webb’s Depth of Knowledge (DOK) as a basis by which to improve questioning on the state

assessments. Many teachers received professional training by Dr. Webb, a representative, school district personnel, or in teacher preparation courses within the last two years. For the purpose of this study, both teachers who have and have not been properly trained in DOK and to teach higher order thinking skills were selected to participate in this study. This study determines whether or not this training was indeed appropriate training for teaching and assessing higher order thinking skills. The researcher also considered the year in which the teachers received this training.

The researcher reviewed each participating schools' MCT II data via a website called the Mississippi Assessment and Accountability Reporting System (MAARS) on the Mississippi Department of Education (MDE) website. This website contains data regarding schools' demographic and testing data. This testing data is available to the public and contains information regarding testing data for the entire school – not individual teachers.

Since student scores are not directly linked to specific teachers, the researcher used the school's QDI as an indicator of teachers who have received appropriate training. Each school within the state of Mississippi received a level based on a compilation of individual student scores on the MCT II. According to the Mississippi Department of Education's Accountability Model, there are six levels (from the lowest to the highest): Failing, At Risk of Failing, Academic Watch, Successful, High Performing, and Star. Those levels are obtained by acquiring each school's Quality Distribution Index (QDI) by using a formula developed at the state department. This numerical value is used in conjunction with Adequate Yearly Progress (AYP) data to determine the school's level or

rating which for this study is used to determine whether or not the teachers are adequately prepared to teach and assess to new and more rigorous standards of accountability.

#### Teacher Perception (Questionnaire)

A questionnaire was used as an instrument to establish teacher perceptions about their preparation for teaching and assessing higher order thinking skills (see Appendix A). The questionnaire was developed by the researcher. It contains a myriad of questions relating to teachers' perception of their level of preparedness by either DOK training; professional development provided by the school and/or district; or teacher education courses at a university and/or college. All questions are multiple choice and based on a 5-point Likert scale. Prior to the study, a pilot study was conducted and Cronbach's alpha was used to determine the validity of the questionnaire. Upon completion of the study, each questionnaire was coded to identify specific schools in order to use in conjunction with the archival data obtained for MAARS. In order to compare means, sub-scores were created for questions that required a "yes" or "no" response. The data from the questionnaires was entered into SPSS for analysis.

#### Procedures

The researcher obtained permission from The University of Southern Mississippi's Institutional Review Board and each school district in order to collect data (see Appendix B). A questionnaire was mailed to the Director of Curriculum and Instruction of one school district and hand-delivered to each participating school's Instructional Literacy Coach for classroom teachers of grades 3-8 to complete. It was designed to take approximately 15 minutes to complete. They were collected by the

Instructional Literacy Coach and picked up by the researcher within two weeks of delivery. The mailed questionnaires were mailed back to the researcher by the Director of Curriculum and Instruction using the provided self-addressed stamp enveloped. Confidentiality was maintained and protected as the researcher collected the data without individual teachers' personal identification on the documents. The questionnaires were used to determine the extent to which teachers felt adequately prepared to teach and assess for MCT II. A cover letter was included to obtain consent from all participants.

In order to collect test data, the researcher used the publicly available website: Mississippi Assessment and Accountability Reporting System (MAARS). The data was entered into SPSS and categorized by school. Test scores for each participating school were obtained from the MDE website in order to compare the teachers' perception to the actual test data at each school.

#### Data Analysis

The Mississippi State Department of Education (2008) has developed a Quality Distribution Index (QDI) which is calculated to determine the overall school's level of performance. This distribution is based on the number of students scoring in each category of *minimal*, *basic*, *proficient*, and *advanced*. It is used by MDE to calculate each school's rank which includes: *Failing*, *At Risk of Failing*, *Academic Watch*, *Successful*, *High Performing*, and *Star*. The QDI was analyzed for the 2009-2010 school year to determine school success. Each QDI was used in comparison to teachers' perceptions of preparation for MCT II. This data was used to determine whether or not

the preparation the teacher received was appropriate for student achievement as indicated by a *proficient* or *advanced* score on MCT II.

Pearson correlations were used to measure H<sub>1</sub>: There is a significant difference in a teachers' own preparation and background knowledge and his/her ability to teach those skills; and H<sub>2</sub>: There is a correlation between teacher knowledge and/or preparation and student achievement. A regression was used to measure H<sub>3</sub>: Standardized testing, teachers' participation in professional development, and college courses are significant indicators of teacher preparation. This analysis was used to compare means of teacher's perception of their professional development, instructional practices, and collaboration with colleagues, professional background, and how they prepare their students for testing.

Teacher perception was ascertained based on their responses to questions regarding whether or not they feel that they have not been adequately trained to teach higher order thinking skills by college preparation courses or DOK professional development sessions and those who feel that they have been adequately trained. The MCT II scores were compared for schools whose teachers felt adequately prepared and/or trained and those who did not feel adequately prepared and/or trained. This comparison was used to determine whether or not training significantly impacted student achievement as defined by *proficient* and *advanced* student scores. The purpose of this measurement is to determine the effectiveness of the DOK training on student test score results on the Mississippi Curriculum Test Second Edition. Prior to the actual survey, a pilot study will be developed and administered to determine any potential problems. The regression was

chosen for analysis to determine if the independent variables would have a statistically significant impact on the dependent variable.

## CHAPTER IV

### RESULTS

The primary purpose of this study was to determine if there was a significant relationship between teacher preparation in and/or background knowledge of critical thinking skills and their ability to teach those skills. Furthermore, the study identifies the most significant indicator of student achievement as defined by overall student performance on the Mississippi Curriculum Test Second Edition (MCT II) and the Quality Distribution Index (QDI) which ranks the individual schools data. Finally, this study identifies a correlation between teacher knowledge and/or preparation and student achievement.

#### Description of the Participants

Participants in this study consisted of elementary school teachers in grades 3-8 who teach subjects that are tested on the MCT II. The researcher sought the participation of teachers from the five coastal school districts in the state of Mississippi. Of the five school districts, only two of the school districts participated in this study with a total of 19 schools participating. The researcher sought to include schools in which teachers felt adequately as well as inadequately prepared to teach and assess critical thinking skills. This data is contained in Table 1.

Approximately 500 questionnaires were distributed. There were a total of 208 participants in this study. There were teachers of varying experience levels: 31.6% with 1-5 years; 21.7% with 6-10 years; 34.4% with 11-24 years; and 10.4% with 25 or more years of teaching experience. Female participants comprised 86.8% with 11.3% being

males and 1.9% of the participants neglected to select an option. Participants' level of education vary in that a majority of the participants, 50%, have obtained a master's degree in education; 46.2% of the respondents have obtained a bachelor's of science; .5% have obtained a specialist degree in education; and 3.3% omitted a response. A preponderance of the teachers, 80.2%, acquired their certification by "traditional route," taking all educational courses with merely 16% attaining their teaching certification by "alternate route," having a degree in another field and later obtaining a certificate in the field of education. 3.8% of the participants failed to respond. Of all the participants, 43.9% of the teachers reported having taken a minimum of 1 or 2 college courses to further their training in the past two years. 6.6% have taken 9-12 hours; 3.8% have taken 15-18 hours; 16% reported having taken 21 or more hours; and 29.7% of the data were missing which may be interpreted as they omitted the question or have not taken any college courses in the past 2 years.

Table 1

*Description of the Participants*

		N	%
Experience	1-5 years	67	31.6
	6-10 years	46	21.7
	11-24 years	73	34.4
No Response		4	1.9
Gender	Male	24	11.3
	Female	184	86.8

Table 1 (continued).

		N	%
No Response		4	1.9
Certification	Traditional Route	170	80.2
	Alternate Route	34	16.0
No Response		8	3.8
College Hours	.00 hours	63	29.7
	3-6 hours	93	43.9
	9-12 hours	14	6.6
	15-18 hours	8	3.8
	21+ hours	34	16.0
Level of Education	BS	98	46.2
	ME.D	106	50
	Ed.S	1	.5
No Response		7	3.3

The teacher respondents each rated his/her perception of preparedness for teaching and assessing for higher level thinking skills as determined by the MCT II using a Likert-style rating system. The questionnaire was designed so that the rating scale varied based on the set of questions being answered. A review of the descriptive data (see Table 2) indicated that teachers on average from 2.16 to 4.23 viewed themselves as being minimally prepared for teaching and assessing higher level thinking skills. Results

indicated that the teacher respondents on average of 4.23 felt that the way they teach and prepare their students is a better indicator of teaching and assessing higher order thinking skills. Respondents on average 2.16 felt less prepared by their professional background or the level of degree they had obtained.

Table 2

*Means and Standard Deviations for Teacher Perception of Preparedness Questionnaire*

	Minimum	Maximum	Mean	Std. Deviation
Professional				
Development	.00	7.00	3.94	2.35
Teaching	1.50	5.00	4.23	.64
Collaboration	1.00	5.00	3.84	.74
Background	.00	5.00	2.16	1.16
Test Prep	1.00	5.00	3.48	.96

Variables were created to obtain the means for instructional practices, teaching practices, collaboration with other educators, and testing preparation (see Table 2).

Variables were also created for professional development and professional background because those items required a “yes” or “no” response and were counted to obtain a numerical score/value. Means and standard deviations for teachers’ perceptions are presented in Table 2.

School achievement was measured by the Quality Index Distribution (QDI) of the individual schools based on the students’ aggregated scores on MCT 2 end-of-year exam for students in grades 3 through 8. Based on this numerical value, the schools achieve

their ranking: 0-99 is “Failing”; 100-132 is “At Risk of Failing”; 133-165 is “Academic Watch”; 166-199 is “Successful”; 200-300 is “High Performing.” A Star School ranking is only achieved by growth. Furthermore, schools may have a QDI that would categorize them as one level; however, their growth allows them to achieve the next highest level. Of the respondents, there were only three levels represented: Star (5.7%), High Performing (85.8%), Successful (7.5%), with .9% missing data.

### Tests of Hypotheses

Pearson correlations were used to measure hypotheses one (1) and two (2) to determine if there was a correlation between teacher preparation and/or background knowledge and their ability to teach and assess critical thinking skills. A multiple regression analysis was used to determine hypothesis three (3) to determine the most significant indicators of teacher preparation that enable them to teach and assess critical thinking skills more effectively as indicated by a high QDI.

### Teacher Perception of Preparedness

A Pearson Correlation was used to measure  $H_1$ : There is a significant relationship between teacher’s preparation and background knowledge and his/her ability to teach those skills as indicated by his/her perception and response to those items on the Teacher Perception of Preparedness for Teaching and Assessing Depth of Knowledge questionnaire. Pearson correlations indicated that there was significant relationship between teacher preparation and their ability to teach and assess critical thinking. Therefore, there is relationship between teacher education courses and a teachers’ ability to teach their students to think critically. Thus, results yielded data to suggest that the

researcher should reject  $H_1$  that there is a relationship between teacher preparation and background knowledge of critical thinking and their ability to teach those skills with significance levels ranging from -.043 to .220.

A Pearson Correlation was used to measure  $H_2$ : There is a correlation between teacher knowledge and/or preparation and student achievement. The results indicated that there is a correlation between teachers' perception of their professional background (level of education .274, teaching certification .212, and college training in the past two years .149) relative to their preparation to teach and assess critical thinking skills. Therefore, the teachers believe that there is a significant relationship between the way they were taught to teach by their college courses and student achievement.

Table 3

*Pearson Correlation: Teacher Perception of Preparedness and School QDI*

		QDI
Professional Development	Pearson Correlation	.031
	Sig (1-tailed)	.335
Instructional Practices	Pearson Correlation	.028
	Sig (1-tailed)	.350
Teaching Preparation	Pearson Correlation	.058
	Sig (1-tailed)	.211
Teacher Collaboration	Pearson Correlation	.141
	Sig (1-tailed)	.024
Professional Background	Pearson Correlation	.220

Table 3 (continued).

		QDI
	Sig (1-tailed)	.001
Years of Experience	Pearson Correlation	.048
	Sig (1-tailed)	.252
Level of Education	Pearson Correlation	.043
	Sig (1-tailed)	.274
Teaching Certification	Pearson Correlation	.057
	Sig (1-tailed)	.212
College Training (past 2yrs)	Pearson Correlation	.074
	Sig (1-tailed)	.149

An analysis using Pearson's correlation coefficient indicates a relationship between all variables. Notably, the school's QDI  $r(187)=0.085$ ,  $p>0.001$ .

For these data, the mean (SD) for each variable is: professional development 3.98(2.36), instructional practices 3.92(.44), teaching preparation 4.24(.61), teacher collaboration 3.86(.72), professional background 2.20(1.13), years of experience 2.20(1.01), level of education 1.51(.51), teaching certification 1.16(.37), and college training in the past two years 1.34(1.33) and QDI.

The strongest significance is the relationship between professional background  $p=.01$  and a school's QDI. Overall, there is a positive correlation between all the variables and a school's QDI which means that all the variables predict a school's QDI

with the strongest predictor being a teacher's professional background (i.e., training for professional development, publishing in journal).

Finally, a multiple regression analysis was used to measure H<sub>3</sub>: Standardized testing, teachers' participation in professional development, and college courses are significant indicators of teacher preparation. Although QDI is predicted by all the variables, the strongest predictor was a teacher's professional background. The higher the professional background the greater the QDI. Teachers who either attended or presented during conferences and/or workshops, published an article in a journal or magazine for educators, participated in curriculum design and implementation, and exchanged information online about teaching strategies yielded higher results than their counterparts.

The multiple regression test was significant at  $F(9, 187) = 1.936, p = .049, R^2 = .085$ . Respondents believed that their preparation for teaching and assessing critical thinking skills adequately prepared them to prepare their students for the MCT II.

According to the multiple regression (Table 4), professional development, instructional practices, college preparation, collaboration with other teachers, years of experience, level of education, teaching certificate, and college courses taken within the past two years predicted a successful score on MCT II. While their own ambition with regard to participating in curriculum design, publishing in a journal, and/or attending and facilitating a professional development session had a significant  $p = .01$  impact on their preparation for teaching their students to think critically. Those teachers who have participated in and/or trained during professional development sessions; contributed to

curriculum design and implementation; exchanged information online with colleagues about how to teach a particular lesson and/or skill; and have written and/or published in a journal felt better prepared to teach and assess critically.

Table 4

*Mean Scores of Teacher Perceptions of Indicators of Preparation for MCT II*

	B	Beta	Sig.
Professional			
Development	-.005	-.031	.691
Instruction	-.003	-.004	.964
Teaching	-.063	-.108	.154
Collaboration	.066	.133	.081
Experience	.030	.086	.321
Education	-.048	-.069	.352
Certification	.049	.052	.481
College	.025	.094	.253

### Summary

There were approximately 212 teachers surveyed from within two (2) school districts on the gulf coast. The results indicated a decision to partially reject the null hypothesis  $H_{O1}$ . Teacher participants indicated that they did not feel adequately prepared by college courses but by their own involvement in curriculum design and implementation. They felt that their neither college courses nor professional development sessions adequately prepare them for the MCT II test. However,

respondents felt that their own studies and conscientiousness with regard to research and curriculum yield better results for preparing their students to think critically.

## CHAPTER V

### SUMMARY

The primary purpose of this study was to determine the extent to which our college preparation courses, professional development sessions, teaching experience, and professional background have any significance on students' ability to think critically relative to a "proficient" or "advanced" score on the MCT II. It sought to ascertain which teaching practices have the most significant impact on a teacher's ability to teach and assess higher-order thinking skills. Since the implementation of NCLB and accountability, teachers and administrators have become increasingly perplexed about ways to increase students' ability to use higher-order thinking skills. Brookhart (2010) defines this ability in terms of being able to transfer information, to think critically, and use problem solving skills. Transferring information involves students being able to remember, make sense of, and use information. Critical thinking requires students to reflect and decide what they should believe and do with the information obtained. Problem solving occurs when students are forced to discover a solution to reach a desirable goal.

With the recent onset of accountability, teachers feel an overwhelming pressure to teach beyond the current curriculum to ensure that students are able to reason and use higher-order thinking skills. This study supports the fact that more teachers who are involved in using higher-order thinking skills themselves the more they will be able to transfer that knowledge to their students with a significance level of .01 (see Table 3).

The goal of education should be to teach students to be able to think which means that students can apply what is learned to new concepts. The concept of higher-order thinking requires students to relate what is learned beyond how and in which context the information was taught (Brookhart, 2010). Based on the results of this study (see Table 3), teachers who are consistently involved in activities that require them to use higher-order thinking skills are more likely to encourage or insist that their students learn acquire this skills.

#### Summary of Procedures

After obtaining permission from The University of Southern Mississippi's IRB (see Appendix B) to conduct this research, the questionnaire was created and developed by the researcher. Permission was requested from the five coastal school districts and only two school district superintendents granted permission for the study. The questionnaires were packaged, sent to, and collected from these two school districts: one hand delivered to the instructional literacy coaches and the other was mailed to the director of curriculum and instruction for distribution. The questionnaires were completed by teachers in grades 3-8 and returned to the school secretary and collected by the researcher. The data from the questionnaires were used in combination with publicly available testing information obtained from the Mississippi Department of Education's website: Mississippi Assessment and Accountability Reporting System (MAARS). This data was coded and results were entered in statistical software in order to test the hypotheses.

### Summary of Major Findings

For the purpose of this study, three research questions were designed to determine educator practices that contribute to student achievement relative to their ability to use higher-order thinking skills. Those research questions are as follows:

1. Is there a relationship between teacher's preparation in or background knowledge of critical thinking and their ability to teach those skills?

H<sub>1</sub>: There is a relationship between teachers' preparation and background knowledge and his/her ability to teach those skills.

2. Is there a correlation between teacher knowledge and/or preparation and student achievement?

H<sub>2</sub>: There is a relationship between teacher knowledge and/or preparation and student achievement.

3. What is the most significant indicator of teacher preparation (standardized testing of students, frequent participation in professional development, college courses)?

H<sub>3</sub>: Standardized testing, teachers' participation in professional development, and college courses are significant indicators of teacher preparation.

Three hypotheses accompanied the research questions in order to help answer the questions based on the teachers' perception of their preparedness for teaching and assessing higher-order thinking skills. Pearson correlations were used to measure the results of hypotheses one and two to determine if there was a correlation between the

variables. Multiple regression tests were used to measure hypothesis three to determine the most significant predictor of teacher preparation.

Of particular interest was the finding that a majority of the respondents had obtained a master's degree in the field of education. These findings are consistent with the data relative to this study in that those teachers who are ambitious and seek to expand their own content knowledge yield students who are more prone to do the same. These teachers voluntarily participated in the furthering their education and therefore may have a higher motivation for increasing their knowledge and understanding of teaching and learning. These teachers may have participated in activities that encourage the use of critical thinking skills more than their counterparts.

A recent study was conducted by Dr. Robert Marzano (2003) which concludes over thirty-five years of research on effective schools and student achievement. The findings from his study outline five school practices, three teacher practices, and three student practices relative to student achievement. Furthermore, he suggests adherence to these critical areas in order to promote school improvement. Marzano's research substantiates evidence from this study which indicates that students should have "fluid intelligence" which he describes as the innate ability to produce abstract thought (p. 134). He further contends that teachers should exhibit and model this process for students.

### Results

H<sub>1</sub>: There is a significant relationship between teacher preparation and/or background knowledge of critical thinking and his/her ability to teach those skills.

Therefore, it is critical that colleges, universities, and school districts provide appropriate and meaningful professional development that will encourage the practice and application of those skills for potential and practicing educators.

H<sub>2</sub>: There is a significant relationship between teacher knowledge and/or preparation and student achievement. Consistent with other studies conducted regarding teachers' knowledge and its impact on student achievement, this study provides evidence that the most successful teachers are those who demonstrate mastery and understanding of content knowledge and are able to articulate that knowledge successfully to their students.

H<sub>3</sub>: There is no significant relationship between teacher preparation and standardized testing of students and college courses. However, there is a significant relationship between teachers' professional background and involvement and students' ability to use higher order thinking skills. The results of the multiple regression tests led to a decision to reject the hypothesis. The multiple regression test was significant at  $F(9, 187) = 1.936, p = .049, R^2 = .085$ . Thus, teachers' professional background and involvement in using those skills themselves is a significant predictor of a teachers' ability to teach those skills.

### Conclusions

There are a few that may be drawn based on the results of this study. The following statements represent those conclusions:

1. There was only one (professional background) of the nine created variables that correlated significantly with a school's QDI which, for the purposes of this study, denotes student achievement and their ability to use higher-order thinking skills.
2. According to the data, on average, teachers viewed themselves as being minimally prepared for teaching and assessing higher-order thinking skills. Based on the teacher perception of preparedness questionnaire, respondents felt that the way they teach and prepare their students is a better indicator than their participation in professional development or the level of degree they've obtained.
3. Consistent with the data from this study, respondents indicated (see Table 4) that their participation in activities that encourage their own usage of critical thinking skills enables them to teach students to use those skills more effectively.

### Discussion

In the 1990s, states began to develop legislation requiring all states to administer a common assessment of core subject areas: Reading, Language, and Math and more recently science. These assessments are required for students in grades 3 through 8 and are comprised of standards which are referred to as general statements regarding what students should know and be able to do. Students taking these assessments may achieve a "minimal," "basic," "proficient," or "advanced" score. States have required that all students score in the "proficient" or above range by the 2014 testing year. They have also developed a standard criterion which assigned a numerical value, cut scores, to each school based on a compilation of student score results. This numerical value is used to classify schools based on the accountability model (Fielding et al., 2007).

One of the main reasons for accountability is to improve the quality of instruction by setting standards and assessing students based on these standards. These standards are developed so that students are encouraged to utilize higher order thinking skills. In order for students to perform well on these assessments, educators must implement more activities that develop and enhance students' ability to think critically (Bailin et al., 1999). There has been some concern, however, that teacher education programs are inadequately preparing effective teachers who can inspire students to think critically and apply higher-order thinking skills (Chung et al., 2002). Therefore, it should be the goal of education to seek activities to promote critical thinking by engaging students in the perpetual practice of the following skills that have been identified by researchers as analogous to critical thinking: inquiry, problem solving, and decision making (Bailin et al., 1999).

#### Implications and Recommendations

This study was conducted for the purpose of determining best practices for teaching and assessing for depth of knowledge. The results of this research support the idea that the field of education must engage teachers in professional development that encourages the use of critical thinking. It is this practice that enables teachers to engage students in critical thinking processes. Taken together, the results suggest that school districts provide more meaningful professional development. It would be beneficial for school districts to utilize the National Staff Development Council's (NSDC) standards when planning for staff development. These standards provide guidance with the improvement of learning for all students in mind. There are three types of standards that

should be used to guide professional development: context, process, and content.

Context standards are designed to help shape and cultivate a collegial environment conducive to collaboration. Process standards help guide teaching strategies toward a common goal of student achievement. Finally, the content standards provide educators with a deeper understanding and knowledge of curriculum and research-based strategies.

Teacher education programs should help teachers to become aware of their own use of critical thinking and better prepare them to give students the confidence to become critical thinkers. Teachers must recognize and be able relay the benefits of becoming problem solvers to their students. Thus, colleges and universities must engage future and practicing teachers in more activities that employ and cultivate their ability to utilize critical thinking skills.

Further research might explore/investigate the specific inhibitors to critical thinking that frequently occur within the school environment. This research should include case studies used in conjunction with the teacher perception questionnaire in order to gain a different perspective regarding what actually occurs during the school day. If the debate is to be moved forward, a better understanding of what actually impedes students' ability to make use of critical thinking skills needs to be developed. Since we have become aware that teachers should use critical thinking themselves in order to impart that ability to their students, then what cultural and/or environmental hindrances may get in the way of students using those skills daily?

## APPENDIX A

## TEACHER PERCEPTION OF PREPAREDNESS FOR TEACHING AND ASSESSING

## DEPTH OF KNOWLEDGE QUESTIONNAIRE

## Section One: Demographic Information:

1. Please circle the range in years that best reflects your years of experience:  
1-5                  6-10                  11-24                  25+
2. Please identify your gender:  
Male                                  Female
3. What is your current level of education (*Circle One*):  
BS                  ME.d                  Ed.S                  Ph.D                  Ed.D
4. How did you obtain your teaching certificate?    Traditional Route  
Alternate Route
5. Please circle the amount of college hours/credits earned in the past 2 years:  
3-6                  9-12                  15-18                  21+

## Section Two: Professional Development

	Yes	No
Have you attended Depth of Knowledge (DOK) Training?		
Did you attend this training within the last two years?		
Did you receive on-going support from any source after training?		
Were you trained by school or district staff?		
Were you trained by a representative of Dr. Norman Webb?		
Were you trained inside your school and/or district?		

## Section Three: School Instructional Practices

	Strongly Agree	Agree	Neutral	Strongly Disagree	Disagree
My school has high expectations.					
I use a variety of evaluation techniques.					
I seek to grow professionally.					

I give students opportunities to apply and use information in a way that goes beyond memorizing facts.					
Teachers understand the school's curricular goals.					
My school does a good job with curriculum implementation.					
College courses effectively prepared me to teach and assess MS standards.					
I feel as if my school is more interested in improving test scores than improving overall student achievement.					
I align instruction to my school's curriculum without considering the MCTII.					
I feel as though I am "teaching to the test" rather than teaching to improve student achievement.					
I spend a large amount of instructional time reviewing testing material rather than teaching content.					

#### Section Four: Teaching Preparation

	Very Good	Good	Acceptable	Fair	Poor
.... to teach/assess my students' ability to apply strategies and skills to comprehend, respond to, interpret, or evaluate a variety of texts of increasing levels of length, difficulty, and complexity....					
... to teach/assess my students' ability to use word recognition and vocabulary (word meaning) skills to express, communicate, evaluate, or exchange ideas...					
...to teach/assess my students' ability to solve problems involving basic operations of rational numbers, use algebraic functions, patterns, and					

language across a variety of contexts, analyze geometric relationships and formulas, use standard units of measurement in mathematical and real-life situations and organize, interpret, analyze, and display data to predict trends....					
...to teach/assess my students' ability to explain and use skills necessary to conduct scientific inquiry, to develop an understanding of the properties of Earth materials, to understand physical science concepts, and to analyze the characteristics, structures, life cycles, and environments of organisms.					
Section Five: Teacher Collaboration					
	Very Frequently	Frequently	Rarely	Very Rarely	Never
...discussions about how to teach a particular concept?					
...preparing instructional materials?					
...visit to another teacher's classroom to observe his/her teaching?					
Section Six: Professional Background					
				Yes	No
...attended a workshop or conference?					
...given a presentation or a workshop or conference?					
...published an article in a journal or magazine for teachers (print or online)?					
...took part in curriculum design and implementation?					
...exchanged information online about how to teach your subject area?					
Section Seven: Testing Preparation					
	No Time	≤ 1 day	2-5 days	2-3 Weeks	≥ 4 weeks
Provide practice using exactly the same format of the MCT II.					

Provide instruction without considering the specific skills that are covered by the MCT II.					
Teach test-taking strategies, such as completing bubble sheets, pacing/timing, strategies for answering multiple choice questions etc...					
Implement interventions based on a review of the MCT II test results for the previous year in an effort to improve students' areas of relative weakness.					
Use practice exercises/tests that are in the same format and use the same language similar to test questions found on MCT II.					
Routinely provide instruction on only the content and skill areas that specifically match those areas measured by the MCT II.					
Routinely use classroom tests that are in the same format and use language similar to test questions found on the MCT II.					

## APPENDIX B

## INSTITUTION REVIEW BOARD PERMISSIONS

## FROM THE UNIVERSITY OF SOUTHERN MISSISSIPPI



## 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: **10042003**

PROJECT TITLE: **Teacher Preparation for Teaching and Assessing Depth of Knowledge (DOK)**

PROPOSED PROJECT DATES: **01/01/2010 to 01/01/2011**

PROJECT TYPE: **New Project**

PRINCIPAL INVESTIGATORS: **Shelly Rankin Holmes**

COLLEGE/DIVISION: **College of Education & Psychology**

DEPARTMENT: **Educational Leadership**

FUNDING AGENCY: **N/A**

HSPRC COMMITTEE ACTION: **Expedited Review Approval**

PERIOD OF APPROVAL: **08/26/2010 to 08/25/2011**

  
 \_\_\_\_\_  
 Lawrence A. Hosman, Ph.D.  
 HSPRC Chair

9-1-2010  
 \_\_\_\_\_  
 Date

APPENDIX C  
PRINCIPAL OF LETTER OF PERMISSION  
FROM PARTICIPATING SCHOOL DISTRICTS

October 20, 2010

Dear Principal,

My name is Shelly Rankin Holmes. I am interested in an educator's preparation for, knowledge, understanding, and application of Depth of Knowledge in teaching and assessing for the Mississippi Curriculum Test Second Edition. I have been in the field of education in the Harrison County School District for 12 years. I am in the process of completing my doctorate degree in educational leadership and research at The University of Southern Mississippi.

I have been given permission by your superintendent for you to take part in a study of teacher preparedness for teaching and assessing Depth of Knowledge (DOK) questionnaire. The purpose of this study is to gather data concerning the teacher preparedness for teaching and assessing Depth of Knowledge (DOK) questionnaire and to gain valuable insight and data regarding preparation, knowledge, and understanding, teaching, and assessing Depth of Knowledge (DOK).

I have enclosed the questionnaire which covers six issues related to preparation, teaching, and assessing for Depth of Knowledge as well as basic demographic information for teachers of students in grades 3-8. Completion of this questionnaire should take no more than 10-15 minutes.

Data will be aggregated and a summary will be submitted as part of completing the dissertation process at the University of Southern Mississippi and may be presented in a professional venue. No individual school or school district will be identified in the summary report. Upon completion of the study, all data will be destroyed.

Participation in this project is completely voluntary. Completing and returning the questionnaire will be an indication of consent to participate in this survey. If you have questions regarding this research, please contact Shelly Rankin Holmes at 228-539-7058 or email me at [mishellae1@aol.com](mailto:mishellae1@aol.com). If you would like a brief summary of the compiled data, please contact me by phone or e-mail. This research is being conducted under the supervision of David Lee, Ph.D. [David.E.Lee@usm.edu](mailto:David.E.Lee@usm.edu).

This project and this consent form have 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 participant 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.

Thank you for your participation and help with this project.

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