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An Exploratory Critical Study of Questioning Strategies Posed by Early Childhood Teachers During Literacy Blocks

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by

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ABSTRACT

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The purpose of this study was to examine the cognitive types and functions of questions orally posed by early childhood teachers in kindergarten through 3rd grade during a 90-minute literacy block. The cognitive types of questions were determined by the criteria established using Hess' Cognitive Rigor Matrix (Hess, Jones, Carlock, & Walkup, 2009). The functions of the posed questions were determined by criteria based on the work of Costa (2001), Hughes (as cited in Fusco, 2012), and Lowery (as cited in Fusco, 2012). This study examined questioning strategies used by 12 early childhood teachers from a Northeast Tennessee School District. The 12 teachers orally posed questions were recorded, scripted, and coded by the researcher to determine each question's type, frequency, and function and how these indicators serve to increase student engagement during the literacy block.

Results from the study show that the majority of questions posed are low in cognitive level requiring students to perform primarily at the basic level of remembering and understanding. The primary function of the recorded posed questions called for students to verify their understanding and many closed questions were asked during the documented lessons. The time teachers gave students to answer a question was minimal and a single student generated response was the predominant vehicle used to glean an answer to a presented question.

While the teachers in this study appeared to understand the importance of posing high level cognitive questions in order to increase Common Core Standards instruction, results from this study showed that there seems to be a disconnect between what teachers think they do and their actual practice in regard to posing effective questions as a strategy for active student engagement and learning.

DEDICATION

This research project is dedicated to the memory of my grandfather Rev. Ralph Cook, my parents Jim and Shelby Helton, and my late husband Frank Baker.

For Papaw, because he was and still remains the most influential person in my life. He, by example rather than words, demonstrated that, “The Lord giveth wisdom: out of His mouth cometh knowledge and understanding” (Proverbs 2:6).

For Mom and Dad, because you never told me “I could not” and because you taught me the “way of wisdom” and “led me in the right paths” as godly parents are instructed by the Holy Scriptures to do. I will never cease to love you for love is stronger than the grave.

Finally, for Frank… because you loved me.

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CHAPTER 1

INTRODUCTION

What is the value in a question? Questions have been posed for centuries and are inseparable from the concepts of teaching and learning. Napoleon Bonaparte wrote, "*Why* and *How* are such important questions one cannot put them to one's self too often" (Taine, 1891, Chapter I, Section III, ¶ 3). Kipling wrote, "I keep six honest serving men (they taught me all I knew): Their names are 'What' and 'Why' and 'When' and 'How' and 'Where' and 'Who'" (1912, p. 83). These historic figures undoubtedly realized the power of a posed question and had they spent their lives as educators perhaps they could have posed effective questions to their students.

Most educators unhesitatingly concur that asking questions is an important part of classroom instruction. Historically and presently, the posing and answering of questions in a classroom has been a fundamental technique for the primary purpose of increasing or measuring student learning. However, many administrators responsible for teacher evaluation do not observe and record effective questioning strategies in classrooms (Hannel, 2009). Even more so, if teachers are asked, *How do you question students?* rarely, can they answer with specific details about when, why, or how they implement effective questioning strategies with students in their charge. Hannel (2009) stated that while questions are asked often by the teacher in the classroom, questioning strategies fail to be understood and are still generally condensed into a small set of factual requests used to gather or measure basic information, which are generally not posed to increase higher order thinking or learning. However, the practice of engaging students with questions to increase higher order thinking and learning has been used throughout history.

The practice of using questions to engage students was first suggested by Socrates and was immortalized by Plato. Socrates effectively used the question-based method of inquiry at his Academy, which was established in 387 BC (Lin, n.d.). Since the time of Socrates and Plato, the types and functions of questions posed have either moved the learner forward or served little purpose in engaging students thoughtfully.

Early research regarding types and functions of questions was analyzed in the Northwest Regional Educational Laboratory School Improvement Research Series, which was produced by the School Improvement Program under a contract with the Office of Educational Research and Improvement for the US Department of Education from 1987-1995. The findings include a paper by Cotton (1988) who categorized questions into three major divisions.

The first division included lower cognitive questions that ask students to simply recall verbatim or with paraphrased words the material recently read. Lower cognitive questions are referred to in past and present literature as fact, closed, direct, recall, and knowledge questions. The second division included higher cognitive questions. These are questions that ask students to mentally manipulate pieces of information previously learned to create an answer or to support an answer with logically reasoned evidence. Higher cognitive questions have historically been labeled or are currently labeled in sources as open-ended, interpretive, evaluative, inquiry, inferential, and synthesis questions. The third division included procedural questions. These are sometimes referred to in the literature as management questions and are used to maintain conversation, manage behavior, clarify, or provide directives (Massey, Pence, Justice, & Bowles, 2008).

Massey et al. (2008) found that questions typified a third of all teacher classroom remarks, with management questions occurring most frequently at 44.8%. Cognitively

challenging questions were noted at 32.5% and low cognitive questions were noted at 22.7%. Cotton (1988) perceived that on average during classroom recitations approximately 60% of the questions asked were lower cognitive questions, 20% were higher cognitive questions, and 20% were procedural.

Teachers entering classrooms today should understand that the presentation and mastery of subject content is their primary duty; every school system expects this to occur successfully. Literacy instruction is one of these primary contents. Every teacher is a literacy teacher in some respect, for every subject has content that should be read, understood, comprehended, and mastered. However, the teaching of reading comprehension inside the literacy block forces these teachers in particular to realize that they must possess a quality skill set whereby they are able to facilitate student learning, growth, and achievement in the area of literacy, particularly in the area of reading comprehension. Teachers must develop their skill so they may impart the knowledge students need to become proficient readers. Research conducted in the past 10 years supports student achievement and is directly connected to the teacher's skill. Darling-Hammond is a leading researcher in teacher preparation who, along with Bransford (2007), said the primary contributor to a student's success is determined by what the teacher knows. The teacher's qualifications, knowledge, skills, and abilities make a huge difference for student learning more than any other factor such as socioeconomic status (Darling-Hammond & Bransford, 2007).

Part of the challenge for teachers is to increase student thinking and understanding by using the strategies and discourse the teachers present to their students in the day's studies. An active and engaged group of students will most likely be guided by a teacher who can pose and deliver adroitly designed questions (Fusco, 2012). Fusco (2012) has also concluded that not all questions asked by the teacher are constructive and that questions are only effective when they

(a) encourage students' discovery of new interests and help students become cognizant of a wide range of possibilities and concepts; (b) promote depth in student thinking about ideas, concepts, and opinions; and (c) are asked inside a safe environment that respects diverse perspectives and learners.

Coupled with this set of high expectations are distinct challenges that teachers must embrace and accomplish. These challenges include (a) the subjection to comprehensive evaluation models whereby they are held accountable for their instructional practices and methods, (b) high stakes accountability testing, and (c) the implementation of our nation's new Common Core Standards. Future and current teachers' ability to accept and master these challenges alongside the advancement of best practices in regard to literacy and reading comprehension will be necessary for success in American classrooms, which is measured today both by student achievement and teacher effectiveness.

Teachers know that the measure by which they demonstrate the effectiveness of their skill set will be assessed by the results their students produce on high accountability state tests and by the scores they receive on teacher evaluations. In Tennessee teachers are assessed using a multiple means approach. According to the Tennessee Educator Acceleration Model (TEAM), educator observations are made up of three components: (1) 50% of the teacher's evaluation score will come from teacher observation data conducted by and scored by an observer, who is generally an immediate supervisor such as the principal; (2) 35% of the teacher's evaluation score will come from student growth scores; and (3) 15% of the teacher's evaluation score will be derived from student achievement data selected by the teacher from a list of state board approved options (Tennessee Department of Education, 2013c).

The 35% and 15% scores from achievement test data in Tennessee are generated from the Tennessee Value-Added Assessment System (TVAAS). TVAAS is a statistical analysis of achievement data that reveals academic growth over time for students and groups of students, such as those in a grade level or in a school. The value-added score is interpreted as a measure of the direct effect that educational factors – primarily the teacher – have had on students' achievement. These test scores are scrutinized to show whether or not the students in the teacher's charge have made gains and mastered expectations (Tennessee Department of Education, 2014b). The other facet of teacher evaluation comes from the Tennessee Educator Acceleration Model (TEAM).

The TEAM model, which provides the other 50% on teacher evaluation, has 12 instructional indicators whereby an evaluator must score the teacher's performance on the given lesson. One of the 12 indicators is *questioning*. A teacher who receives the highest score of 5 implies that the teacher demonstrates abilities significantly above expectations. In order to score 5, the teacher must consistently exhibit the following eight descriptors, which are critical as teachers implement the Common Core Standards in their classroom instruction.

1. The teacher asks questions that are varied and of high quality;
2. provides a balanced mix of question types;
3. poses a high frequency of questions in number asked;
4. sequences questions consistently with attention to the instructional goals;
5. regularly requires active responses;
6. provides wait time (3-5 seconds) consistently;
7. calls on volunteers and non-volunteers, with a balance of students based on ability and gender; and

8. allows students to generate questions that lead to further inquiry and self-directed learning (Tennessee Department of Education, 2013c).

Classroom teachers are implementing the Common Core Standards across the nation. The Common Core Standards are designed to ascertain what students should know and be able to do while delivering on the promise that these standards will address the problem of curriculum being "a mile wide and an inch deep" (Common Core State Standards Initiative, 2014, p. 3). The Common Core's reading standards for literature and informational text are designed to expose students to literacy instruction intended to generate a staircase of increasing complexity in what students must be able to read so that all students are college and career ready no later than the end of high school (Common Core State Standards Initiative, 2014).

In order for students to gain mastery of presented complex texts, they are required to comprehend the presented material accurately. The Common Core State Standards expect that teachers are able to embrace and implement specific comprehension strategies during literacy instruction. Obviously, a prime characteristic of the Common Core State Standards will be the requirement that students are able to progress through the grades comprehending and understanding any text they read (Battelle for Kids, 2012).

Specifically, the *Reading Standards for Literature K-12, Common Core Grade Standard CCR Anchor Standard 1* for both *Reading Standards for Literature* and *Reading Standards for Informational Text* will necessitate students carefully and attentively read to determine what the text says explicitly and make logical inferences from it, cite specific textual evidence when writing or speaking about the text, and support the conclusions they draw from the text with textual evidence (Battelle for Kids, 2012). Under these two *CCR Anchor Standards,* the expected grade standard for kindergarten students is that, with prompting and support, students will ask

and answer questions about key details in a text. For grades 1-3 the expected grade standard is for students to be able to ask and answer questions like who, what, where, when, why, and how to demonstrate understanding about key details in a text, referring explicitly to the text in order to support the answer given (Battelle for Kids, 2012).

Statement of Purpose

Due to changes coming with the implementation of the Common Core State Standards, current teacher evaluation models implemented in several states, and the depth of knowledge that will be required from students on future state assessments, it is critical that teachers are able to increase comprehension skills. One effective comprehension strategy is to ask questions that will require students to generate answers beyond basic recall. Therefore, it is important to look at current practice to see if teachers are currently using effective questioning strategies and, if so, to what degree are they being implemented. Due to the challenges facing teachers, the purpose of this study was to examine questioning strategies used by early childhood teachers during a 90-minute literacy block.

Research Questions

Overarching Question: During a 90-minute literacy block, how do K-3 teachers use questions to support students' literacy development? Four research questions guided the study.

RQ1: During the 90-minute literacy block, how many questions are orally posed by the teacher based on Hess' Cognitive Rigor Matrix (Hess et al., 2009), and the Question's Function based on the work of Costa (2001), Hughes (as cited in Fusco, 2012), and Lowery (as cited in Fusco, 2012)?

RQ2: During the 90-minute literacy block, what are the cognitive levels of the questions orally posed by the teacher based on Hess' Cognitive Rigor Matrix (Hess et al., 2009)?

RQ3: During the 90-minute literacy block, what is the function of the initially posed or generated follow-up question asked by the teacher (i.e., clarification questions, cueing questions, focusing questions, or probing questions) based on the work of Costa (2001), Hughes (as cited in Fusco, 2012), and Lowery (as cited in Fusco, 2012)?

RQ4: During the 90-minute literacy block, once orally posed questions are presented, how does the teacher allocate for student responses(e.g., no response taken, wait time of 3-5 seconds, teacher answered response, single student response, more than one student response, or whole group responses) (Costa, 2001)?

Significance of the Study

By making close observations of teachers in grades K-3 during a 90-minute literacy block, the data will show if the teachers show evidence of meeting the established expectations of asking quality questions as part of literacy instruction regarding reading comprehension. The research shows (a) the quantity and cognitive level of questions teachers present to students in the literacy block, (b) the intended function of the questions posed, and (c) how teachers responded to student answers.

The study is significant in providing information to support if there is a need for continued further professional development for teachers in order to help them improve or develop their maximum potential in the area of comprehension reading instruction by (a) learning and implementing direct questioning as a comprehension strategy, (b) becoming more conscious of the need to provide ample wait time for students to answer generated questions, (c) foster questions that will allow students to delve into higher order thinking responses while increasing their ability to answer questions characterized by a depth of knowledge rather than simple literal recall, (d) inform or enhance current literature regarding effective questioning

strategies proffered by teachers, and (e) possibly lead to larger studies that may support professional development opportunities or training materials for current or future educators.

Definitions of Terms

This study included terms that may not be familiar to the reader, which are included in language specific to the field studied. These definitions are presented to help the reader become familiar with the terms used.

Accountable Talk – Conversation shared with others about ideas that sustain learning; promote learning, knowledge, and rigorous thinking (Costa, 2001).

Common Core State Standards – A set of criteria written to provide a consistent, clear understanding of what students are expected to learn, so that teachers and parents know what students need to know, understand, and be able to do. The standards are designed to be robust and relevant to the real world, reflecting the knowledge and skills America's students need for success in college and a career. They are designed with the intent to fully prepare young students for the future and are expected to position them to compete successfully in the global economy (Common Core State Standards Initiative, 2014).

Constructivism – A poststructuralist psychological theory that construes learning as an interpretive, recursive, nonlinear building process by active learners interacting with their surroundings in the physical and social world. It is a psychological theory of learning that describes how structures, language, activity, and meaning come about, rather than one that simply characterizes the structures and stages of thought, or one that isolates behaviors learned through reinforcement (Fosnot & Perry, 2005).

Convergent – The ability to come together and have one interest, purpose, or goal; or to move toward one point (Convergent, 2014).

Convergent Questions – Questions posed so that the answers to these types of questions are usually within a very finite range of acceptable accuracy (Wilson, 2014).

Discourse – The use of words to exchange thoughts or ideas about a subject (Discourse, 2014).

Divergent – Differing from each other or from a standard (Divergent, 2014).

Divergent Questions – Questions that, when posed, allow students to explore different avenues and create many variations and alternate answers or scenarios. Correctness may be based on logical projections and may be contextual or arrived at through basic knowledge, conjecture, inference, predictions, creation, intuition, or imagination (Wilson, 2014).

Literacy – Encompasses the reading components necessary to become a self-sufficient reader, writer, speaker, and listener using developing innovations and knowledge thereby sufficiently progressing in a job, studies, or lifestyle. Literacy is comprised of five components: phonemic awareness, phonics, comprehension, vocabulary, and fluency (National Reading Panel, 2000).

Prior Knowledge – Consists of the inferences made based on past experiences (Johnson & Keier, 2010).

Reading Comprehension – A complex cognitive process that requires an intentional and thoughtful interaction between the reader and the text to enhance understanding (National Reading Panel, 2000).

Recitation – Characterized by recurring sequences of teacher asked questions and student answers. Students recite what they generally already know or are learning (Costa, 2001).

Reflective Dialog – The manifestation of the processes of learning and instruction by engaging in quality conversation, discourse, and questioning that includes pausing, probing, and clarifying (Costa, 2001).

TAP Rubric – The *TAP Rubric* (Teaching Skills, Knowledge, and Responsibilities Performance Standards Rubric) is a comprehensive system designed in rubric form that is used to evaluate teachers. The rubric is a set of clearly defined standards that promote best practices and apply to all content areas (National Institute for Excellence in Teaching (NIET), 2012b) (Appendix A).

Tennessee Comprehensive Assessment Program (TCAP) – A set of statewide assessments given in Tennessee in order to measure students' skills and progress. The TCAP achievement test is given to students in grades 3-8. Student results are reported to parents, teachers, and administrators each year (Tennessee Department of Education, 2013a).

Tennessee Educator Acceleration Model (TEAM) – The annual evaluation model used to assess Tennessee teachers. The model looks at the performance of teachers through reflective practice and test data using the multiple measures of student growth scores, student achievement data, and administrator observations using the TAP Rubric. Teachers may earn a composite score of 1, 2, 3, 4, or 5 comprised from the multiple measures with a score of 1 significantly below expectations and 5 significantly above expectations (Tennessee Department of Education, 2013c).

Tennessee Value-Added Assessment System (TVAAS) – A statistical analysis of achievement data that reveals academic growth over time for individual students and groups of students in a grade level or school. TVAAS is a tool that provides feedback to school leaders and teachers on student progress and assesses the influence of the teacher and school on their

progress. TVAAS allows educators the opportunity to follow student achievement over time and provides schools with a longitudinal view of student performance (Tennessee Department of Education, 2014b).

Wait Time – The significant pause after a posed question and sometimes the pauses after a given answer prior to additional feedback, other verbal response, or a second question (Walsh & Sattes, 2011).

Zone of Proximal Development – The level of development where the child can do a task with help because he or she sees the task, strategy, or skill modeled by another person, followed by practice with the assisting person, and then followed by independent ability (Johnson & Keier, 2010).

Limitations

This study was limited to 12 K-3 teachers employed by one school system in Northeast Tennessee. One limitation was the gathered data only represents a small section of the educational arena outlined by the geographic range and cultural features of the area. A second limitation was the variation in the observed teachers' beliefs, expectations, educational degrees, years of experience, scores earned on the teachers' evaluation rubric, scores netted on state achievement, and value added growth results. Other limitations include that the questions documented in this study only came from a small snapshot of each teacher's literacy block and the study did not include questions posed in other subject areas or times during the school day. The documented questions were limited to only those questions orally posed by the teacher; the study does not include other forms of posed questions such as those presented in written form. A major limitation is that observations and decisions based on the observations were limited to

those of one person. Despite these limitations, the importance of this study may impact student achievement due to teachers posing ineffective questioning strategies.

Delimitations

All research studies pose delimitations to narrow the focus in order to thoroughly explore the specified topic. The first delimitation of this study was that it categorized questions into specific functions as defined by Costas (2001), Hughes (as cited in Fusco, 2012), and Lowery (as cited in Fusco, 2012). A second delimitation was that the questions were categorized into specific cognitive types as defined by Hess' Cognitive Rigor Matrix (Hess et al., 2009). The third delimitation of this study was that early childhood encompasses only kindergarten through third grade. The fourth delimitation was set forth by the definition of the literacy block as being the instructional time devoted to the reading and understanding of fiction and nonfiction literature, writing, speaking, listening, vocabulary development, and specific skill instruction. These four delimitations represented and delineated the primary types and functions of questions currently posed or those that should be posed for effective engagement in the early childhood classroom literacy block.

Organization of the Study

Chapter 1 presents an introduction, the statement of purpose, research questions, significance of the study, definition of terms, limitations, and delimitations pertaining to the study of effective questioning strategies presented by teachers to students in early childhood literacy blocks and the importance of the strategies in light of Common Core State Standards, teacher evaluation, and effectiveness. Chapter 2 provides the findings from the review of literature including the theoretical framework on which questions are necessary to early childhood instruction, the categorization of questions into types and functions, and the

connection to strategic questioning as an effective tool to use to increase student mastery of comprehension. Chapter 3 focuses on the research method, including the design, research questions, sample, participants, participant selection, data collection, instrumentation, validity and reliability, data analysis, and coding and recording of data used in the study to determine the types, functions, and use of questions in current early childhood practice during the literacy block. Chapter 4 presents the results and data analysis from the study, which includes participant data, results of each research question, and the overarching research question. Chapter 5 contains a summary of the findings, conclusions, and recommendations for further research.

CHAPTER 2

LITERATURE REVIEW

Introduction

Questioning as part of instruction has been practiced since the time of Socrates. In today's classrooms, teachers are expected to effectively ask questions to increase student learning and achievement. These techniques are of such importance that current and future teachers are and will be evaluated on how, when, and why they pose questions. Therefore, this study looked at teacher posed questions during the literacy block to see how many questions are orally posed by the teacher and what types of questions are posed based on Hess' Cognitive Rigor Matrix (Hess et al., 2009); the function of the initial or follow-up question posed by the teacher (i.e., clarification questions, cueing questions, focusing questions, or probing questions) based on the work of Costa (2001), Hughes (as cited in Fusco, 2012), and Lowery (as cited in Fusco, 2012); and how teachers allocate for student responses such as wait time. Effective questioning strategies used in the classroom are recorded in the literature and are often referred to as the "art of asking questions" (Wolfe, 1987, p. 1).

Questions in the Classroom

Wolfe (1987) wrote, "Ask a teacher how he or she teaches and, chances are, the answer is, 'By asking questions'" (p. 1). However, if the teacher is next asked how he or she uses questions or what separates or identifies a question as a powerful, profound, engaging question from a quick, routine one, the very same teacher probably will have a difficult time making distinctions between the two. Wolfe (1987) reported that he seldom observed teachers posing questions about a text that required students to generate answers beyond basic recall and higher levels of posed questions were not regularly asked in most American classrooms.

Marzano (1993) said that there are three frequently used techniques teachers use to enhance student thinking. These were (1) general information processing strategies, (2) writing methods, and (3) questioning techniques. Marzano (2011) included questioning techniques as part of his *Art and Science of Teaching Framework*. He listed questioning under Domain 1 of his framework, underneath what he denotes as *Lesson Segments Enacted on the Spot.* Beneath this segment, he constructed *Design Question 9: Communicating High Expectations for All Students* and detailed this section of the design with a descriptor stating that generally teachers do not pose questions to their low achieving students. On the rubric sheet for this descriptor, he indicated that for questioning to be effective in a classroom the teacher must make sure low achieving students are asked complex questions at the same rate and depth as high achieving students, and students should expect their teacher to ask all students high quality questions. One of the five reflection questions posed to teachers for self-reflection and improvement on this teaching framework is "How might teachers adapt and create techniques for asking questions of all students?" (Marzano, 2011, p. 44).

The art of asking questions is part of what Darling-Hammond and Bransford (2007) specified as an observable feature when one examines common practices among highly effective teachers. She concluded that all professions have key components to delineate professionalism. Therefore, a professional teacher is committed to helping every student succeed. They state that it takes intense, committed, and consistent work for these teachers to be successful. Successful teachers must possess the "knowledge and skills necessary to follow through with commitments rather than simply try and fail" (Darling-Hammond & Bransford, 2007, p. 6).

Hamilton County, Tennessee's school district studied 92 teachers who were identified as highly effective. These 92 teachers were selected because they all had 3-year highly effective

measurement scores as measured by an appropriate system assessment or by the Tennessee Value Added Assessment System (TVAAS), resulting in their students scoring consistently in the top 25% (Carter, n.d. as cited in Darling-Hammond & Bransford, 2007). Although the teachers were diverse by demographics, they were similar in discourse. Discourse is any form of oral or written communication more extensive than a sentence, such as when making a formal written or oral presentation on a subject, a formal discussion of a subject, or just the simple act of interacting with someone.

According to Nuthall, Graesser, and Person (2012) the term discourse in relation to the classroom is defined as the language teachers and students use to communicate with each other such as talking or conversation. Talking and conversation is the vehicle used to complete the act of teaching. Therefore, the study of classroom discourse is the investigation of the verbal exchanges that occur between a teacher and his or her students.

Beginning with studies of the classroom as early as 1910 using stenographers to record observations, it became clear that verbal interaction in the classroom was essentially the dialog whereby the teacher asked a question and one or two students answered, then the teacher commented on the students' answers (sometimes summarizing what had been said) and asked a follow-up question. This cyclical pattern repeated itself throughout all the lessons presented (Nuthall et al., 2012). Therefore, it is quite obvious that questions have been and still appear to be a strategy used in classroom discourse with all subject matter.

The characteristics and discourse attributed to these teachers represent what Darling-Hammond and Bransford (2007) labeled as conventional procedures of highly effective teachers. These practices included:

- Expectations for students were clearly defined,
- student work was adequately displayed,
- teachers did not stand still and lecture but moved about the room often and strategically covered every section of the room in order to monitor each student's activity or progress,
- small groups were used often and traditional rows of desks were not present,
- the room and the lessons were clearly organized and no class time was wasted due to poor or inadequate planning, and
- there were prominent levels of instructional discourse.

The students were stimulated and encouraged to confidently ask and answer questions presented by the teachers and other students.

Darling-Hammond and Bransford (2007) concluded that teachers must have three skill sets to deliver quality reading content instruction. First, they must possess a clear understanding of the skills and subject matter presented in the reading text. Second, they must have considerable and extensive knowledge of explicit strategies that will increase effective understanding for diverse students. Third, they must know which strategies will effectively deliver the presented content and how to best teach and model the strategies efficiently so that students may gain mastery. Based on the work of Dantonio and Beisenherz (2001) there are some learnable techniques for posing effective questioning strategies that include:

- preplanning questions,
- using a wide variety of questions,
- avoiding rhetorical questions,
- stating questions with precision,

- using appropriate wait time after a question is delivered,
- not asking questions in rapid fire succession, and
- equitably selecting students to answer.

Walsh and Sattes (2011) wrote that questions engage students in thinking about the expected academic content. As teachers and students move forward with the expectations set in motion for America's schools, teachers will find it necessary, more than ever, to engage students at a deep and meaningful level. By using effective questioning strategies, teachers will be able to engage students using high levels of cognitive thinking and interactions because the nature of questions is to connect all components of the instructional core together. This will be the expected practice of all early childhood educators presented by the implementation of the Common Core State Standards.

Common Core Standards

Because questioning has the ability to connect core components, it will be a necessary approach needed to implement the Common Core State Standards Initiative (2014). While the Common Core Standards (Appendix B) will address all content areas, and even though questions are an effective technique for any discipline, we will only examine the core in regards to the standards associated with literacy for this study and examine questioning inside the literacy block. Furthermore, Darling-Hammond and Bransford (2007) support that teaching reading comprehension strategies is most likely one of the most complex tasks teachers must learn to deliver effectively.

The Common Core calls for primary teachers to give students chances to speculate, imagine, manipulate, analyze, and connect with texts, particularly nonfiction texts. Calkins, Ehrenworth, and Lehman (2012) stated that teachers will be expected to impart high level

comprehension and analytical reading skills to students and that it is likely many of these teachers will find it necessary to admit that they have not experienced adequate training or practice with the instructional delivery methods needed to teach higher level skills to students. The Common Core will require students to be exposed to explicit instruction in skills and strategies necessary to accomplish a high level of reading comprehension. With the implementation of Common Core, teachers will be required to expose their students to nonfiction literature at least 50% of the time and will need to ask questions effectively in order for the students to demonstrate a high level of text understanding similar to what Otto and Shuck (1983) found in their study. These researchers determined that the achievement of students who were assigned to teachers trained to use strategic questioning in science class using nonfiction text materials was significantly higher than that of students who participated in classes where the teachers were not trained in using strategic question techniques.

Costa (2001) was almost prophetic in his book *Developing Minds* saying, "We need to create effort-based schools in which academic rigor and a thinking curriculum permeate the school day for everyone" (p. 4). In order to increase rigor and thinking, Costa (2001) purported that teachers will need a fundamental set of core principles, the first of which is accountable talk. For teacher talk to promote learning, it must be answerable to precise, correct, appropriate knowledge, and arduous thinking. Teachers should purposely design the classroom to support accountable talk using a rigorous, academic, thought-provoking curriculum that supports metacognition and problem solving. Curriculum and instruction will need to be constructed on a knowledge core of key concepts that students are expected to profoundly know in all subjects and at each grade level.

Common Core Standards certainly could be the response to Costa's idea that a knowledge core is necessary. The United States now has as its initiative the Common Core Standards that call for educators to prepare all students to be college and career ready (Common Core State Standards Initiative, 2014). This initiative demands increased expectations and increased accountability in regard to students' reading achievement both at the school and classroom level (Peterson & Taylor, 2012). As stated earlier, the Common Core will require primary teachers to give students opportunities to speculate, imagine, manipulate, analyze, and connect with the information being presented. The Common Core will support the use of questioning, which Marzano, Pickering, and Pollack (2001) listed as one of the nine effective research based strategies for teaching reading comprehension.

The Common Core will call for students to make question-answer relationships such as those found in the Question and Answer (QAR) Method. There are four question and answer relationships defined by Raphael, Highfield, and Au (2006) for the QAR Method.

1. Right There! The answer is in the text and the reader could literally point to it and say the answer is *right there!*
2. Think and Search! The answer is in the text, but the reader will have to look to find it. The answer could be scattered in the text or be found in various sentences.
3. Author and You! The answer is not in the text, but the reader will still need to use the information the author has given them to generate an answer. The reader will need to combine this information with his or her prior knowledge in order to respond to the asked question.
4. On My Own! The answer is not in the text and the reader may not even have to read the text to be able to answer it.

Whereas the Common Core will require that teachers ask both low cognitive and high cognitive questions, it is important for educators to remember that simply asking these types of questions – particularly high cognitive questions – will not guarantee a higher level response, more thinking, or greater learning gains. In order to make a positive impact on student achievement, students will need explicit instruction in answering these types of questions and teachers may very well need practice in planning for them (Costa, 2001).

It should not be a surprise that Calkins et al. (2012) stated that the Common Core Standards are "a big deal" (p. 1). The Kindergarten-12 Common Core State Standards documents were constructed on behalf of 48 states, two territories, and the District of Columbia. To date, 45 states, the District of Columbia, three US territories, and the Department of Defense Education Activity have adopted the standards. The Common Core State Standards were created to support teachers and ensure student ability. By presenting teachers with clear goals for student learning, the Common Core State Standards are expected to provide the necessary guidance needed for students to master crucial skills and obtain essential knowledge required to flourish in a college class or in a selected career (Common Core State Standards Initiative, 2014).

The Common Core State Standards Initiative (2014) states that our nation's current school systems need standards to ensure all students have the essential skills and knowledge to be a success, no matter where they reside geographically, so that they are fortified for success in postsecondary education classes or the work place. The Common Core Standards will help safeguard our nation's students by giving them an opportunity to consistently participate in a high quality education from school to school and state to state. The Common Core Standards will allow educators the opportunity to provide students with an occasion to participate in the collective experience of best practice within and across the United States.

The Common Core State Standards Initiative (2014) clearly states that the standards were not designed to instruct or direct teachers in how to teach but were designed to assist teachers in understanding the knowledge and skills students need to acquire. The standards will offer educators a compass whereby they may engage in creating quality lessons. The standards are designed to be clear, realistic goals for success. The Common Core State Standards Initiative (2014) indicates this is the cornerstone and the guiding light that will empower students with an eminent education resulting in them being prepared for success in college or the workforce.

Tennessee adopted the Common Core State Standards on July 30, 2010, and the implementation of the standards began in the state thereafter. According to a PowerPoint found on the Tennessee Department of Education (2012b) website, Tennessee's state educational leaders gave support to the districts implementing the Common Core State Standards in K-2 and set the goal that all Tennessee districts would move toward full implementation in the 2012-2013 school year. In order to achieve this implementation, the State affirmed that focus groups of districts with promising practices that share best practices with districts would be convened, and districts would be encouraged to focus on direct instruction in reading, especially for students at risk of reaching third grade below grade level.

Because the Common Core is recognized by the state (Tennessee Department of Education, 2014a), it appears that the Common Core Standards are providing what Calkins et al. (2012) called "an urgently needed wake-up call" (p. 8). With that being established, the Common Core Standards are emphasizing much higher comprehension skills than previous standards in the past. According to Calkins et al. (2012) the last major educational shift to occurr happened when the No Child Left Behind Act of 2001 (2002) caused educators to focus on the reading components deemed critical to quality reading instruction, as established by the National

Reading Panel (2000). This panel determined there were five major components to quality reading instruction:

1. phonemic awareness,
2. phonics,
3. vocabulary,
4. fluency, and
5. comprehension.

The National Reading Panel did not seem to determine that one of these components should be more greatly emphasized than the others (Calkins et al., 2012). However, Calkins et al. (2012) concluded that the Common Core Standards would ardently stress reading comprehension skills. The Common Core Standards will require teachers to stray from the basal reading program that emphasized seatwork and small repetitive reading groups. Instead, the standards will require many books be placed into the student's hands with the expectation the student will be actively engaged with text in many meaningful ways including conversations full of provocative opportunities for thought.

The Common Core State Standards will require that comprehension move beyond noticing text details to a deeper account of understanding. Calkins et al. (2012) have determined that the standards will focus on rigorous textual analysis such as the types of intellectual work associated with Webb's Depth of Knowledge (2002) whereby students will be expected to succeed in level's two and three of the Webb hierarchy and be expected to sort and categorize, compare and contrast, evaluate, analyze, and reason with the presented text.

With the adoption of the Common Core Standards as the expected guide for Tennessee's teachers, the Tennessee Department of Education website (2012b) distinctly states that "*why*"

we teach is to prepare students for postsecondary education or the workforce. This distinct "*why*" makes the Common Core State Standards the document that provides teachers with "*what*" they should teach. With *"why"* and *"what"* unmistakably clear to the educators in our state, it seems only natural that the Tennessee TEAM teacher evaluation model would provide a vision of excellence for *"how we teach"* (Tennessee Department of Education, 2012b). With clear expectation given to "*why*" and "*what"* teachers are to provide in order to maximize instruction, consideration must be given to the connection that exists between what teachers know to do, what they believe they do, and what they are actually practicing.

Alignment Between Beliefs and Practices

Harbin and Newton (2013) studied to determine if the perceptions, beliefs, and experiences of mathematics teachers aligned with their teaching practices and found that while teachers usually possess a core set of beliefs about how students study and acquire knowledge, they often did not demonstrate what they knew and believed about educational innovations and best practices. Hedrick, Harmon, and Linerode (2004) examined teachers' beliefs and practices in regard to social studies vocabulary instruction and found that while the teachers said they knew, understood, and used what was currently accepted as best practice in regard to vocabulary instruction, they failed to implement those reported practices and continued to apply more traditional instructional approaches during the documented lessons.

In looking at research on teacher effectiveness, clearly the connection or disconnection between teachers' beliefs and practices exists. There are various reasons for incongruities between teachers' beliefs and practices, which may ensue due to the teacher's lack of knowledge; lack of self-awareness, partially defined as the inability to do what they think they do; and lack of cognizance concerning their practices and the effects those practices have on their

students. For example, Sahin, Bullock, and Stables (2002) studied teachers and found them to be unaware they were implementing impromptu questioning strategies that were impacting their students' comprehension abilities.

Teachers whose beliefs and practices were clearly connected in a positive association were able to recognize what they should be practicing in regard to instruction; they were delivering it consistently and effectively. Nevertheless, some teachers appear to have a surface level knowledge of best practices. They know the strategies they should employ but fail to implement them successfully (Roehrig, Turner, Grove, Schneider, & Liu, 2009). While there appear to be teachers who may or may not exhibit a disconnect between what they believe occurs during their instruction and what is actually being delivered, Tennessee public school administrators and supervisors can systemically measure a teacher's instruction using the Tennessee Teacher Evaluation or TEAM rubric.

Tennessee Teacher Evaluation (TEAM)

With many states, including Tennessee, choosing to measure the quality of individual teacher instruction, the need for teachers to provide instruction that is challenging and rigorous for their students while accelerating student growth is imperative. Forty years of research on effective reading instruction has provided educational leaders with an abundance of research and knowledge about how to address the complexities and challenges of teaching students (Peterson & Taylor, 2012). Studies have shown that teachers who see more growth in their students' reading scores emphasize higher level thinking strategies in relation to presented texts more so than other teachers (Taylor, Pearson, Peterson, & Rodriguez, 2003).

Peterson and Taylor (2012) documented in a recent study how teachers who strategically planned and implemented higher order questions in their reading assignments consistently

advanced their students' reading scores compared to those students who were assigned to teachers who did not consistently pose higher order thinking questions. The students in the higher order questioning classrooms did not exhibit giving off-the-top-of-the-head answers or filling in the blanks. These students were better able to make connections as they talked about the stories. Therefore, it should come as no surprise that the Tennessee Educator Acceleration Model (TEAM) evaluation model (Appendix A) selected by Tennessee should include indicators for effective questioning.

The state instituted the evaluation system as part of the requirements set forth in the First to the Top legislation proposed by then Governor Bredesen, which was approved by the state legislature in January, 2010. The Tennessee First to the Top Act (Tennessee Department of Education, 2010) required that beginning with the 2011 school year evaluations of all teachers would be implemented annually. The action theory behind the educator observation model presented by TEAM is laser focused on educator practices and student achievement. The purpose of the model is to institute quality procedures for study and investigation in order to ensure ongoing teacher improvement and effectiveness (Tennessee Department of Education, 2013c).

The Tennessee TEAM model was grounded in the work founded by Milken, who some call a visionary in educational reform (Lowell Milken Family Foundation, 2014), and who created the System for Teacher and Student Advancement (TAP) in 1999 and the National Institute for Excellence in Teaching in 2005. For the past 20 years, the National Institute for Excellence in Teaching (NIET) and the Milken Foundation have conducted research that documents that the quality of the classroom teacher is the single most important factor affecting student achievement in regards to school structure. Their gathered statistics reflect 43% of the

variance in student achievement as based on the teacher's qualifications and abilities (National Institute for Excellence in Teaching, 2012a).

According to the NIET (2012a) TAP Research Summary, TAP's classroom evaluation measures yielded more valid performance ratings than did traditional teacher evaluations. The report concluded that for a teacher's ability to deliver quality instruction to improve, the quality of the instruction being delivered in the classroom must be assessed with an instrument that denotes both rigor and high expectations. Historically, evaluations used by school systems have not been effective in measuring and assessing classroom instruction and practice. According to the TAP Research Summary Report (NIET, 2012), most school systems failed to evaluate their teachers in meaningful ways and most teachers were rated highly even though most of their students were not achieving at high levels.

The New Teacher Project (2010) in its publication *Teacher Evaluation 2.0* reported current issues with teacher evaluations continue to suffer from "design flaws" (p. 5), the most prominent being observations that are conducted without focus and rarely connected the teacher's performance or the students' academic progress. The project report indicated school districts rarely evaluate teachers on their responsibility, which is without doubt the adequate instruction of students, but rather measured teacher effectiveness on cursory criteria that had little influence on student learning such as the type of bulletin boards displayed.

Many states are still providing teachers with undifferentiated observations allowing for marks to only be scored as satisfactory or unsatisfactory. "This satisfactory or unsatisfactory pass/fail system makes it impossible to distinguish great teaching from good, good from fair, and fair from poor" (The New Teacher Project, 2010, p. 4). The New Teacher Project (2010) speculated that in many school districts 99% of the teachers earn a satisfactory rating. Therefore,

teacher observations are not helpful and do not consistently offer teachers beneficial feedback on their performance with students. With beneficial feedback as a goal, the Tennessee Department of Education chose to use the TAP Rubric as the state model for the 50% observation component based on its positive field test results, supporting research provided to the State by NIET linking the instrument to growth in student achievement and the capability of TAP to offer expert trainers for high quality direct training and certification of all observers statewide.

The First to the Top Act (Tennessee Department of Education, 2010) designated that 50% of a Tennessee teacher's evaluation score would come from data collected on state assessments and 50% of the score would come from the TEAM model evaluation observations conducted by the teacher's principal, assistant principal, or other instructional leader who had been thoroughly trained in the observation protocol. Once the instructional leader is certified to evaluate teachers using the TAP rubric, he or she is very familiar with the rubric's *Teaching Skills, Knowledge, and Professionalism Performance Standards*, which are divided into four domains: (1) instruction, (2) planning, (3) environment, and (4) professionalism.

Each of the four domains has performance indicators; there are 12 performance indicators aligned to the instruction domain, including:

1. standards and objectives,
2. motivating students,
3. presenting instructional content,
4. lesson structure and pacing,
5. activities and materials,
6. questioning,
7. academic feedback,

8. grouping students,
9. teacher content knowledge,
10. teacher knowledge of students,
11. thinking, and
12. problem solving.

The instruction domain performance indicators have bulleted descriptors that create the TEAM model rubric. The rubric specifies three performance levels for measuring actual teacher performance based on the observed indicators. Performance is scored at three primary levels, which are 1, 3, or 5, but raters can also score performance at levels 2 or 4 based on their professional judgment. Teachers earn a score of 1, 2, 3, 4, or 5 for each indicator on the rubric.

During the 2011-2012 school year (the first year TEAM was implemented), the Tennessee Department of Education reported 52,989 of Tennessee's teachers (82% of the state's teachers) were evaluated by a certified instructional leader using the TEAM model (Tennessee Department of Education, 2012a). Teachers holding a professional license were observed four times annually, with two observations occurring in each semester and at least half of those observations unannounced. Apprentice teachers were observed six times annually, three times each semester and at least half of those were unannounced.

The distribution of observation scores by the TEAM evaluation model for the first year of implementation in Tennessee were documented in the first year implementation report released in July of 2012 (Tennessee Department of Education, 2013b). The report stated that districts conducted more than 295,000 observations focusing on teacher planning, instruction, environment, and professionalism and found that:

- 0.2% of Tennessee's teachers scored a 1 (significantly below expectations),
- 2.3% of Tennessee's teachers scored a 2 (below expectations),
- 22.7% of Tennessee's teachers scored a 3 (meeting expectations),
- 52.4% of Tennessee's teachers scored a 4 (above expectations), and
- 22.0% of Tennessee's teachers scored a 5 (significantly above expectations).

The purpose of this study was to examine questions. Therefore, the TEAM model's instruction domain for questioning and its descriptors are relevant to this study (Appendix A). To receive the highest level score of 5, which is significantly above expectations, a teacher must demonstrate that the questions he or she asks are varied and of high quality by providing a balanced mix of question types including knowledge and comprehension, application and analysis, and creation and evaluation. Their questions are consistently purposeful and coherent with a high frequency of questions asked. The posed questions are consistently sequenced with attention to the instructional goals and the questions regularly require active responses (e.g., whole class signaling, choral responses, written and shared responses, or group and individual answers). Wait time (3-5 seconds) is consistently provided. The teacher calls on volunteers and those who do not volunteer with a balance of students based on ability and gender selected. The teacher provides the students with opportunities to generate questions that lead to further inquiry and self-directed learning.

To receive the competence level score of 3, which is at expectations, the teacher's questions should be varied and of high quality providing for some, but not all, question types including knowledge and comprehension, application and analysis, and creation and evaluation. The teacher's questions are usually purposeful and coherent with a moderate frequency of questions asked. His or her questions should be sequenced with attention to the instructional

goals. The questions sometimes require active responses (e.g., whole class signaling, choral responses, or group and individual answers) and wait time (3-5 seconds) is sometimes provided. The teacher calls on volunteers and those who do not volunteer with a balance of students based on ability and gender selected.

To receive the lowest level score of 1, which is significantly below expectations, the teacher's questions are inconsistent in quality and include few question types including knowledge and comprehension, application and analysis, and creation and evaluation. The questions asked are random and lack coherence. A low frequency of questions is asked. Questions are rarely sequenced with attention to the instructional goals. Questions rarely require active responses (e.g., whole class signaling, choral responses, or group and individual answers) and wait time (3-5 seconds) is inconsistently provided. The teacher mostly calls on volunteers and high ability students.

The present day TEAM model indicators for questioning seem to support what Stevens (1912) found in his observations of teachers 100 years ago. He stated that an administrator could accomplish set instructional goals in a short time if he or she would require the teacher's lesson to contain six to eight purposeful questions that would be asked and satisfactorily answered. Posing effective questions systematically would result in a natural classroom pace full of attentive students who could connect facts in "profitable relations" (p. 86). He continued to write that questions should highlight the lesson, thereby producing students who are able to practice and study a lesson independently for significant details, eventually being able to construct and participate in the ability to systematize subject matter into independent and meaningful understanding. Therefore, to perfect the ability to ask effective questions, one must first develop a definitive definition of meaning for the word *question*.

Questions Defined

In 1988 Cotton penned an overview of her research on classroom questioning and defined a question by dictionary standards as, “any sentence, which has an interrogative form or function” (p. 1). She defined teacher questions presented in the classroom as, “instructional cues or stimuli that convey to students the content elements to be learned and directions for what they are to do and how they are to do it” (p. 1). In the broadest sense questions are generally classified into two main types convergent and divergent. Convergent questions are posed such that the answers are usually within a finite range of acceptable accuracy and include several different levels of cognitive ability such as comprehension, application, or analysis. Convergent questions also include factual questions that are at the lowest level of cognitive process, for these will generate an answer that is generally predetermined to be right or wrong (Wilson, 2014). Basically, a convergent question requires the responder to converge or derive at one acceptable answer. Examples of these would be: *What color is the dog? What is a habitat?*

Divergent questions are posed so that students are able to respond with diverse possibilities and reply with varied answers. Correctness of a divergent question may be based on logical prediction, may be based on the context in which the question is posed, or be reached based on prior knowledge, conjecture, inference, likelihood, creation, intuition, or imagination (Wilson, 2014). Examples of divergent questions include: “How do you think the unnamed character in Dr. Seuss’ (1960) book *Sam I Am* feels when Sam keeps asking him to try green eggs and ham?” and “What does peer pressure mean to you?”

Perhaps these definitions are too broad in scope and too implied in practice to be clear in regard to effective classroom use, but clearly, questions are being presented daily in today’s classrooms as a strategy meant to enable students to learn a concept, skill, or idea through the

school child's ability to reason. Therefore, is seems reasonable to expect that a teacher's desire to enable student learning is the reason why teachers ask so many questions.

Cotton (1988) reported there are a variety of purposes for teachers' classroom questions. These recorded purposes include (a) to develop interest and motivate students to become actively involved in lessons, (b) to evaluate students' preparation and check for understanding, (c) to develop critical thinking skills and inquiring attitudes, (d) to summarize and review previous lessons, (e) to nurture insight by exposing new relationships, (f) to assess achievement of instructional goals and objectives, and (g) to stimulate students to pursue knowledge on their own. Fusco (2012) deemed that effective questioning encouraged students' discovery of new interests and increased their awareness of potential ideas and concepts; promoted deeper thinking about ideas, concepts, and beliefs; and created a safe climate for diverse perspectives during classroom discussions. Instruction, which includes posing questions to students during lessons, is more effective in regards to producing achievement gains than instruction that is carried out without questions posed to students (Cotton, 1988).

Stevens (1912) concluded in his research that an effective teacher is generally one who can pose questions for distinct instructional purposes. This notion still seems prevalent today. A hundred years later, Fusco (2012) wrote about questioning, saying that in an effective instructional setting the teacher can and will proficiently ask quality questions.

Theoretical Foundations for Asking Questions

Any educational practice is grounded in theory. The use of questioning strategies is no exception. Questions are used profoundly in classrooms by teachers, used for thousands of years, and have been extensively researched. Beginning with Socrates, questions have been and will

continue to be a practice that is intended to guide, facilitate, and manifest student learning, engagement, and thinking.

Quality of Thinking: Socrates

Asking students questions can easily find its beginnings as an educational exercise in the questioning methods practiced by Socrates whereby he initiated questions and determined that they were a necessary and essential intellectual tool for learning. Socrates wrote that the quality of our thinking is yielded in the quality of the posed question (Paul & Elder, 2006). Thinking is not driven by answers but by questions. Socrates said that unless we are skilled at questioning we cannot be skilled in thinking (Paul & Elder, 2006). Socrates questioned his pupils, not to discover a new truth as pre-set by him, but to point out ways they could make their own discoveries about the truths they wanted to consider, learn, or study (Nelson, 1951).

In 2006, Paul and Elder revised a taxonomy for Socratic questions and grouped them as:

- classification,
- probing assumptions,
- probing reasons and evidence,
- viewpoint and perspectives,
- probing implications and consequences, and
- questions about questions.

Examples of these classifications can be found in Table 1. When Socratic questions are used with students they learn how to foster fundamental subjects, explore below the surface of ideas, search for problems in their own thinking processes, discover the constructions of their own ideas, become thoughtful about accuracy and depth, and arrive at judgments by employing their own reasoning skills (Paul & Elder, 2006). Using Socratic questioning with students helps them

intensely examine what they know from what they do not know and understand the differences accordingly (Paul & Elder, 2006).

Table 1

Taxonomy and Examples of Socratic Questions by Paul & Elder (2006)

Taxonomy Label	Examples
Classification	What do you mean by?
Probing Assumptions	What do suppose, imagine, believe, think?
Probing Reasons and Evidence	How do you know?
Viewpoint and Perspectives	What effect would that have? What would you do differently?
Probing Implications and Consequences	How can we find out?
Questions about Questions	What does this mean?

The Language of Thinking: Piaget and Vygotsky

Fusco (2012) clearly indicated that her book *Effective Questioning Strategies* is based on the theories of learning developed by Jean Piaget and Lev Vygotsky. These fundamental theorists' contributions to how children learn and develop have determined that learning is an active process. Therefore, orally posed teacher questions and the responses students offer to them require a language of thinking. Walsh and Sattes (2011) delineated words such as analyze, classify, contrast, hypothesize, infer, predict, and speculate are the types of words that permeate the types of thinking Vygotsky and Piaget would purport for young children.

The work of Piaget and Vygotsky supports the established work concerning posing questions to young children as part of active learning (Fusco, 2012). Questioning can easily hold a place in the theoretical approach established by Piaget for he maintained that children's

cognitive development heightens as they participate in occasions that exercise their thinking strategies in relevant and meaningful learning situations. According to Piaget (as cited by Fusco, 2012), when new information is presented to young children to study, children are able to assimilate and evaluate it, connect it to their own past experiences or prior knowledge, and produce relevant learning. As children manipulate information in meaningful experiences, they construct a schema, or a mental filing system, which they regulate or transform as new information is cogitated (Fusco, 2012). This model recognizes that students' prior knowledge varies from child to child and experience to experience, and that all children who engage in active learning construct knowledge (Fusco, 2012).

Questioning lends itself easily to Vygotsky's theory of learning. Vygotsky advocated that children first learn through social situations. Children first participate in person-to-person interactions and later internalize the social learning through their inner speech to create deep understanding (Costa, 2001). Within the social context, Vygotsky asserted that learning takes place inside the zone of proximal development through scaffolding. This zone represents the appropriate target for student learning, which is defined as "the level of challenge or difficulty beyond current mastery" (Fusco, 2012, p. 59). Teachers who are able to organize activities and assignments including specifically selected guiding, probing, or scaffolding questions that are not too easy nor too difficult can assist the child in constructing knowledge and facilitate learning.

Questions should be one of the scaffolding tools teachers use. Sawyer's (2009) description of scaffolding allows us to see how questions should be used as a scaffolding prompt.

> Scaffolding is the help given to a learner that is tailored to that learner's needs in achieving his or her goals of the moment. The best scaffolding provides this help in a way that contributes to learning. For example, telling someone how to do something or doing it for them may help them accomplish their immediate goal; but it is not

> scaffolding because the child does not actively participate in the construction of knowledge. In contrast, effective scaffolding provides prompts and hints that help learners figure it out on their own. (p. 9)

The prodigious influence of Vygotsky's learning theory on class interactions can be seen in teacher-to-student interactions when adept questioning, coordinated by the teacher, allows the students opportunities to reveal understanding. The teacher's questioning channels the social interaction in the classroom. This type of conversation offers evidence of the influence of Vygotsky on thinking and discourse (Costa, 2001).

Vygotsky pioneered the role of social interactions in the development of individual cognitive competencies and wrote "every function in… cultural development appears twice: first on the social level and later on an individual level… All the higher functions originate as actual relationships between individuals" (as cited in Costa, 2001, pp. 159-160). Vygotsky's work enables us to understand that the human intellect grows and develops not only from within us on an individual level but also through our interactions and relationships with others. It is through social interaction that new perceptions and intellectual behaviors are shaped and nurtured. This social interaction cultivates the students' level of intellectual development, which blossoms when discourse contains conversational characteristics such as those found in reflective dialog (Costa, 2001).

Reflective Dialog: Costa

Reflective dialog, as defined by Costa (2001), contains eight markers, five of which support the effective use of questions in the classroom. In order to be a participating, facilitating member of a group and be engaged in productive and satisfying discourse these markers must be present. First is *pausing*, which in the art of questioning is called wait time. In discourse, time must be given for complex thinking. Pausing is the vehicle used so that group members may

listen respectfully. Second, is *paraphrasing*, where we seek to let members of the group know they are being listened to and that the teacher understands. We see this in effective questioning when teachers use their students' responses to guide the lesson and facilitate deep thinking about topics. The third piece of reflective dialog is *probing and clarifyin*g, which is intended to help the listener understand the speaker and increase the precision of thinking. This can be seen when teachers pose questions and then pose followup questions to move students toward mastery. Fourth, quality discourse allows group members to move ideas on and off the table. Groups are most productive when everyone shares their thoughts, mistakes, assumptions, and opinions. This is relative to effective questioning when teachers create a climate of safety whereby students may present wrong answers but are respected and guided to other productive replies. Fifth, reflective dialog includes paying attention to self and others so that the group is able to discuss topics successfully using effective questions as a guide. Thus, the students are actively participating in constructive conversations.

Questions and Constructivism

Teachers of young students who stand on the principles of Piaget and Vygotsky consider themselves constructivists. Teachers who structure their lessons around a quest for understanding do so because their convictions lie in the idea that learning is entrenched in understanding, not memorization, and that students who actually understand critical concepts and standards of learning will perform at or above expectations on state or other high stakes assessments.

Constructivist learning theory implies that knowledge is constructed by the learner based on mental activity and that this learning is influenced by the practice of some overarching principles, as defined by Costa (2001). First, constructivists seek and value the learners' point of view. Next, constructivist teachers challenge the deductions of their students. Last, constructivist

teachers pose problems that are significant in the development of their students and structure learning around "big concepts and ideas" (p. 150).

Brooks and Brooks (2001) identified and defined constructivist teachers by using 12 descriptors; 9 of the 12 descriptors support the constructivist teacher in effectively implementing the art of asking quality questions. For this study, Descriptors 1, 3, and 4 through 10 offer a strong foundation for effective questioning by constructivist teachers. Because the purpose of this study is to determine the effective use of questioning by teachers, understanding these nine descriptors that define the foundation for effective questioning helps teachers differentiate weak questioning strategies from strong questioning strategies when posed during literacy instruction.

Descriptor 1 – Constructivist teachers encourage and accept student autonomy and initiative. The way a teacher frames an assignment usually determines the degree to which students may be independent learners. Through modeling, the teacher instructs students in how to pose questions so they can themselves become future problem solvers.

Descriptor 3 – When framing tasks, constructivist teachers use cognitive terminology such as classify, analyze, predict, and create. This can be seen in how teachers frame questions around content such as a story's main idea. Asking students to select the main idea from a list of four options is a very limited task. However, asking students to predict how the story might have turned out differently minus a particular event expects students to make connections and probe genuinely into the text to create new understanding.

Descriptor 4 – Constructivist teachers allow student responses to drive lessons, shift instruction, and alter content. This does not mean students pick and choose content based on their own interests alone but that constructivist teachers understand, recognize, and maximize teachable moments. Asking divergent questions allows students to make connections to the

topics of study. For instance, if the teacher made a suggestion to the class such as “Think about your favorite things at home,” in order to help students make a personal connection to the selected story, students could connect personally to this lesson and may expand it by orchestrating a class experiment to see which type of pizza was the class or school favorite.

Descriptor 5 – Constructivist teachers inquire about students’ understanding of concepts before sharing their own understanding of the concepts. This descriptor is in direct contrast to teachers who answer their own questions, seek only their predetermined correct responses, and limit the responses to only the high achieving students who raise their hands to offer responses.

Descriptor 6 – Constructivist teachers encourage students to engage in dialog both with their teacher and with other students. Discourse is a powerful tool to modify or support concepts held by students. When students have a chance to hear and reflect on the ideas of others, they participate in an empowering experience. Discourse helps in the meaning making process. Students not subject to constructivist principles will learn quickly that the teacher moves rapidly through the lesson and expects brief responses to rapidly fired factual questions.

Descriptor 7 – Constructivist teachers encourage student inquiry by asking thoughtful, divergent questions. Constructivist teachers model the value of inquiry and plan for quality questions to occur.

Descriptor 8 – Constructivist teachers seek elaboration of students’ initial responses. By using scaffolded questions, constructivist teachers support the students into a better understanding of the topic. Scaffolding or follow-up questions (a) hold the student accountable for the best possible answer, (b) help the student distinguish correct knowledge from incorrect knowledge as well as incorrect knowledge from incorrect cognitive processing, (c) help the

teacher understand why the student proposed the given answer, and (d) allow the student to function inside their zone of proximal development (Walsh & Sattes, 2011).

Descriptor 9 – Constructivist teachers engage students in experiences that may provoke contradictions to the students' initial assumptions. Teachers can often challenge student thinking with questions. The questions provide a system whereby the students can examine their assumptions and acknowledge which answers are the best for the needed solution.

Descriptor 10 – Constructivist teachers allow wait time after posing questions. Wait time is the pause the teacher presents after offering a question to students. Providing wait time affords each student the opportunity to reflect on his or her own prior knowledge, resulting in more correct as well as more complete answers. This allows more students to participate by offering answers and promotes confidence when volunteering an answer (Walsh & Sattes, 2011).

Therefore, what a teacher says and does in the classroom greatly affects student learning, whether the teacher is considered a constructivist or something else. The discourse or language presented in every classroom includes questions posed by the teacher. Every behavior the teacher displays influences student achievement. Questioning behaviors should be used to challenge student intellect and help students metacognitively process information (Costa, 2001). This discourse of asking questions has been relevant to past academic instruction and will be critical as teachers' present instruction in the future.

Questions Now and Then

Certainly asking students questions in any type of classroom by any type of teacher is not a new phenomenon. Stevens (1912) found in his historical study on teacher questioning techniques and determined that instruction was rarely supervised or observed and that instructional supervision was given little attention, often disregarded, and simply neglected.

Today, the TEAM Model places emphasis on questioning in the classroom and this lack of instructional leadership is no longer an acceptable practice. With that being said, now it seems clear as to why the TEAM model would choose to score teachers regarding the practice of asking questions to students. The Tennessee TEAM model handbook calls questioning an art form that helps establish whether or not a teacher is effective in the classroom. The descriptors identified on the TEAM model rubric are generated in order to provide a context for the types of questions teachers should pose in lessons and how teachers should efficiently and effectually glean answers from students (Tennessee Department of Education, 2013c).

The questioning section of the TEAM model is based on Danielson's (2007) *Framework for Teaching.* She determined that good teaching includes being able to assess the quality of teaching practice. She purported that it is not sufficient to say, "I can't define good teaching, but I know it when I see it" (Danielson, 2011, p. 36). Danielson's (2011) framework described for each component of good teaching four levels of performance. These degrees of teacher expertise for the questioning component on the framework include unsatisfactory, basic, proficient, and distinguished. Forming a dependable definition of good teaching requires that we are able to signify best practice.

Walsh and Sattes (2011) acknowledged that best practice is producing quality questioning activities, which are those designed to sustain interactions and relationships among the members of the classroom, the academic content, and the teacher. These qualifiers will strengthen both student engagement and achievement. Active engagement (Darling-Hammond et al., 2008; Walsh & Sattes, 2011) occurs when:

- students participate in active learning so they may apply and test what they know,
- students make connections to prior knowledge and experiences,
- teachers diagnose student learning so that the learning process may scaffold understanding,
- student learning is continuously assessed and modified so that teaching meets student needs,
- teachers make the standards clear,
- teachers provide constant feedback,
- teachers provide opportunities for work, and
- teachers present strategic and metacognitive thinking strategies so that students can learn to evaluate and guide their learning.

Studies conducted on the effects of classroom questions date further back than one might expect. As early as 1912, Stevens studied teacher posed questions. At this time, he noted that the use of questioning was a significant classroom procedure and that the use of teacher-posed questions was a constantly applied strategy. Stevens (1912) wrote that it was generally just believed most teachers knew by intuition when and how to ask effective questions. It seemed to be understood that if the teacher had adequately prepared for the lesson, his or her questions would be generated and delivered almost magically and would match and support the academic needs of the lesson objective. At the time of his study, he determined that 80% of the students' school time required them to be engaged in the reciprocal process of being asked a question and answering one.

In his historical study, Stevens (1912) observed and studied New York City teachers from 1908 to 1911 and found that the six teachers in his study during a 40-minute class observation

delivered between 61 and 176 questions. When we come forward 67 years, we find that Durkin (1979) completed her memorable observational analysis of reading instruction in American elementary schools and concluded that teachers were still spending nearly all of their instructional time asking questions.

In 1981 Levin and Long found that teachers delivering instruction asked between 300 and 400 questions each day. Parker and Hurry were intrigued by Durkin's 1979 study and proffered the question of what extent would the findings of the 1979 Durkin study be reflected in London teachers' 2007 classroom practices. In an attempt to re-create the Durkin study, Parker and Hurry (2007) observed teachers practicing 25 years after the 1979 Durkin study to determine if there was "a change in the amount of instructional time spent by teachers asking questions" (p. 299). Their observations concluded that 70% of the teaching behavior examined was in the form of direct questioning from the teacher to the children about the presented content, in particular reading texts, and that the observed teachers were still using questioning as a preferred method of teaching.

Therefore, the number of questions asked by teachers is intriguing, but the number of asked questions alone does not determine question quality. Stevens (1912) found that teachers were seldom at a loss for questions and that many teachers' first concern was their ability to ask them often and quickly. A novice teacher interviewed by Stevens said, "Oh, I'm going to ask questions so fast that the pupils will have no chance to *think* of anything" (1912, p. 2). However, when Stevens gave some of his findings to a school principal serving at that time, the principal firmly responded, "*Why, when do they think?*" (1912, p. 16).

Stevens (1912) determined that asking a large number of questions indicates that the teacher is doing the primary work instead of directing students to be engaged. His observations

of teachers who were able to rapidly fire questions to students called for the students to simply reflect someone else's ideas or answers in diminutive and cautiously separated segments. He found these students' answers generally called for them to give back to the teacher predetermined acceptable responses or produce points made clear by the text book or someone else (Stevens, 1912).

In Stevens's (1912) landmark study, he found that the *"rapid firing"* of questions by the teacher to the students left no time to "cultivate the art of expression," allowed "little time for correction," or only allotted the teacher an opportunity to get a "glimmer of an idea" from the student. When the teacher got a peek into the students' thought processes, the teacher would elaborate or expound on it resulting in the student thinking he or she had related "something credible" (p. 24).

Even though Stevens (1912) primarily saw a large number of posed questions during his observations, he also noted that having a small number of questions asked did not sufficiently measure if the questions asked were able to support student thinking and engagement any more than asking many questions in quick succession. He noted that asking a small number of questions did not indicate good teaching because, "Efficiency of instruction involves good questioning; good questioning is synonymous with the use of good questions" (p. 71) not the number posed. The study was unable to identify quality questions to any significant degree even in lessons that tendered a relatively small number of questions. This phenomenon may be found when:

- there is the absence of a clearly defined purpose of instruction,
- there is failure to appreciate the function of the question as a medium of instruction,
- there is an almost total neglect of the supervision of instruction,

- there are feelings of indifference on the part of the teacher in regard to the methods purposed by the schools that train teachers, and
- there is a dependence on the material in the textbook.

Parker and Hurry's (2007) work supports the work of Stevens (1912) for they contend that the time spent on asking students questions is not the true issue at hand but rather the type of questions posed. They indicate that it is the quality of the question, which becomes the teaching strategy meant to scaffold students into engaged thinking.

Effective Questioning

Stevens (1912) concluded that a person who actually wants to know the answer asks the finest questions. He noted that beyond the school's classroom in all situations both academic and social, persons desiring to know or learn something ask questions to acquire the knowledge they seek. He chose to measure the quality of a question by (a) the "degree of reflection" the question stimulates; (b) the adaptability of the question to the student's work or experience, what today we would define as prior knowledge; and (c) the "motor power" of the question, which he defines as the ability of the question to draw forth a "well-rounded thought" (p. 75).

Brualdi (1998) wrote that "in order to teach well… one must be able to question well" (p. 2). Quality questions will foster interaction between the teacher and the student, and this interaction results in student achievement. Therefore, she stated that good questions nurture and raise student understanding. A good question defined by Brualdi (1998) is one that is high in cognitive level and requires students to use higher order thinking or reasoning skills to deliver an answer. A low level cognitive question, as defined by Brualdi (1998), is one that requires students to concentrate on producing only factual information and limits them in acquiring deep, elaborate understanding of subject matter. It is important to note here that there is a proper place

for lower cognitive questions in a classroom. In fact, research is available to support that the use of lower level cognitive questions is more effective than higher level cognitive questions with young children, especially young disadvantaged children (Gall, 1984). Lower cognitive questions serve the purpose of imparting factual knowledge and work well for helping students commit factual knowledge to memory (Brualdi, 1998). However, the mark of a truly bad question is one that is vague, tricky, rhetorical, or too abstract for the age of the child (Brualdi, 1998).

Costa (2001) offered five specific questioning patterns that should be avoided. These he declared, "do not belong in thoughtful" (p. 360) lessons.

1. First are verification questions. The answers to these questions are already known by the teacher or the student (e.g., What is the name of…? How many times did you…?).
2. The second type of question is closed. These questions can be answered with a yes or no response (e.g., Can you recite the poem?).
3. Next are rhetorical questions. These questions have the answer within the posed question (e.g., In what year was the war of 1812 fought?).
4. Fourth are defensive questions, which cause personal justification, resistance, or self-protection (e.g., Why didn't you complete the assignment?).
5. The fifth type of questions that do not produce thought are agreement questions whereby the question is posed in order to get others to agree with the preordained answer or opinion (e.g., The three parts of a plant are root, stem, and leaves, right?).

Effective questioning can support students' curiosity and active engagement with learning because they are able to express their thinking expressively from various viewpoints. Teachers who pose effective questions to students support this examination of the presented

topic. However, there seems to be disparity between theory and practice when it comes to asking quality questions during classroom instruction (Fusco, 2012). Teachers who exhibit best practice when it comes to asking questions follow what Fusco (2012) called a 7-step process, which includes:

1. plan a question;
2. ask a question;
3. allow for pauses after the question is asked, which is defined as wait time;
4. listen to the student generated response;
5. evaluate the students' response;
6. ask a follow-up question; and
7. plan the next questions based on students' answers.

Teachers should also be cognizant of the context in which a question is posed and should deliberate certain factors when preparing to pose a question to students. These factors include the relationship the question has to the subject matter being presented to students, how the question relates to the key concepts that are being fostered in the students' knowledge, prior knowledge the students have to help them understand the presented question, and how the question is linked to other questions (Fusco, 2012). Regardless of how much insight teachers have regarding effective questioning techniques, every teacher assigned to a classroom asks questions and in most cases teachers ask numerous ones daily. Within this context, teachers pose questions for a variety of reasons that include increasing student participation, activating discussion on a presented topic or previous learning, evaluating students' learning, differentiating instruction, and promoting diversified interactions among students (Fusco, 2012).

Because all teachers ask questions, Wilen (2001) explored some myths he believed most teachers embrace. He proposed that teachers do not have any techniques stored in their instructional toolbox about classroom questioning. Primarily, he found that most teachers rarely planned for questions and relied chiefly on traditional practices or *myths* about the art of asking questions.

Myths of Questioning

Wilen (2001) declared that the first myth teachers believe is that they do not need to plan for questions but rather consider it a "natural behavior" (p. 27). Armed with this premise, a teacher seeks to facilitate learning by asking extemporaneous, low level questions that are intended to simply appraise basic facts and yield low level comprehension or agreement.

Stevens (1912) defined the *mechanical* questioning teacher as the teacher who uses questions to simply impart multiple facts garnered from a read through of the textbook lesson, attempting to force basic facts into his or her student's short term memory. This recitation style of questioning uses many fact-oriented, literal questions to get students to respond with answers that (a) the teacher has predetermined are correct, (b) are given primarily in one-to-one interactions between the teacher and a single student, or (c) are limited to one-, two-, or three-word responses regulated by previous factual learning presented in class (Fusco, 2012).

Alvermann, Dillon, and O'Brien (1987) studied how questions lead to recitation rather than discussion. They found that questions begetting recitation type answers were expressed in activities submerged in review, drilling, and quizzing. If teachers are to promote discussion about topics, the posed questions have to be designed so that answers generated can no longer be those where "the typical two or three word phrases found in recitations" would suffice (p. 3). These authors suggested the reason recitation answers are so often generated is because,

- students learn to depend on the teacher as the primary source of information,
- the teacher believes he or she knows best when to modify the information so students' level of understanding and prior knowledge relationships can be met,
- the teacher can direct the student's thoughts towards what he or she believes are the pertinent parts of the lesson to be mastered, and
- the teacher can assert the ways he or she wants to monitor the students' understanding.

The practice of teaching and learning is partly grounded in the verbal exchange between a teacher and his or her students. The questions and answers posed, answered, and exchanged are part of this practice. So, what kinds of questions do we see in a classroom? Acar and Kilic (2011) examined questions asked during the teaching and learning process. They transcribed 179 questions from 13 observed teacher lessons chosen at random. Of the observed lessons, 78% of the transcribed questions asked directly aligned to the lesson. Of these, 52% were basic, literal questions about the lesson; 22% of the questions were asked to a single person and 58% were asked to the group. Of questions not asked about the lesson, 67% were labeled extra-curricular and fell into four categories:

1. personal situation (e.g., What's up John?),
2. general application (e.g., Where is your assignment book?),
3. time information (e.g., When do we go to related arts? What time is lunch?), and
4. behavioral (e.g., Why you are late? What are you doing?).

Behavioral guided questions made up almost half of the posed extra-curricular questions and were used to warn, criticize, or direct behavior of the questions presented by the teachers

about the observed lessons, Acar and Kilic (2011) determined these fell into seven categories with percentage distributions:

1. 2% of the questions were motivating in nature.
2. 3% of the posed questions were asked about the preparation of the tools and materials needed for the lesson,
3. 3.5% of the questions required the students to seek out reasons,
4. 6% of the enquired questions were delivered to help students make connections to previous lessons,
5. 23% of the questions required students to recall or remember facts or basic information,
6. 24% of the questions were asked by teachers in order to gain student feedback control, and
7. 38.5% of the questions required intellectual operation abilities from the students such as mathematical computations,

Wilen (2001) supported part of this collected data in his notes regarding the myth that there are no bad questions. He proclaimed, “Inappropriate questions are those that confuse, frustrate, and intimidate students” (Wilen, 2001, p. 28). These types of inappropriate questions should be avoided as well as yes-no questions that provide students a chance to guess at the expected answer and what he terms as *tugging* questions, which are those when asked promote the guessing of answers such as “wouldn’t you agree?” (Wilen, 2001, p. 28).

Another myth that teachers succumb to is that they should only call on volunteers to answer questions. Costa (2001) recorded a teacher who had been identified by her administer as *highly skilled* and presented her with some 1-minute recordings of her class. Upon listening to

the recordings, she found herself dismayed to realize she asked and answered questions essentially "in the same breath," realizing "students had no time to think about the question" (p. 155) much less generate an answer. A second teacher studied by Costa (2001) and also identified by her administrator as being *highly skilled* discovered, when she was presented with her 1-minute recordings, that she had unintentionally arranged rivalry or competition between her students. Consistently, the first two or three students to raise their hands were primarily the only ones called upon to answer. She concluded that the students who did not quickly raise their hand to answer were excluded from any upcoming discussion. If it is the intent of a teacher to find out what his or her students know, this goal cannot be achieved by allowing only a few students an opportunity to answer. Furthermore, research findings support that there is a positive relationship between calling on non-volunteering students and gains in achievement (Wilen, 2001).

Wait Time

While these myths appear to exist in classrooms, Wilen (2001) posits that the final and perhaps most critical myth is that teachers believe they give students wait time, which is defined as enough time to generate an answer for the posed question. Costa (2001) offered two reasons why students learn not to respond immediately to questions. First, students quickly realize that teachers who expect immediate responses thwart their thinking processes. Second, students learn that this quick succession of questions with expectation of quick responses compels them to the position of onlooker while their high achieving or extroverted classmates produce answers.

Nevertheless, wait time is defined in two ways. Wait time 1 is defined as the length of time the teacher waits for a student to respond. Wait time 2 is the length of time a teacher waits after a student has responded before he or she reacts to what the student has articulated (Walsh & Sattes, 2011). Teachers have trouble with appropriate wait time primarily because they are

uncomfortable with the sound of silence, worry they will embarrass the students, and are constantly concerned with covering the expected curriculum (Fusco, 2012).

Most of the research recorded (Costa, 2001; Fusco, 2012; Martin, Sexton, Franklin, & Gerlovich, 2005; McIntyre, Hulan, & Layne, 2011; Walsh & Sattes, 2011; Wilen, 2001) stated that wait time is generally 1 second, after which the teacher repeats, rephrases, or asks someone a question. Wilen (2001) stated that a wait time of 1 second may be adequate for recitation fact answers but it is generally not enough time for critical thinking or problem solving. However, the effects of wait time are positive and when teachers wait as little as 3 to 5 seconds both the quantity and the quality of student responses improve (Fusco 2012; Wilen, 2001). Perhaps this is because wait time allows students to use their metacognitive abilities when teachers furnish enough time whereby they may reflect on their thinking before they respond (Fusco, 2012).

Documented effects for teachers and students when wait time is effectively implemented include students' responses become 400% to 800% longer (Martin et al. 2005). In addition (Fusco, 2012):

- child-child comparing increases,
- solicited student responses increase,
- children generated questions increase,
- incidences of speculative thinking increases,
- lower performing students' responses increase,
- failure to respond decreases,
- disciplinary moves decrease,
- teacher centered show and tell decreases,
- teachers' responses to the answers become more flexible,

- the number and kind of questions the teacher poses changes,
- and teachers expectations for student performance change in a positive direction.

Nevertheless, planning for questions, asking questions, and providing wait time will not change practice or discourse unless teachers change their dialog. Teachers must attempt to move away from recitation and begin asking key effective questions that provide direction, structure, and engagement while increasing the probability of student thinking and understanding (Wilen, 2001).

> Quality questioning is not possible without quality questions; hence, the formulation, creation, or framing of the questions themselves is our first consideration and if questions are not aligned with instructional purposes or worthy of student thinking, then we need not bother [to ask them]. (Walsh & Sattes, 2011, p. 4)

Functions of Questions

The literature has much to say about the various functions of posed questions available for the asking. Questions can be posed straightforward or even in the form of a statement (e.g., Tell me what has happened to your plant.). Costa (2001), Lowery (as cited in Fusco, 2012), and Hughes (as cited in Fusco, 2012) have all offered labels for the purpose or function of why a particular question is asked in the classroom. Using a combination of these authors' work, it appears there are some specific categorical question functions that often typify classroom practice (Appendix C). These question functions can be noted when teachers pose them initially or as follow-up questions. Each function seems to accomplish a specific response when posed to students. While all questions should be posed to scaffold learning, teachers who understand the different functions of the posed question can become very aware of exactly what type of enquiry they are requiring of students and the authentic purpose behind it (Fusco, 2012).

Costa (2001) offered these five functions for posed questions and expected them to impact teaching and thinking.

1. *Cueing Questions* provide clues to the direction or purpose of the question (e.g., How do bees help the farmer?).
2. *Focus Questions* place emphasis on detailed information so more specific details may be gathered (e.g., What characteristics are on planet earth that makes life possible here?).
3. *Probing Questions* pursue more information and stretch students' thinking (e.g., Why do you think that will happen?).
4. *Clarifying Questions* are those that prompt students to elaborate on their given response because the teacher is not sure what the student means (e.g., Tell me more about ___?).
5. *Verification Questions* are ones the teacher poses even though the students and the teacher already know the answer (e.g., What is the name of ___?).

However, Costa (2001) also offers that there are closed questions and these function simply to allow students to answer with a "*yes,"* a "*no,"* or an "*I can*" statement and in reality serves little purpose. Lowery (as cited in Fusco, 2012) recommended these five labels for questions clarifying that the function of them is to connect the learner to instruction and content.

1. *Confirming Questions* ask students to remember, define, or recall a fact (e.g., What is 2+2? What is a rectangle?).
2. *Integrating Questions* ask students to analyze, conclude, or develop an idea independently and suggest that teachers often should not but actually give clues when posing this type of question (e.g., What will happen if we put the vinegar and the baking soda together?).

3. *Open-ended Questions* are posed for the purpose of not restricting children in their responses but rather function to allow them opportunities to analyze, synthesize, and problem solve (e.g., What if...?).
4. *Valuing Questions* ask students to develop an opinion, a judgment, or a preference (e.g., What changes could you or would you make ___?).
5. *Feeling Questions* ask students to describe feelings or express emotions (e.g., How do you feel about bullying?).

Hughes (as cited in Fusco, 2012) submitted these eight question functions in order to help give students feedback as well as allow them to better construct knowledge and elaborate on their thinking.

1. *Variety Questions* are used when additional or different answers are desired and are often used with broad topics (e.g., What are some different kinds of vegetables a farmer could plant?).
2. *Re-focus Questions* are meant to steer the student's thinking toward the expected learning goal (e.g., You were telling us about a comma. We are talking about things we have in common. What do you know about that?).
3. *Narrow Focus Questions* are used when a broad question does not get the desired first response. These questions are meant to narrow the focus more specifically (e.g., When you write a friendly letter, what does the closing tell you?).
4. *Specification Questions* are used when the first response is too general (e.g., A flower has different parts; tell me specifically what they are?).

5. *Extension Questions* are used when the student's initial response is fragmented, too broad, or incomplete (e.g., Yes, there are numbers on the envelope, but which set is the zip code?).
6. *Support Questions* allow students to label their inferences or classifications (e.g., How did you decide those animals are all mammals?).
7. *Clarifying Questions* are ones posed to help students gain clear meanings about words, topics, or ideas (e.g., What are you thinking when you say the communicative property of addition?).
8. *Verification Questions* are those asked by the teacher to gain accuracy. The teacher asks the student to explain his or her reasoning and verify the response (e.g., How do you know this shape is a polygon and this shape is not?).

Costa (2001) and Lowery (as cited in Fusco, 2012) agreed that there are a series of questions that serve limited purposes. Costa (2001) reported that these questions "miscue students' thinking by sending confusing or mixed messages" (p. 360).

- *Rhetorical Questions* are those asked and the answer is present in the question or no response is expected (e.g., Is the sky blue?).
- *Procedural Questions* are those used to manage the class (e.g., Do you have a pencil?).
- *Behavioral Questions* or *Defensive Questions* are those used to control student actions (e.g., Are you misbehaving again?).
- *Agreement Questions* are posed so that the given answer is expected to agree with the teacher's opinion or answer (e.g., This is really the best solution, isn't it?).

Walsh and Sattes (2011) reminded us of the saying "nothing worthwhile is ever easy" and that formulating quality questions is a difficult task that requires effort and rigor because quality questions are multifaceted and complex. Teachers must consider,

> The function of the question in relation to student engagement and learning, must ponder at what level of thinking do they want the question to engage the students in, and how can the question be structured and worded so that the students will understand what is being asked. (Walsh & Sattes, 2011, p. 18)

Above all, teachers should thoughtfully consider what curriculum standard the enquiry helps convey; the primary goal is to pose questions that will direct student learning toward the expected mastery of content.

Questions and Content

Because the Common Core focuses on nonfiction text as well as fictional literature, the research on math, science, and social studies in addition to the research conducted concerning reading comprehension and the use of questioning strategies seems to give more indication of what is currently taking place in school classrooms. Weiss, Pasley, Smith, Banilower, and Heck (2003) looked inside math and science classrooms to find that for a lesson to be judged effective it needed to assist students in connecting their activities to learning objectives and teachers who are able to ask effective questions help advance student thinking during the presented lesson. In fact, these researchers found that when skillful questioning was used, the students were able to think intensely about the content of the lesson. When the teacher posed questions to assess the students' understanding, the students were able to powerfully engage in the math and science content and as a result performed better on assignments when compared to students who participated in classrooms where the teacher quickly asked a succession of low level questions that placed emphasis on retrieving the one suitable, acceptable answer.

Weiss et al. (2003) found questioning was among the weakest elements of math and science instruction with only 16% of observed lessons incorporating effective questioning. Of the lessons observed, effective questioning was not found at all in 39% and was found to a great extent in only 5% of the presented lessons. The behaviors noted in the study included:

- When questions were asked, many times only one student responded and it was difficult to determine if the other students in the class also understood or to what degree they understood.
- Teachers moved very quickly through the lessons often without checking to see if the students satisfactorily understood the presented material.
- The most predominant pattern of questioning observed in the lessons was the low level, fill in the blank type question asked in quick staccato fashion with emphasis placed on getting the right answer.
- Even though some teachers in the study asked good questions, it was noted that they were still so determined to get a correct response that they often contributed the answers themselves, in effect cutting short the students' opportunity to think.

In historical research by Stevens (1912), he began to unearth the idea that the number of questions asked is not synonymous with effective questioning. If one is considering the context of recitations, Wilen (2001) determined that the quantity of questions must yield to the quality of questions if the teacher's expectation is for students to answer beyond simple recitations of fact. While numerous questions on a subject will review and prepare students with the necessary skill to pass a factual test, posing fewer questions at a higher cognitive level will result in more synthesized learning.

Martin et al. (2005) studied an inquiry approach to science. They concluded that even though teachers use questions more than any other teaching tool, they use them intuitively, often out of habit, and call on students they perceive as high achievers more than they do students perceived as low achievers. Weiss et al. (2003) also offered support to this finding. Using MANOVA statistical analysis with a $p < 0.05$, they reported mean ratings for questions posed to high ability students at 2.48, middle ability students at 2.39, heterogeneously high and low ability grouped students at 2.70, and low ability grouped students had a mean rating of 2.03. In regards to the use of questions as a teaching tool, the study determined that teachers whose classes were comprised of mostly low or middle ability students significantly posed fewer questions than teachers who were presenting lessons in classes comprised of either high ability students or heterogeneously grouped students. Martin et al., (2005), also found that low achievers were given less time to think of an answer and respond than higher achievers. These behaviors seem to support what Fordham concluded in 2006. Fordham found that when teachers were presented with data concerning the delivery of questions in their classrooms, most discovered they were inclined to practice the types of questioning models they had experienced during their own school encounters.

Questions and Literacy

What is the necessary end result to literacy instruction? When one poses this question to any early childhood literacy teacher, each teacher asked would most likely respond that the final objective is for students to master the ability to comprehend what they read. Obviously, there is no lack of support found to justify that reading comprehension is considered by early childhood educators as the most critical skill necessary to produce fluent and successful readers (Calkins et al., 2012; Johnson & Keier, 2010; McIntyre et al., 2011; Morrow, 2009).

Johnson and Keier (2010) called reading comprehension “the bottom line” (p. 131) and documented specific strategies in their research that help students master the critically important skill of comprehension. These strategies include the use of graphic organizers, visualization, thinking aloud, modeling, and questioning. When supporting children in developing reading comprehension, effective questioning techniques provide a tool that allows teachers to monitor student understanding of a text. Constructive discussions about texts are ensured by quality questions, which are those that not only inquire about literal details but rather ask students to do skills such as compare and contrast, draw conclusions, and infer and problem solve.

It is reported that when a sample of third grade teachers were studied concerning the use of questioning during reading group instruction, on average these teachers asked a question every 45 seconds (Martin et al., 2005). While most researchers agree that the number of questions asked by a teacher is often attributed to the selected activity; the number of teacher asked questions appears to fall between 30 and 120 per hour (Martin et al., 2005) no matter what the assignment or endeavor. However, it should be noted that content knowledge or comprehension of content does not just include the stories found in the reading series or those presented in the reading lessons. Comprehension of content transcends every subject because every subject contains text that must be comprehended and understood for proficient reading. This is the *key* that will unlock student achievement in school and in all future endeavors whereby the student wishes to succeed (Fordham, 2006).

Questions asked about the knowledge and comprehension of content seem to make up approximately 70% of teacher generated questions. Teachers who consistently ask for only basic comprehension facts are likely inadequate role models for constructive questions that kindle investigative learning (Martin et al., 2005). Fordham (2006) stated that teachers are responsible

for developing student mastery of literacy skills and for empowering students with strategies so they may acquire content knowledge. She defined content literacy as, "The ability to use reading, writing, talking, listening, and viewing to learn subject matter" (pp. 33-34).

Strategic questions advance reading comprehension by necessitating that students infer, visualize, clarify, and summarize. Strategic questions should be asked before, during, and after a reading to provide the most benefit for student learning (Fordham, 2006). However, when the reading assignment is examined, most observers still acknowledge the conventional formula first documented by Durkin (1979) when she studied reading comprehension instruction. She recorded what Alvermann, Swafford, and Montero (2004) would later label the read-question-respond model. In this model after the students have read a passage, the teacher generally asks questions about the content of the passage. Next one student, or sometimes a few students, would give a brief response to the teacher proffered question. A diminutive dialog might occur and then the procedure would be repeated until the end of the passage. While these teachers think they are using quality questioning techniques, they are merely asking questions that measure basic factual information; they are not addressing the students' ability to comprehend (Fordham, 2006).

Klingner, Urbach, Golos, Brownell, and Menon (2010) conducted 124 observations of 41 special education teachers responsible for teaching reading to students identified with learning disabilities in grades 3-5. The object of the observations was to study how these teachers promoted students' reading comprehension abilities. Their reported results indicated that, in 42 observed lessons, there was no comprehension instruction discerned, and in 30 of the observed lessons the only comprehension instruction recorded was "asking of students questions about what they had read by means of mostly factual, rote level questions" (p. 59).

Ness (2011) conducted a study on the amount of time given to and the type of reading comprehension strategies taking place in elementary schools because, “The consequences of not providing explicit reading comprehension strategy instruction is costly to students in elementary school and beyond” (p. 100). While Ness’s data were collected in a variety of settings and with varied instructional materials, she documented that out of 3,000 language arts instructional minutes recorded in grades 1-5, 751 minutes could be identified as being devoted to strategic reading comprehension instruction, which would account for 25% of the designated time committed to language arts instruction. Of these minutes, first grade students experienced 142 minutes of comprehension instruction, second graders experienced 174 minutes, and third grade students received 67 minutes of reading comprehension instruction. During these recorded minutes of instruction, Ness (2011) explored which reading comprehension strategies were most and least prevalent and found teachers clearly preferred asking questions as a comprehension strategy. With 25% of the given time devoted to comprehension instruction, questions generated by the teacher claimed 8.5% of that instructional time.

The National Reading Panel (2000) reviewed more than 100,000 studies concerning reading instruction and achievement. The panel used a specific screening procedure to determine if the results identified methods that consistently correlated to reading accomplishment. The panel members searched the literature and documented achievement in one or more reading skills. Effective teaching of these skills was not included in the screening unless reading achievement was measurable. The panel required generalizable results; studies with small samples were not considered. Members of the panel scrutinized the effectiveness of the treatments using an experimental approach. They deemed it crucial that reading achievement be ascribed to the reading treatment. The panel members accepted only peer reviewed research

articles for the study and concluded through their review that there is research that offers guidance concerning the instruction of reading. According to Chessman, McGuire, Shankweiler, and Coyne (2009) 90% of America's children can be taught to read using research-based instruction. The research-based components deemed necessary by the National Reading Panel (2000) for optimal reading instruction and student reading success are phonics, phonemic awareness, fluency, vocabulary, and comprehension.

Comprehension happens when the reader reads with a purpose. Children need to be instructed in reading comprehension strategies so that they are active readers who can make sense of the printed words on the page. The National Institute for Literacy (Armbruster, Lehr, & Osborn, 2008) defined comprehension strategies as "conscious plans – sets of steps that good readers use to make sense of text" (p. 41). These strategies included monitoring plans, asking questions, generating graphic organizers, understanding story structures, and summarizing. Children can be educated to use comprehension strategies by direct explanation, modeling, guided practice, and application.

Duffy (1986) documented that "Effective comprehension instruction begins with direct explanation of strategies including how, when, and why" (p. 104) the strategies should be used. Duffy (1986) encouraged teachers to make obvious statements about the strategy, determine which critical attributes of the strategy to employ, determine what text clues can guide the reader in using the strategy, and explore why and when during reading instruction the strategy can be applied. Teachers should model the strategy that *makes the covert overt* and allows students a chance to provide clear explanations by "thinking aloud about how the process of understanding works. This process requires teacher scaffolding and the strategies for comprehension must be gradually released to the student" (Dewitz, Jones, & Leahy, 2009, p. 104).

Teachers who use effective questions as a strategy to increase the students' ability to comprehend text know that there are guiding principles for making this tactic successful, including:

- teaching students to question self, the author, and the text while reading;
- conducting deep conversations about the meaning of the text; and
- providing scaffolding for students to be able to participate within their zone of proximal development.

In order to implement these principles teachers must get children to participate in discussions. Johnson and Keier (2010) called this "nudging the talk" (p. 104). They offered specific examples of the kinds of questions to ask before, during, and after students engage with a text to support students in learning how to become proficient readers who engage with and think about text. They affirmed that teachers need to challenge students to be active readers and instructed them that "readers who read broadly and think deeply… realize that reading is an action sport" (p. 105). This nudging the talk creates what Johnson and Keier (2010) called *meaningful talk* that becomes an integral part of an interactive reading experience whereby the reader learns by experience what "all readers do as they read independently" (p. 105). These interactions with the text using teacher generated questions as a guide to employ meaningful talk teaches children how to think in ways that will strengthen their abilities so they may become proficient readers. Question examples to use with students before reading begins include:

a. "What do you think this might be about?
b. What might we learn in this book or reading?
c. Can you think of any words we might hear in this book?" (Johnson & Keier, 2010, pp. 104-105).

Questions for use during or after the reading include:

a. What are you thinking?
b. What do you think will happen?
c. Does this story remind you of anything?
d. How did the character change from the beginning to the end of the story?
e. How is the book like our class, our school, our town, or our world?
f. What message or big idea is coming across from this book?
g. How do you know that?
h. Why do you think that?
i. How can you justify your idea with evidence from the text? (Johnson & Keier, 2010, pp. 104-105).

Morrow (2009) indicated that interaction with text comes from active participation in literacy experiences between the teacher and the children. She contended that these literacy experiences are created when teachers are able to lead them by generating good questions. She reminded teachers that students are not able to answer effective questions minimally and that quality questions ask students to clarify, explain, predict, and justify. She categorized the questions as literal and inferential or critical. According to her work literal questions "identify who, what, when, and where details [by asking] students to classify ideas, sequence text, and find main ideas" (Morrow, 2009, p. 207). While these are important and should not be eliminated, they are primarily the bulk of asked questions in regard to comprehension and limit meaningful talk. Inferential or critical questions ask students to draw on information from their background or prior knowledge, make text to life, text to world, or other text connections, predict outcomes,

interpret the text, compare and contrast, determine cause and effect, apply information, and solve problems. She offered these as examples of quality questions:

a. How did you feel about the story?

b. What questions do you have about the story?

c. What did you learn from the story?

d. What in your life is like the story you read?

e. What is the main thing the author is trying to tell you?

f. How could you find out more?

g. If you could speak with the author, what would you ask him or her? (Morrow, 2009, pp. 207-208).

It is important to note that Morrow (2009) ended her book's section on questioning with these words,

> When asking questions, instruct students to look back into the text to find the answers to questions they cannot answer themselves. We need to help students know where to find answers that are explicit; that is, the answer to a question is stated in the text. Students need to be able to find implicit answers to questions when the answer is not exactly stated, but can be found within a few sentences of the text. (p. 208)

While students need to be able to answer questions found in the text, they also need to be able to answer those questions that are not specifically covered in the text but that must be answered using the "child's background knowledge" (p. 208). Also, note these questions from Johnson and Keiser (2010), "What message or big idea is coming across from this book? How do you know that? Why do you think that? How can you justify your idea with evidence from the text?" (pp. 104-105). These and the questions Morrow (2009) described are part of the rigorous expectations of the Common Core State Standards Initiative (2014) as indicated by Calkins et al. (2012).

The Common Core State Standards Initiative (2014) values reading comprehension and places much emphasis on comprehension and high level thinking skills. The Common Core

documents use words like close, attentive reading, critical reading, reasoning, understand precisely, cite specific evidence, evaluate other points of view critically, refer explicitly to the text, determine, describe, analyze, explain, compare, contrast, and question (Battelle for Kids, 2012). These types of words are used in question phrases creating a question that reflects a level of quality allowing children a chance to produce answers at a cognitive level that requires them to use higher order thinking or reasoning skills to produce an answer.

Cognitive Question Levels

Therefore, Morrow (2009) and Johnson and Keier (2010) indicated there are types and levels of questions generated by teachers. In his 1912 study, Stevens asked,

> What do we mean when we talk about the quality of a question? What is a good question? Since the number of questions cannot be the full measure of efficiency in questioning, what other tests must be applied to determine efficiency? (p. 72)

The Costa Model

Costa (2001) determined that everything a teacher communicates and executes in his or her classroom significantly impacts student learning. Certain teacher behaviors influence a student's achievement, self-concept, social relationships, and thinking abilities. Teacher behaviors are those that invite, maintain, and enhance students' thinking in the classroom and fall into four categories. First is *structuring*; a classroom that is structured so that the physical environment supports achievement will maximize the use of space, time, and materials as it orchestrates the use of whole group, small group, and individual interactions. Second, he or she will *respond* to the students so that a trusting environment is created to maintain and extend thinking. Next, the teacher will *model* the behaviors that reflect thinking. Finally, he or she will *question to challenge* the students' intellect, help students gather and assemble information,

process that information into meaningful associations, and apply relationship associations to dissimilar or new ideas, situations, or contexts.

Questioning to challenge summons various echelons of complex thinking. Teachers should desire to pose questions that move the child to use all levels of thinking by deliberately challenging student's intellect and imagination. The teacher should seek to heighten the students' curiosity by promoting thinking skills and cognitive tasks. By the teacher's model, students should understand it is necessary to develop a thirst for inquiry and value the sincere need for posing good questions (Costa, 2001). With this belief about questioning, Costa (2001) designed a framework inspired by Oliver Wendell Holmes's poem titled *The Three Story Intellect* (Appendix D). Costa (2001) said the "poem captures the increasingly complex levels of thinking" (p. 361).

The Three-Story Intellect
By Oliver Wendell Holmes

There are one-story intellects,
two-story intellects, and
three-story intellects with skylights.
All fact collectors,
who have no aim beyond their facts,
are one-story men.
Two-story men compare, reason, generalize,
using the labors of the fact collectors,
as well as their own.
Three –story men idealize, imaging,
predict their best illumination
come from above, through the skylight.

Bearing these levels in mind, questions can be designed to activate student thoughts at a prominent level of thinking or cognitive processing. The Costa (2001) three-story model begins with *Level 1 – Input*, which consists of questions designed to stimulate student input by drawing from student "concepts, information, feelings, or experiences they have acquired in the past and

stored in long or short term memory" (p. 361). Costa (2001) offered that posing questions from *Level 1 – Input* will ask students to do such cognitive behaviors as (a) complete (e.g., The third little pig's house was made from…what?), (b) name (e.g., Which states border Tennessee?), (c) observe (e.g., Watch and tell me what color does the pudding change into when I add the white milk?), (d) describe (e.g., How does the picture of the flooded area make you feel?), (e) list (e.g., What are the five vowels?), and (f) recite (e.g., Can you tell me the nursery rhyme Humpty Dumpty?).

In *Level 2 – Process,* Costa (2001) purported that this level will include questions posed by teachers in order to allow students the chance to "draw relationships of cause and effect, synthesize, analyze, summarize, compare, contrast, or classify" (p. 361). In the realm of *Level 2 – Process*, Costa (2001) offers that these types of questions will assist students in eliciting such cognitive behaviors as (a) sequencing (e.g., How might you arrange the blocks in order by their size?), (b) comparing (e.g., How are the characters Sam I Am and the Cat in the Hat the same or different in the stories created by Dr. Seuss (1957, 1960)?), (c) inferring (e.g., What clues in the story led you to think that?), (d) explain (e.g., Tell me why you think the wood did not sink?), and (e) group (e.g., How can you group these shapes together?).

Level 3 – Output is defined by Costa (2001) as questions that cause "students to go beyond the concepts or principles they have developed and use this relationship in a novel or hypothetical situation" (p. 361). When students are able to apply knowledge facilitated by *Level 3 – Output* questions, they are invited to "think creatively and hypothetically, to use imagination, expose their value systems or to make judgments" (p.362). Questions from *Level 3 – Output* will ask students to (a) forecast (e.g., What do you suppose will happen to the weather if the temperature drops below zero degrees?), (b) speculate (e.g., What do you think our world will be

like when you are 100 years old?), (c) predict (e.g., What do you think will happen next to Junie B. Jones (Park, 2004) and why?), (d) evaluate (e.g., What would be a fair solution to our problem?), and (e) model building (e.g., Using this clay, how could you make a model of the parts of a plant?).

If we expect questions to increase cognitive activity in students, we must be somewhat accepting of the concept that questions can be developed to involve students in thinking and learning about content (Walsh & Sattes, 2011). So, what are the characteristics of questions that will allow teachers to foster a level of mastery for students and will assist teachers in meeting the rigor expected at this time in education? Walsh and Sattes (2011) stated that the initial thinking about a question begins when the teacher considers the concept, idea, principle, or phenomenon he or she wants the students to think about. In other words, to what degree of intellect will the posed question engage the students in thinking? Judgments made about the focus of a question should be the first determinants of whether or not the posed question is rigorous. Therefore, a good place to begin is to, "Select a taxonomy to support your design of questions" (p. 19). It is important to align them with appropriate and increasingly complex cognitive operations so that the students will be able to engage in and participate in such thinking behaviors as remembering, understanding, applying, analyzing, evaluating, and creating.

Bloom's Taxonomy

John Dewey suggested, "What is a question, you ask? Everything! It is the way of evoking stimulating response to stultifying inquiry. It is, in essence, the very core of teaching" (Dewey, as cited in Fusco, 2012, p. 42). Therefore, if educators believe the question is part of teaching's core, it is imperative that questions posed be structured well. Fusco (2012) said that

she finds the best approach to structuring a question is to base the development of the question's structure on the taxonomy framework created by Benjamin Bloom (1956).

Bloom's original taxonomy was created to provide classifications to educational goals and help the educational community deliberate curricular and evaluation problems with loftier precision. The selected configuration for the taxonomy was a hierarchy of mental processes from simple to complex; educators have been using it since its debut to help them obtain an understanding of the mental processes students use to learn presented material (Lipscomb, 1985). According to Krathwohl (2002) one of the authors who helped pen the revised version of Bloom's Taxonomy, Bloom said the taxonomy would be a common language about goals for learning that would make communication and access to subject matter easier across grades as well as showcasing the "range of educational possibilities against which the limited breadth and depth of a particular education course or curriculum could be contrasted" (Bloom, 1956, p. 212). The original taxonomy included six major categories in the cognitive domain: knowledge, comprehension, application, analysis, synthesis, and evaluation; it was presumed that mastery of the less difficult or simpler categories was prerequisite to mastery of the subsequent more complex (Bümen, 2007).

Because Bloom positioned the categories as a hierarchy, this organizational structure has brought about some criticism for there are those who purport there is not a hierarchy of thought and that realistically the classifications interrelate within the students' mental dispensations (Fusco, 2012). According to Booker (2007) it is clear that lower level content is imperative and critical because all higher thinking is established by the foreknowledge gained from lower order thinking. To address some of this criticism, Anderson and Krathwohl (2001) revised Bloom's original taxonomy. The revised taxonomy is a framework for aligning learning objectives,

curriculum, and assessment; it allows the educator to match the complexity of learning while providing a manageable system whereby questions can be strategically structured by moving teachers' posed questions and children's responses from the factual, literal level to the inferential and abstract (Fusco, 2012; Hanna, 2007).

The revised framework is two-dimensional displaying knowledge and cognitive processes. In making these changes, Anderson and Krathwohl (2001) consider the taxonomy is clearer. The most significant change in the revised taxonomy is that it is now a two-dimensional model rather than one-dimensional. The inclusion of types of knowledge, which still includes factual, also more clearly define conceptual, procedural, and metacognitive knowledge (Hanna, 2007). In the revised version, knowledge is renamed remembering and the comprehension category is renamed understanding. Synthesis is renamed creating and the remaining categories were retitled using the verb forms applying, analyzing, and evaluating (Bümen, 2007). By interchanging the order of synthesis (renamed create in the revised taxonomy) and evaluation (changed to evaluating in the revised taxonomy), the taxonomy better reflects that creative thinking is a more complex cognitive process than critical thinking (Appendix E). The most common example given is that a person can be critical without necessarily being creative but creative production requires critical thinking.

Fusco (2012) offered the following important reasons for using Bloom's Taxonomy to help prepare a range of diverse cognitive questions. The taxonomy helps teachers ask questions that will connect the literal and inferential levels of thinking thereby enriching the intellectual capabilities of their students. This will assist in closing the gap between literal and inferential thinking levels resulting in cognitive development while helping teachers remain cognizant that they should construct questions around the students' level of basic knowledge. The taxonomy

allows teachers an opportunity to determine the purpose of each question and the level of response or reply he or she expects to obtain while focusing on the principle that learning begins not with the subject matter or text but with questions to which the students will react.

Using the definitions by Krathwohl (2002) and question stems adapted from the work of Pohl (2000) and Tarlington (2003), the revised Bloom's Taxonomy has exemplars and is straightforwardly explained and defined. Beginning at the first level, *Remembering* is the retrieving of relevant knowledge from long-term memory by recognition or recall. Question stem examples include:

- Who?
- Where?
- Which one?
- What?
- How?
- How many?
- When?
- What does it mean?
- What happened after?
- Which is true or false?

Understanding is determining the meaning of instructional messages including oral, written, and graphic communication by interpreting, exemplifying, classifying, summarizing, inferring, comparing, or explaining. Question stem examples include:

- What does this mean?
- Is this the same as…?

- Explain why?
- What could have happened next?
- Which statements support?
- Which are the facts?
- What seems likely?
- This represents…?
- Can you clarify?
- Can you illustrate?

Applying is the carrying out or using a procedure in a given situation to execute or implement. Question stem examples consist of questions such as:

- Predict what would happen if?
- What was the main idea?
- Do you know of another instance where…?
- What questions would you ask of…?
- What do you think?
- From the information given, can you develop a set of instructions for...?
- Could this have happened in…?
- Clarify why?
- What would happen if…?
- Who do you think?

Analyzing is the breaking of material into its fundamental parts and detecting how the parts relate to one another and to an overall structure or purpose by differentiating, organizing, or characterizing. Question stem examples are:

- What is the function of…?
- What is a fact or opinion?
- What does the author believe?
- What ideas justify the conclusion?
- What is the relationship between…?
- Which events could not have happened?
- How is X similar to Y?
- What conclusions can you make?
- What is the point of view in this material?
- Why did the changes occur?

Evaluating is the ability to make judgments based on criteria and standards by checking and critiquing. Question stem examples include:

- Which is more important, logical, valid, or appropriate?
- Where or what are the errors?
- Is there a better solution?
- What changes would you like to see occur?
- Do you believe?
- How would you feel if…?
- Why is ___ of value?
- Can you defend your position?
- How effective are…?
- Can you determine the value of…?

Creating is the putting of elements together to form a novel, coherent, whole, or original product by generating, planning, or producing. Question stem examples consist of questions such as:

- Can you create a new use for…?
- Can you design a…?
- Why don't you devise your own way to…?
- How else would you?
- How many ways can you…?
- What could be the solution?
- What would happen if?
- What could you change?

Even though Bloom was a behaviorist, Booker (2007) said that it is ironic that the constructivist philosophy has developed such use for Bloom's Taxonomy. Perhaps it is because constructivist teachers are encouraged to construct classroom environments that are more conducive to active engagement, problem solving, and independent thought. They are less concerned with the production of basic fact retrieval. Constructivists also consider that knowledge about our world is not fixed but constructed by the child through his or her own experiences, giving credibility to the view that learning is authentic and challenged by projects, students, and the teacher. Booker (2007) determined that these are the primary explanations constructivist teachers use to define the Taxonomy as a favorable paradigm for teaching and learning.

Parker and Hurry Strategies

Research into what kinds of questions are being posed in primary classrooms found that not a great deal has changed since Durkin's original 1979 study regarding the use of questioning.

Twenty-five years after Durkin's (1979) study, Parker and Hurry (2007) examined instructional time to see if there had been any improvement or if teachers were continuing to spend the majority of their instructional time asking students questions with minimal time given to teaching strategies that could be used to help students effectively answer questions.

Parker and Hurry's evidence supports four reading strategies that are effective in improving students' reading comprehension. These are predicting, clarifying, summarizing, and generating questions about the text. To be effective, "These strategies need to be explicitly taught and practised by the children" (Parker & Hurry, 2007, p. 302). With this information in mind, Parker and Hurry (2007) examined the strategies, in particular how teachers used questions as a strategy in the classroom.

Parker and Hurry (2007) reported in their review of literature that for students to achieve literacy learning, teachers must talk unambiguously, which will help children master the art of independent thinking. The studies they examined support that teacher discourse will not support pupil learning if the discourse is used to lead students to generating a predetermined answer. They also reported that whole class activities remain very similar in delivery as they have been historically documented because of the potential for teacher talk in developing student understanding for investigating pupils' misunderstandings, errors, or fallacies has not yet been entirely identified or completely mastered.

In their 2007 study, Parker and Hurry identified comprehension of text at three levels:

1. literal, which included factual recall;
2. inferential, whereby the children were expected to deduce, suppose, and conjecture; and
3. evaluative, which called for students to connect a personal response to the text.

The students' ability to infer was of some interest to the researchers for they note specifically that when a student masters the ability to infer he or she is generally considered a skilled comprehender rather than a poor comprehender. Young students are often only able to demonstrate their ability to infer when they are prompted or questioned explicitly.

Teacher responses in the Parker and Hurry (2007) study were recorded in three ways:

1. specific teaching,
2. other teaching methods, and
3. direct questioning.

Direct questioning was noted by interactions when the teacher asked a direct question. These interactions were recorded and coded along with teacher interview responses regarding the use of questions as data for the study.

From the teacher surveys, Parker and Hurry (2007) found the following percentages represented the types of questions teachers believed they would pose to students at the literal, inferential, and evaluative level. At the literal level, teachers reported that they believed they used questions about biographic details (3%), narrative questions (24%) such as what is the story about, and recall of facts (21%) where the question posed was a closed question with only one answer considered correct. Teacher responses to references about the perceived use of questioning at the inferential level occurred in the form of deductive questions (16%), prediction questions (15%), empathy or characterization questions (16%), and open-ended questions (3%) where more than one answer could be considered correct. Teacher references to the supposed use of questions categorized as evaluative were only referred to for a total of 2% in the collected interviews.

When actual observations were documented by Parker and Hurry (2007), the teachers used direct questions in the reading comprehension lessons approximately 70% of the time, with 50% literal, 48% inferential, and 2% evaluative. The observations reflect what the teachers perceived about asking literal, inferential, and evaluative questions as determined by the interview data. The predictions were similar to what was actually delivered and recorded in the lesson. The data concluded that ⅔ of the questions posed were asked in closed form where only one answer would be considered correct and were reflected in questions asked concerning,

- recall of facts,
- deductive inference,
- background information about the story,
- biographic information,
- explanations of words or phrases, and
- queries about genre.

Only ⅓ of the questions were found to be open-ended, which allowed students to generate answers where more than one response could be considered correct and were reflected in questions asked concerning empathy, prediction, inference, or a reference to the child's own experience.

Therefore, from the transcribed questions, Parker and Hurry (2007) documented 205 questions and calculated the following percentages for the types of questions asked. At the literal level they found that teachers:

- asked for recall of factual information from the text (25%),
- asked for word or phrase meaning (9%),
- asked for bibliographic information (5%),

- asked for background information (6%),
- asked for an explanation of metaphor, which is a word or phrase that is not meant literally but by means of a vivid comparison expresses something (1%), and
- asked for an answer from the children based on their own experience (4%).

Parker and Hurry (2007) found that at the inferential level teachers asked for deductive inference and could generate a known answer (18%), asked for inference about empathy (9%), asked for inference where the answer was not known (7%), asked for information from pictures (5%), asked for predictions (5%), and asked for an answer based on the child's own experience (4%). In looking for questions asked at the evaluative level, teachers were noted as asking questions about genre (1%) and questions about the author's point of view or purpose (1%).

Parker and Hurry (2007) found that teachers were using the typical prototype three-part exchange structure consisting of initiation in the form of a teacher question, student given responses, and the teacher providing some form of response to the answer or answer attempt. Teacher-led recitation is still being given prevalence in classroom discourse and is used primarily to evaluate the student's answer. Parker and Hurry (2007) found that teacher responses to questions fell into three categories.

First, the teacher responded yes or no to the student or ignored the student's answer resulting in no dialog, which was the most frequent response recorded with the simple affirmative *yes* recorded for 40% of the teacher responses. It should also be noted that the students correctly answered 85% of the posed questions, which suggests that questions are designed to predominantly extract convergent, factual answers that are already known by the student. These types of questions do not ask children to participate in giving an answer that cognitively challenges their thinking (Parker & Hurry, 2007).

Second, the teacher provided elaboration or developed the student's response for him or her. A positive response with teacher elaboration was recorded 29% of the time, while only 16% of the time did the teacher response give the child an opportunity to further develop, reconsider, or expand an answer. Therefore, it stands to reason that while teachers know the value of questions, the majority of them are still posing questions very basic in nature even though Bloom's Taxonomy has been present as a guide since the 1950s (Parker & Hurry, 2007).

Teachers are primarily developing questions that are basic and factual in nature and deliver those questions to students using the protocol of recitation, "Good teachers use divergent and convergent questions framed in such a way that they invite students to make connections and arrive at new understanding" (Danielson, 2007, p. 2). Expectations for students by most educational standards call for them to acquire, use, and extend their knowledge. Bloom's (1956) work gives the educator a framework whereby he or she may construct a question in such a way as to level it according to some mental process beyond simple recall. He attempted to provide educators with a tool to interpret and assign a level to the expected student depth of knowledge.

Posing questions inside a depth of knowledge and expecting student answers to align within that depth of knowledge will be the expectation set forth as Tennessee and other states move forward with the implementation of the Common Core Standards and continue to participate in high stakes testing, which is moving away from the standardized bubble in dot response to a student constructed written answer. Teachers will need to remember and maximize what they know about Bloom's Taxonomy but will find it needful to become well versed in the depth of knowledge model created by Webb (1997).

The constructed response questions on the third and seventh grade constructed Response Assessments have items reflective of the first three levels of Webb's Depth of Knowledge

(DOK) framework. In fact, Calkins et al. (2012) offered that in order to meet the high expectations of the Common Core Standards, which place emphasis on close textual enquiry, teachers will likely need to become conversant in Webb's DOK framework. Webb's Depth of Knowledge allocates a structure that will help the teacher align the Common Core's expected intellectual operations to levels two and three of Webb's hierarchy, which will be representative of the expected rigor of Common Core.

Webb's Depth of Knowledge

Webb's Depth of Knowledge (DOK) is a scaled cognitive demand (thinking) design created to align standards with assessment. Based on the research of Webb (1997), this document defines the highest DOK level for each core content standard for state assessments and guides item development for the state assessment (Matthews, 2010). Webb's DOK has four levels (Appendix F). Each level is defined specifically for the content areas of language arts, math, science, and social studies. Because this study concentrated on the literacy block of instruction, the descriptors were given for the language arts levels of DOK. Webb (2002) defined the following descriptors of the language arts DOK levels.

1. Level 1 necessitates that students either get or give easy facts or demonstrate simple skills or abilities. Oral reading rather than demanding analysis of the text and basic comprehension of a text is expected. Activities and products require minimal understanding of text and usually require students to precisely recall simple sections of the text. Some examples that represent Level 1 include:
    a. support ideas by reference to details in the text,
    b. use a dictionary to find the meaning of words, and
    c. identify figurative language (Webb, 2002).

2. Level 2 allows for some engagement of mental processes beyond basic recall. It requires both comprehension and text processing. Inference is generally required. Some important concepts are covered but usually not complexly. Students are usually expected to summarize, interpret, infer, classify, organize, collect, display, compare, and determine fact or opinion. Literal main ideas are emphasized. A Level 2 assessment item may require students to apply some skills and concepts. Some examples that represent Level 2 performance include:
    a. use context cues to identify the meaning of unfamiliar words,
    b. predict a logical outcome based on information in a selected text, and
    c. identify and summarize the major events of a story (Webb, 2002).
3. Level 3 calls for deep knowledge to become the concentration. Students are encouraged to go beyond the text. Students are expected to explain, generalize, or connect ideas. Students are required to support their thinking and apply prior knowledge. Some examples that represent Level 3 expectations include:
    a. determine the author's purpose,
    b. summarize information from multiple sources, and
    c. analyze characteristics of various genres (Webb, 2002).
4. Level 4 centers on the fact that higher order thinking is central and knowledge is deep. Activities are extended over time. Students take information and are asked to apply the information to a new task. Some examples representing Level 4 performance include:
    a. analyze and synthesize information from more than one text,
    b. examine and explain varied perspectives, and
    c. express common themes from varied texts (Webb, 2002).

According to the Webb's Depth of Knowledge Guide provided by the Research and Curriculum Unit from Mississippi State University (Parker, 2009), there are some specifics that Webb wanted noted when using the DOK. First, when assigning a DOK level, the assignment should take into consideration the level of work the students are expected to produce. This product should represent the most common acceptable response and should represent the complexity of the expected work or task rather than the difficulty. The DOK "describes the kind of thinking required by a task, not whether or not the task is 'difficult'" (p. 5).

The DOK notations set two precedents. First, if the DOK level assigned reflects the level of work commonly required of students, we cannot expect them to respond to test questions they have not yet been exposed to in classroom instruction on a daily basis. Danielson (2007) made it clear that questions of high quality cause students to think and reflect, deepen their understanding, and test their ideas. When teachers pose questions of exceptional quality, they ask only a few and provide students with sufficient time to reflect and answer. On a few occasions for the sake of necessary review, teachers will need to ask students a set of general low level questions for a verbal quiz. This may be necessary for the purpose of establishing facts, but this rhetoric of questions should not be a substitute for the use of queries that will deepen students' understanding or engagement. Therefore the continuation of only asking lower level questions using recitation protocol will not prepare students for questions that will appear on future state assessments (Danielson, 2007).

Second, in regards to the DOK describing the nature of thinking necessitated by a task and not the difficulty of the task, the teacher must become cognizant of the questions he or she presents. Just as Bloom's Taxonomy has resulted in question stems as guides for tasks of inquiry, so have there been question stems created for DOK. Just as with Bloom's work, it is not the

question's propounded verb that measures a student's depth of knowledge but the context in which the verb is used and the depth of thinking required to answer it (Matthews, 2010). For instance, the verbs are not always applied fittingly. For illustration, words like explain and analyze alone do not create a high quality question (e.g., the question "Explain to me where you live?" does not raise the depth of knowledge beyond that of simple recall).

Matthews (2010) defined complexity as the amount of higher order thinking required to answer the question verses the question difficulty, which refers to simply how many students can correctly respond to the given question. She gave an excellent example of how the verb alone cannot supply complexity using the action word *describe*. Example question 1 – *Describe* three characteristics of metamorphic rock. This is a Level 1 DOK question because it requires only simple recall. Example question 2 – *Describe* the difference between metamorphic and igneous rocks. This is a Level 2 DOK question because it requires cognitive processing to determine the difference between the two types of rock. Example question 3 – *Describe* a model that you could use to represent the relationship that exists within the rock cycle. This is a Level 3 DOK question because it requires deep understanding of the rock cycle and calls for a determination about how best to represent it.

Remembering to discern that the verb alone does not indicate the quality of a question, its DOK, or its effectiveness to incite complexity or cognitive processing, Collins and Webb (2013) developed question stems to help in the construction of effective questions. *DOK Level 1 – Recall* examples include:

- When did ___ happen?
- Who was ___?
- What is ___?

- Can you select ___?
- Who discovered ___?
- Can you identify ___?
- How would you describe ___?
- What is the meaning of ___?

Question stems for *DOK Level 2 – Skill or Concept* include:

- How would you compare ___?
- How can you explain ___ affected ___?
- How would you classify ___?
- How would you summarize ___?
- What do you notice about ___?
- How are ___ alike or different?
- How can you apply what you have learned?

Question stems for *DOK Level 3 – Strategic Thinking* are represented by such examples as:

- What conclusions can you draw?
- What is the best answer? Why?
- How would you adapt ___ to create a new ___?
- What would happen if ___?
- How would you describe the sequence of ___?

Questions that reflect *DOK Level 4 – Extended Thinking* can be regarded in such a question as, “What information could you gather to support your idea about ___?” This is the only question example given by Collins and Webb (2013) for this level. The other examples they offer are not in a verbal or written question but are related more to an activity or project such as:

- Design and conduct an experiment.
- Write a paper, drawing conclusions from multiple sources.

An examination of Webb's Depth of Knowledge only takes a moment to see that there is much similarity between it and Bloom's Taxonomy, reminding educators that both of these documents were prepared so that teachers would be able to identify that questions of all types can be employed to move the students' thinking forward. To design effective questioning strategies, teachers should consider the kind of question they ask, the level of thinking required by each question, and the function they wish the question to serve. Quality questions will elicit student responses assist students in clarifying their thinking, identify ambiguity in the students' reasoning, and extract out or facilitate student solutions to problems (Walsh & Sattes, 2011).

In light of the TEAM model, the Common Core, and the designs of best practice, teachers are beginning to realize that they are not only expected but are required to teach the rigorous skills and knowledge students will need for future college and workforce success. Education's stakeholders have increasingly called for instruction, curriculum, and assessments to be more rigorous (Hess et al., 2009). Therefore, it stands to reason that teachers will most likely be compelled to use established criteria in order to successfully plan and implement quality questions in their instruction.

Hess' Cognitive Rigor Matrix

Hess et al. (2009) declared that Bloom's Taxonomy has been an educational support for more than 50 years. The taxonomy has helped teachers create lessons that allow students to practice and develop thinking skills over a wide range of cognitive difficulty, and even though it went through revision under the direction of Anderson and Krathwohl (2001), its general purpose

still remains the same, which is to help teachers in classifying questions and activities according to their levels of abstraction, complexity, and cognitive rigor.

Bloom's Taxonomy was considered limited when assisting in the selection of assessment items and for preparing question strategies because it used verbs to differentiate the taxonomy levels (Hess et al., 2009). The weakness was found to be connected to the fact that "many verbs appear at multiple levels" and are not able to "articulate the intended complexity implied by the taxonomy" (Hess et al., 2009, p. 1). With this recognized need, Webb (1997) created his model of rigor designed for gauging depth of knowledge. Webb (1997) said of his work that, "Assuring the alignment between expectations and assessments can strengthen an education system in important ways" (p. 1). Webb also concluded that the Depth of Knowledge document would support teachers in being able to better (a) "assess important learning such as how well a student is able to perform scientific inquiry," (b) realize that the use of a "short-answer format is not aligned with an intended purpose of measuring students' ability," and (c) "design an inquiry to address quality questions" (pp. 2-3).

Hess et al. (2009) studied how to merge Bloom's Taxonomy with Webb's Depth of Knowledge and create a matrix that reflects cognitive rigor. They studied teachers as they met in professional learning communities and documented specific incidents where teachers struggled somewhat in planning for questions. The teachers in the study discovered that Bloom's Taxonomy offered inadequate guidance in conveying instructional strategies and also found there was not a "natural tie between the taxonomy levels and the depth of understanding required to respond" (Bloom, 1956, p. 2). These teachers also found that many of Bloom's verbs such as *compare* and *explain* were used frequently at various levels of the taxonomy. The teachers were able to understand how Webb's Depth of Knowledge assisted in lesson planning and found that

designing DOK Level 3 and Level 4 activities required the students to converse with one another for an extended time and were therefore more engaged with the content. These teachers found that the students required more wait time when questions were posed and that the students were better able to express conceptual understanding. The teachers agreed that DOK Level 3 and Level 4 activities required their students to learn in more depth than previously expected.

Hess et al. (2009) realized there was not a straightforward one-to-one correspondence tool available that would correlate Bloom's Taxonomy with Webb's Depth of Knowledge so she created a matrix that would superpose them. Her results were the Cognitive Rigor Matrixes; she created one for each of the major content areas of language arts (Appendix G), science, social studies, and math. The matrix distinctly "connects, yet clearly distinguishes, the two schemata, allowing educators [an opportunity] to examine the rigor associated with tasks that might seem at first glance comparable in complexity" (p. 5). Therefore, using the *Reading Matrix* (Hess et al., 2009) as an expected example, the first level in Bloom's Revised Taxonomy is *Remember* and Hess include retrieve knowledge from long term memory, recognize, recall, locate, and identify. *Remembering* corresponds to *Webb's Depth of Knowledge Level 1 – Recall and Reproduction*. The descriptive indictors under this level include recall; recognize; and locate basic facts, details, events, or ideas explicit in texts; read words orally in connected text with fluency and accuracy; and define terms (Appendix G).

Both Bloom's Taxonomy and Webb's Depth of Knowledge can contribute important purposes in education in terms of helping teachers develop questions that represent cognitive rigor, complexity of content, and cognitive engagement. Hess' Cognitive Rigor Matrix for Reading (Hess et al., 2009) can enhance instructional and assessment practices. As educators become "more skilled at recognizing cognitive rigor and analyzing its implications for

instruction and assessment, they can enhance learning opportunities for all students and across all subject areas and grade levels" (Hess et al., 2009, p. 7). Because students need daily and continuous exposure to all levels of complexity, including those proposed using effective questions, teachers should become cognizant of effective questioning to enhance and facilitate learning and thinking.

Summary

Extensive research has been done in the area of teacher-posed questions and the effect they have on the production of children's thinking in connection to cognitive complexity and learning. As outlined in this chapter, much of the research both historically and currently has helped educators understand the importance of effective questioning techniques.

This study sought to examine current practice in early childhood classrooms to see if most teachers primarily ask numerous questions using (a) the recitation protocol and (b) posing questions at the lower levels represented by Bloom (1956) and Webb as superposed by Hess' Cognitive Rigor Reading Matrix. An investigation of how teachers implement questioning strategies in the literacy block was examined for the cognitive level of questions posed, the function of the posed questions, how often questions were posed, and what did the teacher do to allow for quality responses from the students to facilitate learning. This study was conducted in order to determine if the practices documented by Durkin (1979) and Parker and Hurry (2007) continue to be the primary practices in classrooms today or if new expectations in education have begun to change what is happening with questioning practices.

CHAPTER 3

RESEARCH METHOD

The purpose of this study was to examine questioning strategies used by early childhood teachers during a 90-minute literacy block. During the 90-minute literacy block, participants were observed for questioning strategies to determine how many questions were posed, the types of questions used, and the function the questions served during the typical literacy block as well as how teachers allowed for student responses. This study was done using a mixed methods design. Quantitative data were collected concerning the frequency of each question type (e.g., understand, apply, analyze) and the frequency of each question function (e.g., cueing, focus, probing) as well as the frequency of what type of student response was accepted. Qualitative data enabled the researcher to gain insight regarding various types and functions of questions teachers posed and the types of student responses accepted.

Research Design

The single study mixed methods research design used for this study allowed the researcher to analyze the context, levels, functions, and frequencies of teacher directed questions that occurred during the typical 90-minute literacy block. According to Creswell and Plano-Clark (2007) a single study mixed design is used to acquire different but complimentary data on the same topic to best understand the research problem by examining quantitative statistical data in the context of the qualitative discoveries and substantiate or expand qualitative results with quantitative data. This design allowed the researcher to collect and analyze quantitative and qualitative data independently on the same occurrences and converge the diverse results by examining the different conclusions and contexts in order to "validate, confirm or corroborate the quantitative results with the qualitative findings" (Creswell & Plano-Clark, 2007, pp. 64-65).

The single study mixed methods design was conducted in one phase allowing the researcher to use quantitative and qualitative methods during a uniform time. The design allowed for simultaneous but separate collection and analysis of both types of data so that the researcher was able to suitably understand the research problem. The study was not conducted over time or over multiple studies; it was conducted simultaneously for one single study to examine selected phenomenon. The researcher congregated the separate data sets together into a global interpretation to define a well-substantiated conclusion about the presented phenomena (Creswell & Plano-Clark, 2007). The model shown in Figure 1 represents a single study mixed methods design where the quantitative data and the qualitative data are collected at the same time to create an interpretation of the gathered results.

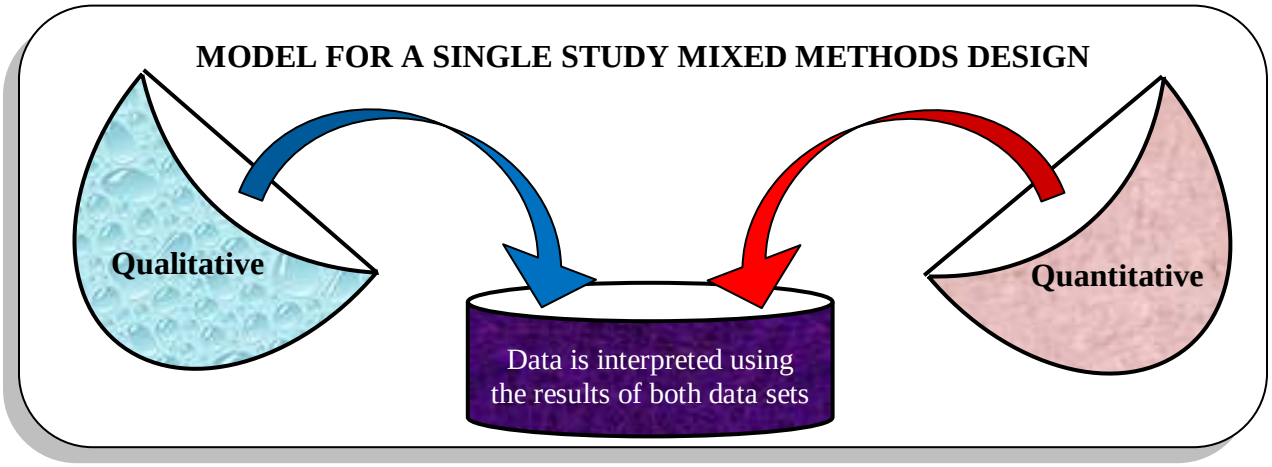

Figure 1. Single Study Mixed Methods Design (adapted from Creswell & Plano-Clark, 2007).

The collection of two types of data and the incorporation of these data create the uniqueness of a mixed methods design. This single study mixed method design required mixing the quantitative data and the qualitative data in order to gain understanding of the presented research problem and interpret the results. According to Creswell and Plano-Clark (2007) quantitative and qualitative data sets may be mixed in one of three ways for the researcher to

gain a clear understanding of what is examined. The data may be viewed as equal in weight and may be merged together as illustrated in Figure 2. The data may also be connected where one data set builds on the other, as shown in Figure 3.

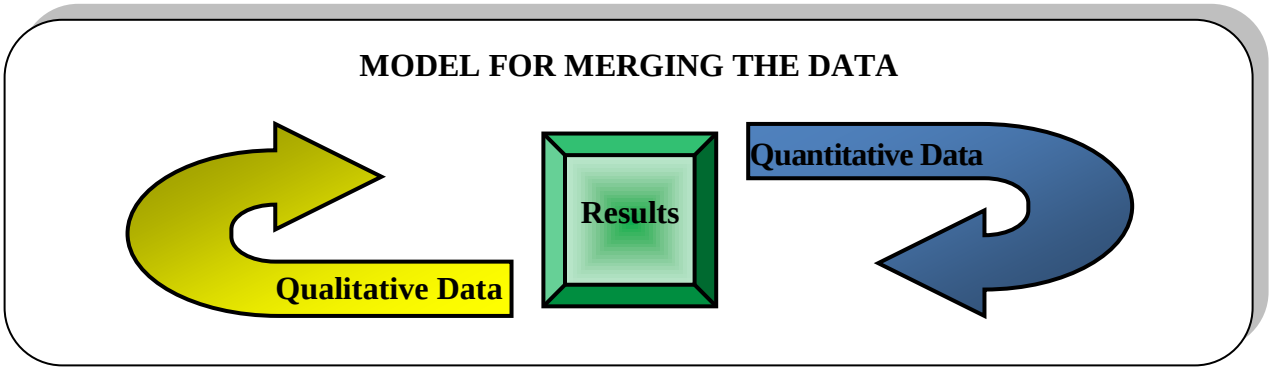

Figure 2. Merging Two Data Sets by Bringing them Together (adapted from Creswell & Plano-Clark, 2007).

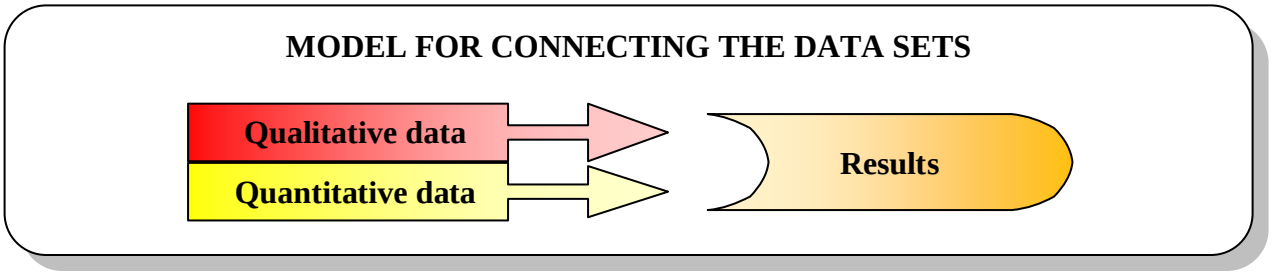

Figure 3. Connecting Two Data Sets by Building One on the Other (adapted from Creswell & Plano-Clark, 2007).

However, this study embedded the data (Figure 4). Embedding one data set inside the other data set allowed the researcher to cast one type of data into a supporting role. Qualitative data may support quantitative findings or, as in this study, quantitative data may support qualitative data. As with any mixed methods design, the purpose of merging or mixing the data allows the researcher to go beyond collecting and analyzing two data sets separately. Requiring

the data sets to be mixed in some way offers the researcher a complete picture of the phenomena, behavior, or occurrence that cannot be established when the data sets stand alone.

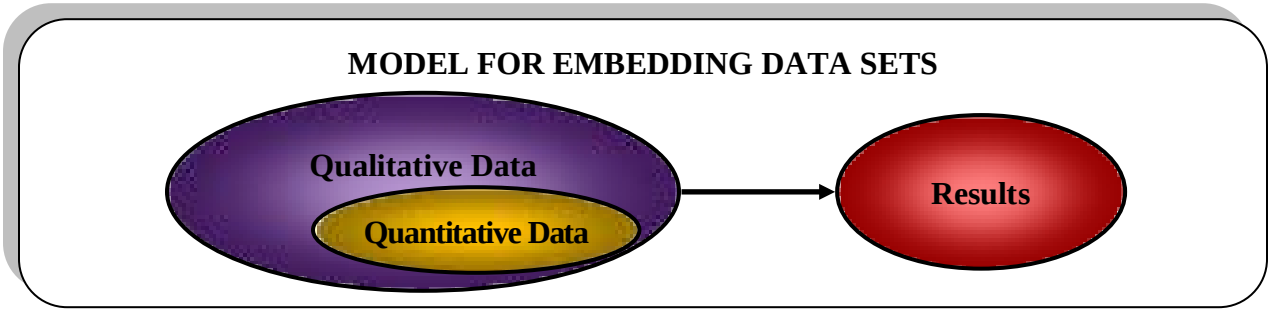

Figure 4. Embedding Two Data Sets so that One Type Takes a Supporting Role (adapted from Creswell & Plano-Clark, 2007).

This study used evaluative inquiry to conduct the research. Parsons (2002) defined evaluative inquiry and designed the evaluative inquiry model specifically so she could investigate student performance, student learning experiences, and teaching. Evaluative inquiries are conducted so the researcher can contrast current practice or observable behavior with what is desired practice or behavior. Evaluative inquiry is designed to disentangle inconsistencies between what is wanted and what actually happens. Evaluative inquiry (Chahine & Covington-Clarkson, 2010) (Figure 5) is a 5-step process consisting of:

1. positioning the inquiry, which is determining the problem that will be investigated;
2. planning the evaluative inquiry, which is the selection of such needed components as data collection and analysis;
3. collecting the data;
4. analysing and synthesizing the data, which supports the use of a mixed methods design because quantitative data can appear meaningless unless it is viewed alongside the context or experience; and

5. communicating the inquiry findings back to appropriate stakeholders in order to determine effectiveness, use, or possible necessary changes or initiatives.

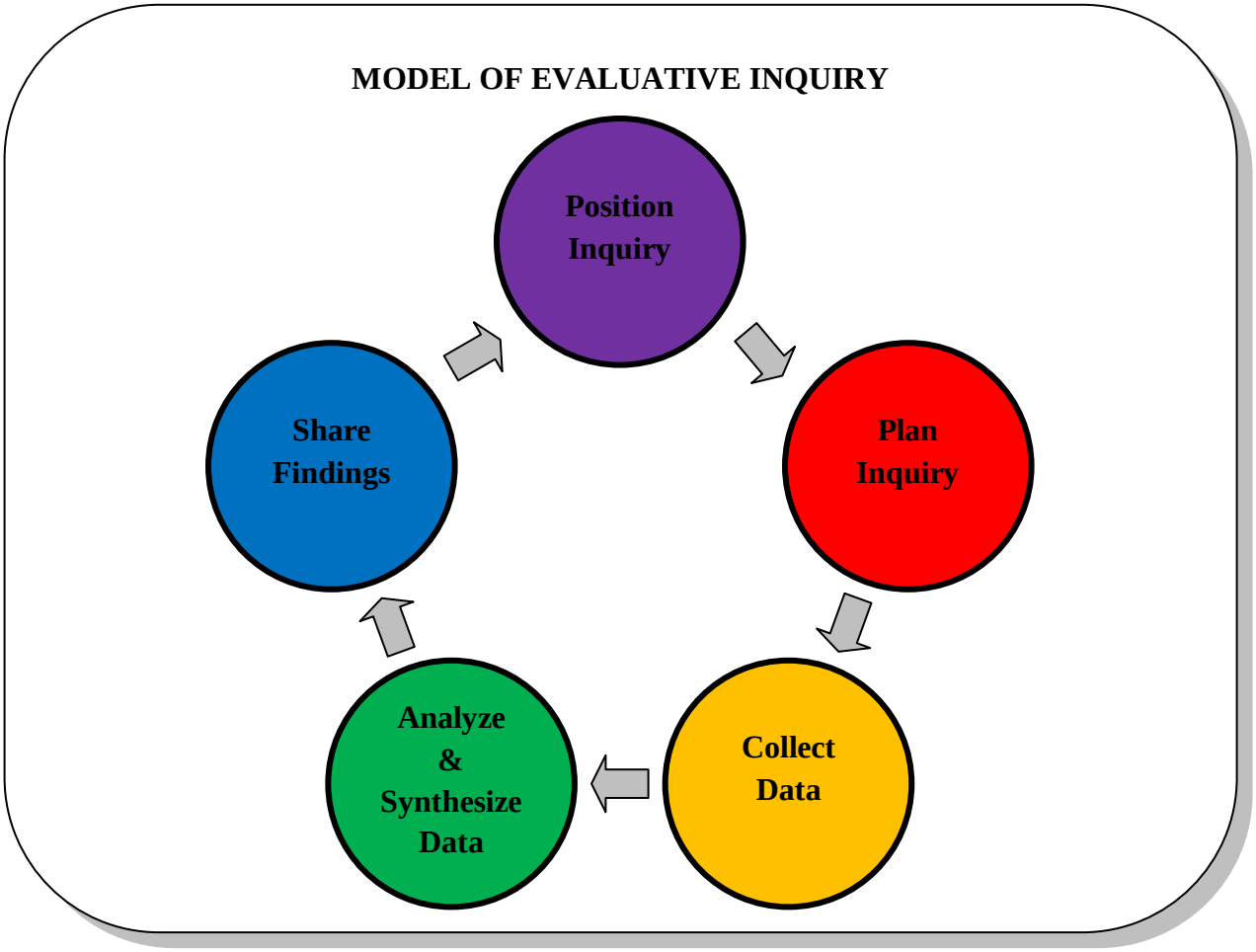

Figure 5. The Five Steps of the Evaluative Model (adapted from Parsons, 2002).

Evaluative inquiry coincides well with the ideas associated with action research, which allows the researcher to study a question scientifically and guide, correct, and evaluate decisions and actions (Corey, 1953). Action research in education is study conducted by colleagues in a school setting whereby the results of their study seek to improve instruction (Glickman, 1992). Action research is an interpretative way of saying we are studying what is happening in school and the results of the study most likely will help us determine how to make it a better place

(Calhoun, 1994). The process of action research has a refining effect on achievement and the researcher gains understanding of what is going on (Dick, 2004) in current practice. Action research is systematic inquiry designed to yield practical results capable of improving a specific aspect of practice and the results are made public to enable scrutiny and further testing.

While this study did not impose any action to take as defined by a pure action research model, it did require the researcher to study and plan, collect, analyse, and reflect on the data, all of which are components of evaluative inquiry and action research. As the evaluative inquiry of this study is complete and the data have been analysed, synthesized, and communicated, action can be considered and implemented, creating areas of future study or change.

Content analysis was used to identify repeated performances of teacher asked questions, reflecting on what happened concerning questioning techniques during the 90-minute literacy block. Content analysis allowed the content of the study to emerge as the researcher studied the text relative to a particular context. Content analysis allows the researcher a system whereby he or she can analytically and objectively identify specific characteristics of particular text inside a specified context (Krippendorff, 2013). For the purpose of this study the text was the recorded and transcribed teacher posed questions and the context that objectively and systematically defined the questions' characteristics was Hess' Cognitive Rigor Matrix (Hess et al., 2009), and the Question's Function based on the work of Costa (2001), Hughes (as cited in Fusco, 2012), and Lowery (as cited in Fusco, 2012).

The qualitative posed question data were coded and analysed according to Hess' Cognitive Rigor Matrix (Hess et al., 2009), and the Question's Function based on the work of Costa (2001), Hughes (as cited in Fusco, 2012), and Lowery (as cited in Fusco, 2012). Student responses were coded, recorded, and analyzed based on the primary responses found in most

classrooms, which are whole group response, more than one student response, single student response, teacher answer response, no response taken, and wait time of 3-5 seconds (Costa, 2001). The researcher looked for categories and themes among the data collections. Quantitative data were analysed using descriptive statistics in particular frequency distributions and measures of central tendency. Measures of central tendency are data points that attempt to describe a set of data by identifying the central positions within the collected set of data.

Research Questions

Overarching Question: During a 90-minute literacy block, how do K-3 teachers use questions to support students' literacy development?

RQ1: During the 90-minute literacy block, how many questions are orally posed by the teacher based on Hess' Cognitive Rigor Matrix (Hess et al., 2009), and the Question's Function based on the work of Costa (2001), Hughes (as cited in Fusco, 2012), and Lowery (as cited in Fusco, 2012)?

RQ2: During the 90-minute literacy block, what are the cognitive levels of the questions orally posed by the teacher based on Hess' Cognitive Rigor Matrix (Hess et al., 2009)?

RQ3: During the 90-minute literacy block, what is the function of the initially posed or generated follow-up question asked by the teacher (i.e., clarification questions, cueing questions, focusing questions, or probing questions) based on the work of Costa (2001), Hughes (as cited in Fusco, 2012), and Lowery (as cited in Fusco, 2012)?

RQ4: During the 90-minute literacy block, once orally posed questions are presented, how does the teacher allocate for student responses(e.g., no response taken, wait time of 3-5 seconds, teacher answered response, single student response, more than one student response, or whole group responses) (Costa, 2001)?

Sample

The sample for this study was selected from teachers assigned to early childhood classrooms in grades kindergarten through third grade in a Northeast Tennessee Public School District with 10 elementary schools and two K-8 schools. These 12 schools serve students in grades K-3 and employed all of the teachers in this study. Eleven of the district's 12 schools were eligible for use in the study. The 12th school, an elementary school, did not participate in the study because the researcher serves as principal at this location. Twelve teachers selected from the eligible schools were observed for this study. The use of teachers from these schools provided the sample with a selection from the county's diverse geographic locations, student socioeconomic status rankings, and special education students who are served in the regular classroom setting.

Participants

The 12 female participants in this study were teachers assigned to early childhood classrooms in grades kindergarten through third grade. Grades kindergarten, first, second, and third were used as the parameters for the early childhood grouping in this study because a Tennessee license in early childhood includes Pre-K through Grade 3. Pre-K was excluded from the grouping because it is not included in the Common Core State Standards. The demographics of the schools in this study are shown in Table 2.

Table 2

Demographics for Schools in a Northeast Tennessee School District, 2012

(*Source:* Tennessee State Report Card, Tennessee Department of Education, 2013a)

School	Grades Served	Enrollment	African American	Asian or Pacific Islander	Hispanic	Native American or Alaskan	White	Economically Disadvantaged	Male	Female
BLTV	PK-5	409	0.5%	0.5%	0.5%	0%	98.6%	74.5%	44.2%	55.8%
BLCY	K-5	490	0.5%	0.6%	1.1%	0%	98.2%	64.5%	48.0%	52.0%
CHTS	K-5	193	0%	0%	0.5%	0%	99.5%	70.5%	45.6%	54.5%
EMMT	PK-5	327	0%	0%	2.7%	0%	97.3%	79.4%	47.4%	52.6%
HLSN	PK-5	295	0%	0.9%	0.6%	0%	98.5%	57.1%	47.3%	52.7%
INSP	K-5	422	0.5%	0.7%	1.2%	0.7%	96.9%	30.8%	48.3%	51.7%
MYHU	K-8	474	0.8%	0.4%	1.4%	0%	97.3%	56.3%	48.1%	51.9%
RKSP	PK-5	427	1.3%	0.4%	2.2%	0%	96.0%	47.4%	49.9%	50.1%
SULV	K-8	344	1.9%	0%	1.1%	0%	97.0%	61.0%	48.0%	52.0%
WEVR	K-5	301	0.6%	0.3%	0.9%	0.3%	97.8%	60.1%	50.2%	49.8%
KETN	K-5	722	3.7%	1.0%	4.9%	0.3%	96.7%	79.0%	47.2%	52.8%

Participant Selection

In order to select teacher participants, the principal assigned to each of the 11 eligible schools was first asked to identify the teachers in his or her building who had a composite score of 3, 4, or 5 on the Tennessee TEAM Evaluation Model and who held a kindergarten, first, second, or third grade assignment (Appendix M). The score (3, 4, or 5) is the total composite score the teacher received from his or her most current evaluation. The number represents the mean score derived from the teacher's TEAM evaluation. The mean score is comprised of the average of the teacher's observation score number, which comprises 50% of the teacher's composite score, the student growth score number, which is 35% of the teacher's composite

score; and the student achievement growth score number, which is the remaining 15% of the teacher's composite score number creating a score of 3, 4, or 5.

From the list generated by principals, the teachers were sent a letter (Appendix N), asked to participate in the study, and agree to be filmed (Appendix O). From the returned letters, the teachers' names were placed into groups by his or her assigned grade level. Stratified random sampling was used to select participants from the groups until each grade level had three teachers from three different schools.

The teacher, school, and grade level were recorded on a master list. The teacher was then assigned an identifying ID number. In order to ensure that the sample was as diverse as possible, the researcher avoided having a grade level represented by one school. However, because the researcher's school was not included in the study, creating an odd number of schools in the 11-school sample, at least one school had to provide two teachers in the sample who were not assigned to the same grade. The sample consisted of 12 female teachers. The integrity of the stratified random sampling process was ensured because the Curriculum Assistant Director of Schools and the Director of Human Resources for the School District participating in the study oversaw the selection of participants. These procedures for selecting the participants were approved by the ETSU Institutional Review Board to ensure the safety, anonymity, and fair selection of the participants involved.

It should be noted that students assigned to each teacher were present during the filming but were not considered in any manner as part of the sample or sample participants. While it was the intent of this researcher to document only the teacher on the video recording, the teacher's students may have been captured on the recording even though the researcher made every effort to capture only the teacher's image. Parents or guardians of students were aware that filming was

occurring in the classroom (Appendix P) and gave written permission for the student to be present during the filming (Appendix Q). The students were not part of the research study and served only as bystanders. As a bystander, the students' anonymity was closely guarded and his or her rights and privacy were maintained.

Data Collection

Each teacher was filmed once during the school semester on a date reserved with the teacher. The filming schedule was arranged to capture the teacher's 90-minute literacy block. This gave the researcher twelve 90-minute sessions of literacy instruction for a total of 1,080 minutes of recorded time.

The 90-minute literacy block was filmed in its entirety. In order to eliminate student interference with instruction due to behaviors that could be attributed to being filmed (e.g. waving and looking at the camera) taping began at least 10 minutes prior to literacy instruction and this part of the taping was not considered part of the study. The classes were videoed by the researcher using an iPad2.

The filmed literacy block consisted of the recording of a variety of activities that included whole group instruction, story book read alouds with both fiction and informational text, partner and small group skill work, guided small group skill instruction, and guided reading instruction with the teacher as well as independent student practice. It is important to note that all of these components and the skills involved in them help to develop a fluent reader who can independently comprehend text. Teacher-posed questions were recorded during each of the various presented activities.

The researcher viewed the video from which the orally posed questions were transcribed and coded. The posed questions were tallied as they occurred for frequency, cognitive level, and

function according to Hess' Cognitive Rigor Matrix Talley Sheets (Appendix H) and Functions of Questions defined by Costa, Hughes, and Lowery Talley Sheets (Appendix I).

Each teacher was also asked to complete a questionnaire, which helped in understanding the context for the use of questions in their literacy block. The questionnaire (Appendix J) was used to gather information concerning the teachers' planning and use of questions during the literacy block.

Videos were recorded on the researcher's iPad2 device and secured with password protection. The iPad2 device was only in the possession of the researcher and was stored in the researcher's locked office. Videos were transferred to the researcher's laptop computer, which is housed in her locked office and is also secured with password protection. The videos were eventually transferred to a flash drive or burned to a disc, depending on the file size. These permanent storage devices remain only in the possession of the researcher, the researcher's locked office, or in a locked storage container at the researcher's home.

Questionnaires were scanned and transferred to the researcher's laptop computer, which is housed in her locked office and is secured with password protection. Questionnaires were eventually transferred to a flash drive; the paper copies of the questionnaire were shredded. The flash drive remains only in the possession of the researcher, the researcher's locked office, or in a locked storage container at the researcher's home.

At the completion of the research study all flash drives or discs containing the video recordings and the scanned questionnaires were archived in a locked storage container at the researcher's home and all information stored on technology devices was permanently deleted.

Instrumentation

The primary method used to collect the frequency, levels, and functions of questions in the literacy block was the instructional video recording captured during each teacher's 90-minute presentation. The questions recorded during the video sessions were transcribed. Each transcribed question was analyzed using Hess' Cognitive Rigor Matrix (Hess et al., 2009), and the Question's Function based on the work of Costa (2001), Hughes (as cited in Fusco, 2012), and Lowery (as cited in Fusco, 2012). Student responses were coded, recorded, and analyzed based on the primary responses found in most classrooms. These were whole group response, more than one student response, single student response, teacher answers response, no response taken, and wait time of 3-5 seconds (Costa, 2001). The secondary method selected to collect how teachers' view the use of questions in their literacy block was gathered from the questionnaire each teacher completed concerning the planning and use of questions during the literacy block.

Validity and Reliability

Content validity was determined after IRB approval had been granted. Prior to approval, four teachers – one each from kindergarten, first grade, second grade, and third grade – who were not included in the study reviewed and answered the questionnaire. Based on their responses and comments, it was not necessary to revise the document. Prior to IRB approval, the researcher used use an iPad2 and recorded two teachers not included in the study. Only the researcher viewed the recordings and transcribed the teachers' orally posed questions that were recorded during those tapings. Once the questions were transcribed, both the researcher and a district wide curriculum supervisor coded the questions to assure that queries could be coded in a like manner by more than one person using Hess' Cognitive Rigor Matrix, which was the tool used to analyze the questions. The curriculum supervisor has clear, credible, trained knowledge

concerning curriculum and instruction and is well versed in the TEAM model rubric (Appendix A). The use of another coder to establish inter-rater reliability established triangulation whereby the researcher renders the use of multiple and various sources to require corroboration of evidence. The use of different coders established the process of corroborating the evidence of the transcribed questions according to the matrix and ensured validation should the study be replicated in the future (Creswell, 2003).

All transcribed questions were analyzed using Hess' Cognitive Rigor Matrix (Hess et al., 2009), and the Question's Function based on the work of Costa (2001), Hughes (as cited in Fusco, 2012), and Lowery (as cited in Fusco, 2012). Student responses were coded, recorded, and analyzed based on the primary responses found in most classrooms. These are whole group response, more than one student response, single student response, teacher answers response, no response taken, and wait time of 3-5 seconds (Costa, 2001). Because the data were studied using content analysis, reliability was expected because of the study's ability to be replicated.

Because content analysis necessitates a context within which the existing accessible behavior is studied, Krippendorff (2013) contends that content analysis is a technique that allows qualitative data to be authentically replicated as demonstrated by the examination of the recorded questions inside the context of Hess's Matrix and Costa's definitions. The Hess Matrix and Costa definitions provided the research's chosen contexts with a model that was explicit enough to allow the results of the analysis to be clear to others who may benefit from this research. The Hess Matrix and Costa definitions as the context are explicitly understood and are substantiated references for what is known about the use of questions in the classroom. Therefore, analyzing the questions using this model as the context for the study gave credence to the expectation it was reliable because of its ability to be replicated. If another researcher, at another time, under

different circumstances, applied the same techniques to the same phenomena, he or she should get similar results (Krippendorff, 2013).

Data Analysis

Descriptive statistics, which organize and summarize information about a collection of actual observations, were used to analyze the teacher responses collected from the questionnaire. The questionnaire concerned planning, knowledge, and current practice regarding questioning strategies and was used to describe how many and what types of questions were orally posed by teachers during a 90-minute literacy block. The frequency of responses was tallied and documented with the most frequent responses in the data sets. These frequencies were used to determine the most used options or behaviors regarding teacher posed questions during the literacy block.

Using content analysis and the context that was provided by Hess' Cognitive Rigor Matrix (Hess et al., 2009), and the Question's Function based on the work of Costa (2001), Hughes (as cited in Fusco, 2012), and Lowery (as cited in Fusco, 2012) and student responses taken from the work of Costa (2001), this study used descriptive explanations to define categories, labels, themes, and patterns. Descriptive accounts are defined by Merriam (1998) as data that "are compressed and linked together in a narrative that conveys the meaning the researcher has derived from studying the phenomena" (p. 178). Krippendorff (2013) determined that content analysis allows the researcher to derive specific inferences from a body of data based on the chosen context by completely encompassing the knowledge that the researcher relates to the given data by citing typical or representative examples in support of a general point.

Coding and Recording the Data

The teacher questionnaire consisted of one open-ended query on planning questions, one open-ended query on why questions are used by the teacher, and one open-ended query on professional development. It also included 18 statement questions indicating questioning practices. The teacher was asked to mark the statement with a "T" if she believed the statement described her knowledge base or current practice. The instructions were to leave the statement blank if she believed the statement did not describe her current practice or is not part of her knowledge base. The survey included Likert-type indicators regarding the levels of questions whereby the teacher selected often, sometimes, or rarely. The final survey question asked the teacher to generate a specific leveled question on her own. These questions were determined correct or incorrect based on the whether or not the posed question did or did not match the correct question cognitive level indicators.

Each 90-minute literacy block recording was viewed in its entirety and the questions posed by the teacher were transcribed. The questions were coded using Hess' Cognitive Rigor Matrix (Hess et al., 2009), and the Question's Function based on the work of Costa (2001), Hughes (as cited in Fusco, 2012), and Lowery (as cited in Fusco, 2012). Student responses were coded, recorded, and analyzed based on the primary responses found in most classrooms (whole group response, more than one student response, single student response, teacher answers response, no response taken, and wait time of 3-5 seconds) (Costa, 2001). All responses were tallied onto one of the tally sheets created by the researcher with the exception of the student responses, which were recorded on the transcribed question sheets using the codes of NRT (no response taken), WT (wait time), TA (teacher answered), SSR (single student response), MTO (multiple student response), and WG (whole group response) (Appendix K).

CHAPTER 4

RESULTS AND DATA ANALYSIS

This chapter provides insight into the questioning strategies used by early childhood teachers during a 90-minute literacy block. The study was designed to examine questioning strategies to determine how many questions are posed, the types of questions implemented, and the function the posed question is intended to serve during a typical literacy block. This study reflects the frequency of each question type (e.g., understand, apply, analyze) and the frequency of each question function (e.g., cueing, focus, probing) as well as how teachers allowed for student responses. Qualitative analysis of the collected data was explored in order to offer awareness of the kinds and purposes of questions teachers are currently posing to young students during the presentation of literacy instruction.

Teacher Participant Data

This study was conducted by observing 12 female early childhood teachers from a Northeast Tennessee County School District. There were no male teachers referred by principals for this study. The county has 10 elementary schools and two K-8 schools. The 12 participants were taken from eight of the 10 elementary schools and both K-8 schools. Eight schools provided one teacher each and two schools (KETN and RKSP) provided two teachers each for the study. This occurred for two reasons: BLTV could not provide a teacher who agreed to participate and MP was not included because the researcher serves this school as the principal. All 12 participants were regarded by the schools' principals as meeting the teacher overall evaluation rubric score of 3 (at expectations), 4 (above expectations), or 5 (significantly above expectations) in regard to instruction. The randomly stratified sample of 12 female participants consisted of three kindergarten teachers, three first grade teachers, three second grade teachers,

and three third grade teachers. The teachers in the sample represented a range of educational degrees and years of experience as shown in Table 3.

Table 3

Degrees and Years of Experience for Teachers in Sample

Teacher	Highest Degree	Years of Experience
Kindergarten 1	B.S.	11
Kindergarten 2	Masters	6
Kindergarten 3	B.S.	3
First Grade 1	Masters	8
First Grade 2	B.S.	30
First Grade 3	Ed.D.	11
Second Grade 1	Ed.S.	8
Second Grade 2	Masters	8
Second Grade 3	Masters	15
Third Grade 1	Masters	2
Third Grade 2	Masters	6
Third Grade 3	Masters	8

To gain insight into the knowledge base of the participants regarding effective questioning, the 12 teachers in the study were asked if they had ever participated in a professional development session centered on the topic of effective questioning. Of the 12 teachers, 7 said they had participated in staff development and 5 said they had never participated in any professional development session on effective questioning or questioning strategies.

Teacher Survey

A teacher survey was given to the 12 participants in the study to shed light on what the teachers currently believed they knew, understood, and demonstrated during their literacy blocks regarding questioning. This data offered insight into the correlation between what teachers know and believe they do in their lessons in regard to questioning strategies and what actually occurred during the recorded observations.

Teachers were asked to explain how they planned for questions in the literacy block. Seven teachers in the study indicated that they read through the texts that were going to be presented to the students before the lesson and created questions based on the student reading material. Two teachers indicated they also use the questions provided by the teacher's edition or guide that accompanied the basal reading series as a resource to select questions to present. Three teachers reported that they also considered the skill or the lesson topic in order to create questions they would pose. Four teachers specified that they generally let questions emerge during the lesson based on the students' engagement with the text. Only one teacher indicated that she used resources beyond the basal or presented text or those that flowed while the lesson was in progress. Kindergarten Teacher 1 indicated that she planned her questions around the Common Core Standards and Webb's Depth of Knowledge, naming these documents specifically on her questionnaire.

When teachers were asked to explain why they used questioning strategies in the literacy block, two primary themes emerged from the teachers' questionnaire responses. First, these teachers believed they asked students questions in order to encourage inquiry resulting in their students being able to challenge their own ideas or deepen critical thinking. Second, they asked

the students questions so the students could increase and master understanding and comprehension of presented skills and texts.

The teachers were asked to identify some statements that would reflect their current knowledge base or practices (Table 4). The majority of the teachers indicated on the survey that they were familiar with Bloom's Taxonomy and Webb's Depth of Knowledge. Eleven of the 12 stated they knew and considered Bloom's Taxonomy when preparing or asking questions and 9 of the 12 stated they knew and considered Webb's Depth of Knowledge when they planned or posed questions. Eleven teachers stated they planned questions in advance but those 11 also stated they did not feel bound to use all the questions they planned for a lesson. While 11 of the 12 teachers documented they planned for questions, 10 teachers also indicated that questions can be naturally presented as the lesson progresses.

Table 4

Teacher Survey Results

Survey Question	YES	NO
I know about Bloom's Taxonomy and I consider it when asking questions.	11	1
I know about Webb's DOK and I consider it when asking questions.	9	3
Most of the questions I ask relate to the focus of my lesson.	12	0
I plan for questions in advance of the lesson.	11	1
I do not plan for questions in advance of the lesson.	2	10
I just let questions naturally flow during the lesson.	10	2
I am flexible with the questions I plan.	10	2
I do not have to use all the questions I plan.	11	1
I use the questions exactly the way I plan for them.	1	11

Table 4 (continued)

Survey Question	YES	NO
Do you post your planned questions, refer to them, or write them down for reference?	9	3
I provide wait time after questions.	12	0
I think the amount of wait time I give after asking a question is sufficient.	9	3
I am not conscious of the amount of wait time I give to most questions.	2	10
I follow up questions with related questions.	12	0
I repeat questions to various students to get diverse answers or opinions.	12	0
I use student-generated answers to guide future instructional plans.	10	2
After the lesson, I evaluate the success of the questions I asked.	10	2
I allow for multiple responses to my questions.	11	1

All of the teachers in the sample recorded that the majority of the questions they posed related to the focus of the lesson. They also indicated they used related follow-up questions and repeated questions to get diverse answers and opinions from the various students. Eleven teachers answered that they allowed for multiple student responses, which indicates that single student responses would most likely be minimal, which was not the case as reflected by the data. All 12 teachers indicated that they believe they are providing wait time with 9 of the 12 stating the wait time she provided was adequate even though 10 of the 12 reported they were not always conscious of the amount of wait time given to student responses.

Teachers were also asked to rate how often they believed they posed various cognitive level questions during the 90-minute literacy block (Table 5). Ten of the 12 teachers stated they believed they posed knowledge and remember questions often. Eleven of the 12 teachers reported they delivered comprehension or understand questions often to their students. Six

teachers believed they often asked application questions and 6 teachers reported that they sometimes ask questions that call for students to apply knowledge to a task or procedure. Nine of the 12 teachers reported that they sometimes ask questions that call for students to create or evaluate and 3 teachers said they rarely pose higher-level questions to their students. The questionnaire recordings support the findings of this study because the 12 teachers posed knowledge or remember and comprehension or understand cognitive level questions more than all the others combined.

Table 5

What Teachers Say Currently Occurs During the 90-minute Literacy Block

Frequency Cognitive Type Posed Question	Number of Teachers Indicated		
	Often	Sometimes	Rarely
Knowledge or Remember	10	2	0
Comprehension or Understand	11	1	0
Application	6	6	0
Synthesis or Create	2	10	0
Evaluation	6	5	1

The final portion of the teacher questionnaire asked for the teachers to generate a question on their own that would meet the definition of Bloom's Taxonomy for Knowledge or Remember, Comprehension or Understand, Application or Applying, Analysis or Analyzing, Synthesis or Evaluate, and Evaluation or Creating. Both the original Bloom's terms and the revised Bloom's terms were listed on the questionnaire because the teachers may have been familiar with only one set of labels in Bloom's hierarchy. Questions were generated that met the cognitive level definition according to Bloom's Taxonomy for each category but none of the

teachers were able to generate a question for each level correctly. All 12 teachers were able to produce a knowledge or remember level question; 11 of the 12 teachers were able to construct a comprehension or understand question. The most difficult questions for the teachers to generate appeared to be analyzing, evaluation, and create cognitive level questions (Appendix L).

Teacher Questioning: Observed Literacy Blocks

In order to report the data accurately and interpret the data from the observations used in this study, the research questions were answered using the following reporting format. First, a definition of the specific inquiry was given so that the relationship of the question and data points were clear, followed by the frequency in which the inquiry occurred. Finally, examples of the recorded inquiries were presented. This reflected the overall picture of what occurred in the classrooms in regard to typical behavior and use of questioning strategies in an early childhood classroom 90-minute literacy block. It is important to note that the question examples were selected because they were able to demonstrate the type or function clearly when read alone as printed and it was not necessary to understand the context of the lesson in which the question was posed. It also should be noted that the frequency of questions is not represented in the examples. For instance, Kindergarten Teacher 1's frequency of clarification, or Hughes questions, was six, but only two of the six questions were recorded as examples. "What do you think?" and "What do you think about all these cars?" These were recorded as the best representative examples because the other four recorded questions were "what do you think?" four consecutive times on the tally sheet.

Research Question 1

During the 90-minute literacy block, how many questions are orally posed by the teacher based on Hess' Cognitive Rigor Matrix (Hess et al., 2009), and the Question's Function based on the work of Costa (2001), Hughes (as cited in Fusco, 2012), and Lowery (as cited in Fusco, 2012)?

The 12 teachers in this study were well aware they were being observed in order to document their orally posed questions. Historically, research indicates that the number of questions teachers pose to students in a given day is large. Parker and Hurry (2007) stated that as much as 70% of teacher behavior is exhibited in the form of asking questions. Therefore, it should be noted that in regard to this study the number of recorded questions posed by the observed teachers could be inflated due to the teachers' self-imposing need to demonstrate questioning strategies. The total number of questions presented and recorded in the twelve 90-minute observations regardless of cognitive level or function was 2,497.

Accordingly, the number of orally posed questions was high for all 12 teacher observations in this study. While Levin and Long (1981) found that the teachers in their study posed between 300-400 questions each day, almost all of the teachers in this study posed nearly half that number within the 90-minute literacy block. The number of questions posed regardless of their cognitive level or function ranged from 100 to 285 during the 90-minute literacy block. This created a mean range of 1.11 to 3.16 questions posed each minute (Table 6).

Table 6

Total Number of All Posed Questions During the 90-Minute Literacy Block

Teacher	Total Number Posed	Average Number Posed Per Minute
Kindergarten 1 (K1)	285	3.16
Kindergarten 2 (K2)	241	2.67
Kindergarten 3 (K3)	242	2.68
First Grade 1 (F1)	256	2.84
First Grade 2 (F2)	262	2.91
First Grade 3 (F3)	161	1.78
Second Grade 1 (S1)	205	2.27
Second Grade 2 (S2)	169	1.87
Second Grade 3 (S3)	143	1.58
Third Grade 1 (T1)	100	1.11
Third Grade 2 (T2)	223	2.47
Third Grade 3 (T3)	210	2.33

From the total number of documented posed questions, examination can determine what types of questions are posed, including those that fall outside the realm of purporting cognitive rigor. These include procedural, behavioral, agreement, and rhetorical questions. These types of questions are not designed to increase engaged thinking. Three of these were consistently found during the literacy blocks (Table 7).

Table 7

Non-Cognitive Questions Posed During the 90-Minute Literacy Block

Function Type	Number Recorded by Teachers in											
	Kindergarten			First Grade			Second Grade			Third Grade		
	K1	K2	K3	F1	F2	F3	S1	S2	S3	T1	T2	T3
Procedural	28	8	10	47	6	37	13	36	20	20	2	31
Behavioral	3	6	13	9	18	5	1	3	3	9	9	0
Agreement	18	16	8	9	14	2	22	13	8	2	12	4
Rhetorical	0	0	0	0	0	0	0	0	0	0	0	0

Procedural Questions

Procedural questions were noted in every classroom with the highest number being 47 recorded in the classroom of First Grade Teacher 1 (F1) and the lowest recording being two, which occurred in the classroom of Third Grade Teacher 2 (T2). Procedural questions are defined as those asked to manage the class and not the lesson (Costa, 2001; Lowery, as cited in Fusco, 2012). The following are examples of documented procedural questions.

Kindergarten Teacher 1 (K1): Can you please put the crates back?

Kindergarten Teacher 2 (K2): What did I tell you to say?

Kindergarten Teacher 3 (K3): What do we do during work time, friends?

First Grade Teacher 1 (F1): Will you give everyone a board?

First Grade Teacher 2 (F2): Would you read page 28 for us?

First Grade Teacher 3 (F3): Which one did you roll?

Second Grade Teacher 1 (S1): Whose turn is it to read?

Second Grade Teacher 2 (S2): Did you all get your paper numbered?

Second Grade Teacher 3 (S3): What are we going to write on this side?

Third Grade Teacher 1 (T1): Should we highlight the whole thing?

Third Grade Teacher 2 (T2): Do you see what I am saying?

Third Grade Teacher 3 (T3): Can you speak for your group?

Behavioral Questions

Behavioral questions were noted in 11 of the 12 classrooms with the largest recording being noted in the classroom of First Grade Teacher 2 (F2). She posed 18 behavioral questions to her students. Third Grade Teacher 3 (T3) did not pose any behavioral questions to the students. Behavioral questions are those posed in order to control students' actions and often result in the student(s) being defensive or resistant (Costa, 2001; Lowery, as cited in Fusco, 2012).

Kindergarten Teacher 1 (K1): Can you look at me please?

Kindergarten Teacher 2 (K2): Why are you coloring when you are not finished?

Kindergarten Teacher 3 (K3): Did you eat talking jellybeans for breakfast?

First Grade Teacher 1 (F1): Are you listening to me?

First Grade Teacher 2 (F2): Are you under control this morning?

First Grade Teacher 3 (F3): Are you doing what you are supposed to be doing?

Second Grade Teacher 1 (S1): What were you going to say?

Second Grade Teacher 2 (S2): Are you sure?

Second Grade Teacher 3 (S3): Can you repeat what I just said?

Third Grade Teacher 1 (T1): Does that mean share your answers with her?

Third Grade Teacher 2 (T2): Who can hear when everybody talks?

Agreement Questions

Agreement questions were noted in every classroom. These questions ranged from the highest score of 22 to the lowest score of 2. The 22 agreement questions were cited in Second Grade Teacher 1's (S1) classroom. The lowest number of posed agreement questions in a 90-minute block was two. First Grade Teacher 3 (F3) and Third Grade Teacher 1 (T1) each posed two agreement questions to the class. Agreement questions are those posed by the teacher to summon the students to agree with the answer given by the teacher inside the question (Costa, 2001).

Kindergarten Teacher 1 (K1): A scooter has two wheels, right?

Kindergarten Teacher 2 (K2): All of these are verbs, right?

Kindergarten Teacher 3 (K3): It is hard on the outside and squishy on the inside, right?

First Grade Teacher 1 (F1): This goes CVC, right?

First Grade Teacher 2 (F2): He has given them spots, right?

First Grade Teacher 3 (F3): We would make cupcakes in the kitchen, right?

Second Grade Teacher 1 (S1): He (the author) is informing us, right?

Second Grade Teacher 2 (S2): We never stop learning, right?

Second Grade Teacher 3 (S3): There is a big part missing, right?

Third Grade Teacher 1 (T1): That's an opinion, right?

Third Grade Teacher 2 (T2): We just know it is a trickster tale, right?

Third Grade Teacher 3 (T3): This is a processed food, right?

Each teacher presented a classic example of an agreement question where the final word spoken is "right." There are other ways to generate agreement when posing questions. Some examples recorded included:

- This is another word for example, isn't it?
- We would think of happiness, wouldn't we?
- I don't hear the /t/, do I?
- So, he is the hunter, is that correct?
- That says Monday, doesn't it?
- Treasures are very special, aren't they?

Rhetorical Questions

Rhetorical questions (e.g., "Is the sky blue?" or "Who is buried in Grant's tomb?") whereby the answer to the posed question is present in the question itself and usually no answer is expected were not documented in this study. The 12 participants did not exhibit any examples of rhetorical questions that met the above criteria as defined by Costa (2001) and Lowery (as cited in Fusco, 2012).

Conclusion

The 12 teachers posed a total of 2,497 questions; there were 465 posed questions that did not have a cognitive level attached to them. Once the 465 questions that were not intended to increase student thinking were gleaned from the data, the number of questions intended to increase student engagement were examined in frequency. The teachers posed 2,032 questions that were considered to be cognitively rigorous based on the work of Costa (2001). Regarding the 2,032 questions, teachers predominately asked questions that focused on remembering and understanding; all 12 teachers posed the majority of their questions in these two domains.

Of the 2,032 cognitive leveled questions posed, 1,984 of them were questions whereby the teacher's expectation was for students to remember or understand. Only 2.36% of the posed

questions fell beyond these first two levels on the Cognitive Rigor Matrix (Hess et al., 2009). This seems to support that teachers may not really be clear as to the true purpose of the level of a posed question. However, these data corroborate the data collected on the teacher questionnaire where all of the teachers stated they believed they often posed these types of questions to students. The disproportionate number of questions posed by cognitive types is clearly shown in Table 7.

The teachers in this study consistently called on students to retrieve relevant knowledge from long-term memory by recognition and recall or asked them to determine basic instructional messages by interpreting, classifying, or summarizing in order to demonstrate basic concept understanding. Some of the questions represented in the two cognitive levels recorded include:

- What are characters?
- Can you sound it out?
- What does foolish mean?
- What was the word?
- What do you call people who cannot see?
- What happens next?
- What on your body helps you taste things?
- What are crops?
- How are school buildings different?
- What helps the trombone play different notes?

Research Question 2

During the 90-minute literacy block, what are the cognitive levels of the questions orally posed by the teacher based on Hess' Cognitive Rigor Matrix (Hess et al., 2009)?

Cognitive Types and Placement on the Matrix

Each recorded question was analyzed using the matrix. Consideration was given to the definition as defined by Bloom's categories remember, understand, apply, analyze, evaluate, or create. Careful consideration was then given to the DOK levels 1-4 as defined on Hess's Matrix. After this consideration, the question was placed on the Matrix Talley Sheets (Appendix I). Placing a question on the matrix tally sheet without careful consideration to both components of the Matrix could have supported a weighted picture of the cognitive types of questions posed.

Almost every teacher posed the question, "What do you think?" This question written here, standing alone, out of context could be considered as analyzing or evaluating and could cause one to make the assumption that the question is asking students to expand their thinking by determining how parts relate, make a judgment, or generate a hypothesis. But when looked at closely using both components of the matrix, the context in which the question was posed as well as the expected answer accepted, for this study almost each time this asked question was determined to be a basic "what question," which would categorize it as an understanding question on Hess's Matrix. The teachers in this study did not ask this particular question in order to glean children's ideas outside the expected answer. The question was consistently posed with the expectation that the question and its answer were to remain congruently aligned with the task at hand, which was primarily constructing meaning, understanding, or clarifying an already anticipated given answer or precept.

Cognitive Types Observed in the Literacy Blocks

The cognitive levels of posed questions predominately fell onto the first two levels of Hess' Cognitive Rigor Matrix (Hess et al., 2009). The Matrix is designed to incorporate both Bloom's Taxonomy and Webb's Depth of Knowledge into one template in order to evaluate the cognitive purpose and rigor of the posed question. The Matrix first lets us see the organizational structure of Bloom's Taxonomy (Anderson & Krathwohl, 2001; Bloom, 1956) making it clear that the foundational lower order thinking skills, which are critical to learning, are a prerequisite to the higher order thinking skills that advance the taxonomy hierarchy and indicate the moving of students beyond simple recall. Webb's Depth of Knowledge (2002) takes the work of Bloom (1956) and expands it into student tasks that are also aligned somewhat hierarchical. The Matrix aligns Webb's and Bloom's work so that the verbs associated with each imply their complexity.

Using the Matrix, the posed questions can be gauged for their strength and rigor. Therefore, it is evident from these data that the strength and rigor of the majority of the teacher posed questions in this study fell primarily into the cognitive types of remember and understand (Table 8) with 97.63% found at the lowest two levels of strength and rigor.

Table 8

Cognitive Types of Questions Posed

Cognitive Type	Number Recorded by Teachers in											
	Kindergarten			First Grade			Second Grade			Third Grade		
	K1	K2	K3	F1	F2	F3	S1	S2	S3	T1	T2	T3
R/DOK1	180	127	169	163	117	29	72	52	36	23	66	48
U/DOK1	42	39	24	28	69	77	36	37	58	18	64	60
U/DOK2	6	30	16	0	29	6	24	20	11	14	33	40

Table 8 (continued)

Cognitive Type	Number Recorded by Teachers in											
	Kindergarten			First Grade			Second Grade			Third Grade		
	K1	K2	K3	F1	F2	F3	S1	S2	S3	T1	T2	T3
U/DOK3	8	11	0	0	5	0	23	0	6	8	21	15
U/DOK4	0	0	0	0	4	0	10	7	0	0	0	3
AY/DOK1	0	0	0	0	0	0	0	0	0	0	13	0
AY/DOK2	0	1	0	0	0	0	1	0	0	1	1	0
AY/DOK3	0	0	0	0	0	0	0	0	0	1	0	0
AY/DOK4	0	0	0	0	0	0	0	0	0	0	0	0
AZ/DOK1	0	0	0	0	0	0	0	0	0	0	0	0
AZ/DOK2	0	0	0	0	0	0	0	1	0	2	0	0
AZ/DOK3	0	0	0	0	0	0	0	0	0	0	0	0
AZ/DOK4	0	0	0	0	0	0	0	0	0	0	0	0
E/DOK3	0	3	2	0	0	5	3	0	1	2	2	9
E/DOK4	0	0	0	0	0	0	0	0	0	0	0	0
C/DOK1	0	0	0	0	0	0	0	0	0	0	0	0
C/DOK2	0	0	0	0	0	0	0	0	0	0	0	0
C/DOK3	0	0	0	0	0	0	0	0	0	0	0	0
C/DOK4	0	0	0	0	0	0	0	0	0	0	0	0

Remember and Depth of Knowledge Level 1 (R/DOK1)

R/DOK1 questions are designed in order for children to be able to retrieve knowledge from long-term memory or glean information from the material that is immediately present. Students are asked to recognize, recall, locate, or identify. They are asked to find basic facts in texts, read words orally with fluency and accuracy, or define terms.

Remember questions are the only question type to manifest into only one level of DOK. R/DOK1 questions were asked and recorded in the study more than any other type of question. All 12 teachers asked numerous R/DOK1 questions. In 11 of the 12 teacher's literacy blocks, R/DOK1 questions were the most frequent type of question asked. The total number of R/DOK1 questions posed was 1,082. The highest number of R/DOK1 questions recorded in a 90-minute literacy block was 180. Kindergarten Teacher 1 (K1) posed these questions. The lowest number of R/DOK1 questions recorded in a 90-minute literacy block was 23. Third Grade Teacher 1 (T1) posed these queries.

Kindergarten Teacher 1 (K1): What year is this? Is this a school bus? What is pushing something? What are these vehicles called? What do wheels do all day? What is this word? What sound goes with the letter "a"?

Kindergarten Teacher 2 (K2): What is our new sight word? Who can name all five senses? Which season do we have a lot of snow? If it is not a vowel, what is it?

Kindergarten Teacher 3 (K3): What is the ending sound? What does the letter "h" say? What is an adjective? What part of speech is the word *playing*? When do we use an exclamation mark? How does a spider move?

First Grade Teacher 1 (F1): What blended with the /r/ in the word frog? What is a stem? What does the word *after* mean? What does it mean to rhyme? Is a biography about a real person or a fake person?

First Grade Teacher 2 (F2): Can you tell me one fact you learned? Can you change *it* [the verb] to a present tense now? Is he an omnivore, a carnivore, or an herbivore? Is that a blend sound? Are homophones spelled the same?

First Grade Teacher 3 (F3): Can you find it in our story? Are they boys or girls? Can you sound out the word *horse*? Was the author and the illustrator the same in the story? What was the dog's name? What does *give* mean?

Second Grade Teacher 1 (S1): What does kindergarten mean in German? What are those raised dots called? How long is an untwisted trombone? What is the name of our community? Where did the girls learn? Where did the Olympic Games start?

Second Grade Teacher 2 (S2): What does *melody* mean? What does *lyrics* mean? What would you put [punctuation] before the word *but*? What do we call these types of words? What is the word?

Second Grade Teacher 3 (S3): What does it mean to be annoyed? Can you re-tell what happened on this page? What does it look like? What does the word *demand* mean?

Third Grade Teacher 1 (T1): What is a fracture? Do cats live longer than dogs? Do cats like water? What should we determine *feline* means? What told me in the sentence it was a cat?

Third Grade Teacher 2 (T2): In the book, it gave specific examples, do you remember? What is a *flavorist*? What are some new flavors? What percentage of our diet is processed food? What are the ingredients? Do you remember the word for getting way to heavy?

Third Grade Teacher 3 (T3): What does an apostrophe mean? What is *agriculture*? Is it a big family or a little family? What are *crops*? What does *pluck* mean?

Understand and Depth of Knowledge Levels 1-4 (U/DOK)

U/DOK level questions are designed for children to be able to construct meaning, clarify, paraphrase, represent, translate, illustrate, give examples, classify, categorize, summarize, generalize, infer, predict, compare and contrast, match like ideas, or explain. Understand level questions are categorized into four DOK levels whereby the rigor of posed questions increases with its connection to the hierarchical level and the type of task or expected answer. The total number of U/DOK level 1-4 questions posed was 902.

Understand and Depth of Knowledge Level 1 (U/DOK1)

In U/DOK1 questions, students are being asked to identify or describe literary elements such as characters, setting, and sequence, select appropriate words by meaning or definition into the task, or answer even though the definition is clearly evident or present in the text. Consistently, students will be asked to answer the basic questions of who, what, when, where, and how. Students are still being asked to recall and reproduce.

The total number of U/DOK1 questions posed was 552. U/DOK1 questions were the second most posed type of question recorded in the study. Of the U/DOK level questions, U/DOK1 questions were the most commonly posed within the four DOK levels. U/DOK1 questions are categorized as being lower in rigor as related to U/DOK levels 2-4. These types of questions are still promoting children to perform in the realm of basic recall and reproduction.

The highest number of U/DOK1 questions recorded in a 90-minute literacy block was 77; First Grade Teacher 3 (F3) posed these questions. The lowest number of U/DOK1 questions recorded in a 90-minute literacy block was 18; Third Grade Teacher 1 (T1) presented these questions.

Kindergarten Teacher 1 (K1): What wheel in our graphic would help us play? Can you point to the title of the book? What do you think the text of our story will be?

Kindergarten Teacher 2 (K2): What is a *character*? What problem did the character in our story have? What does a table of contents do?

Kindergarten Teacher 3 (K3): What color word describes the crocodile? What part of the book is this? Who writes the words? Who draws the pictures?

First Grade Teacher 1 (F1): What makes a poem or story funny? Are these normal or silly characters? What does it mean, "*It was a big hit*"? When did he [Dr. Seuss] write it?

First Grade Teacher 2 (F2): Who else was in the story? What was the unfortunate event that started it all [in the story]? How is this story like the *How the Leopard Got His Spots* story?

First Grade Teacher 3 (F3): What does Fritz make next? Where is Fritz in the middle of our story? How else did Fritz feel? Where did the story take place? Where did the story happen?

Second Grade Teacher 1 (S1): Can you tell how the illustrations fit the title? What do the children do? Who do you think that is in the big chair [in the illustration]? How did you know it was an alphabet?

Second Grade Teacher 2 (S2): What would make practice hard fun? What does color have to do with concentration? What do we know about them [the characters]?

Second Grade Teacher 3 (S3): The setting for the story is what? What did Farmer Brown decide? What was the duck's request? Who are the main characters? What kinds of illustrations are used in *Click, Clack, Cow, Moo*?

Third Grade Teacher 1 (T1): Who ultimately owns the animal? Who thinks a thesis would be long? What does the article say about nine lives? How do you know it is the next paragraph?

Third Grade Teacher 2 (T2): How do flavorists work their magic? What did they use to make their flavors? What makes a food processed or natural?

Third Grade Teacher 3 (T3): What happens first in the story? Is this going to be informational text? What is the rabbit's problem? What does it mean if I talk about the theme of a story?

Understand and Depth of Knowledge Level 2 (U/DOK2)

U/DOK2 questions require students to offer answers that explain why, show relationships, determine cause and effect, provide examples, infer, predict, give main idea, and locate information to support an idea. U/DOK2 questions call for students to demonstrate skills and concepts.

The total number of U/DOK2 questions was 229. The highest number of U/DOK2 questions recorded in a 90-minute literacy block was 40; Third Grade Teacher 3 (T3) posed these questions. The lowest number of U/DOK2 questions recorded in a 90-minute literacy block was zero; First Grade Teacher 1 (F1) did not pose any U/DOK2 questions.

Kindergarten Teacher 1 (K1): Why do people use wheels? Why is it work? Why is it faster to ride?

Kindergarten Teacher 2 (K2): Tell me how she is different from us? What is your prediction? How did Amelia feel when she went to school and figured out her show and tell was different?

Kindergarten Teacher 3 (K3): They look alike to me, what is different? Why does it not say the word *alligator*? Why do we say *slide*?

First Grade Teacher 2 (F2): Why not? What are two ways we use the word *ate* or *eight*? Why do you suppose he was lonely? Why did he fly around the world?

First Grade Teacher 3 (F3): Where do you think Fritz' home is? Why is he happy? What evidence shows us he is in the kitchen?

Second Grade Teacher 1 (S1): Why might some children wear warmer clothes than other children? In Athens, do you think they help each other in that community? Why did you say that?

Second Grade Teacher 2 (S2): Why would an author write a book that would give people information? Why does the author choose to compare music to color? Why do you think he [the author] chose to tell us that music is hard fun?

Second Grade Teacher 3 (S3): Why do you think he is snoring? Why do you think it is not a good idea? What do these two words have in common?

Third Grade Teacher 1 (T1): What is your main argument? What are they inferring? If we are talking about cats versus dogs, what could that mean?

Third Grade Teacher 2 (T2): Why could it be the company's fault? Why would a flavorist potentially make a lot of money? Why are we eating more processed food now than when Ms. Third Grade Teacher 2 was little?

Third Grade Teacher 3 (T3): Do you think Peggy would feel the same about the window being broken as Ms. Allen did? What is the difference between bear and his daddy? Are we looking for what the story is mostly about?

Understand and Depth of Knowledge Level 3 (U/DOK3)

U/DOK3 questions ask students to explain, quote, or connect ideas using supporting evidence that is present. Students should be pondering how word choice, point of view, or bias may affect the interpretation of the text. Students are being asked to strategically think and reason.

The total number of U/DOK3 questions was 97. The highest number of U/DOK3 questions recorded in a 90-minute literacy block was 23; Second Grade Teacher 1 (S1) posed these questions. The lowest number of U/DOK3 questions recorded in a 90-minute literacy block was zero; Kindergarten Teacher 3 (K3), First Grade Teacher 1 (F1), First Grade Teacher 3 (F3), and Second Grade Teacher 2 (S2) did not proffer any U/DOK3 questions.

Kindergarten Teacher 1 (K1): What do you think? Did you make any conclusions about your drawing?

Kindergarten Teacher 2 (K2): Can you guess what this story is going to be about? What could that possibly tell you about [the character] Amelia?

First Grade Teacher 2 (F2): If you could take one lesson from this story, what would it be? If the turtle was in the bush and he could not get out, what would the possible consequences be?

Second Grade Teacher 1 (S1): How are schools different? Can you relate our school to any of this [text in the story]? Look at pages 445-447; what are some things children do at school?

Second Grade Teacher 3 (S3): Who notices anything different about these animals in this story and in the story we just read? Is that a good idea or a bad idea?

Third Grade Teacher 1 (T1): How do those two things tie together? Which one do you think the directors of the movie were trying to show was smarter?

Third Grade Teacher 2 (T2): What lessons have we learned from reading this article? What can you tell about the job of a flavorist just by looking at this text feature, the picture? What changes have happened that cause moms today not to cook the snacks we eat?

Third Grade Teacher 3 (T3): From my point of view, who should have been the winner? From Student X's point of view, who should have been the winner? What is Bear's point of view? Do you think the author's word choice could send us a message? Can you give two words in the text that show us Bear is mad?

Understand and Depth of Knowledge Level 4 (U/DOK4)

U/DOK4 questions are posed with the expectation that students will be asked to explain how a concept or idea relates together. Students should demonstrate in their answer how generalized results might apply to a new situation; students are required to extend their thinking.

The total number of U/DOK4 questions was 24. The highest number of U/DOK4 questions recorded in a 90-minute literacy block was 10; Second Grade Teacher 1 (S1) posed these questions. The lowest number of U/DOK4 questions recorded in a 90-minute literacy block was zero; Kindergarten Teacher 1 (K1), Kindergarten Teacher 2 (K2), Kindergarten Teacher 3 (K3), First Grade Teacher 1 (F1), First Grade Teacher 3 (F3), Second Grade Teacher 3 (S3), Third Grade Teacher 1 (T1), and Third Grade Teacher 2 (T2) offered no U/DOK4 questions to their students.

First Grade Teacher 2 (F2): What do you think the moral of the story is?

Second Grade Teacher 1 (S1): How is that like today?

Second Grade Teacher 2 (S2): What colors make you think of happiness?

Third Grade Teacher 3 (T3): What can you relate to on this page?

Apply and Depth of Knowledge Levels 1-4 (AY/DOK)

AY/DOK level questions are designed so that students may carry out or use a procedure in a given situation. In particular, students should be applying a familiar task to an unfamiliar task. Apply level questions are categorized into four DOK levels whereby the rigor of the posed question increases with its connection to each type of task or expected answer. The total number of AY/DOK level 1-4 questions was 18.

Apply and Depth of Knowledge Level 1 (AY/DOK1)

AY/DOK1 questions require that students use language structures such as prefixes and suffixes or word relationships such as synonyms and antonyms to determine the meanings of words. These types of questions call for students to recall and reproduce information.

The total number of AY/DOK1 questions was 13; all of these questions were recorded in Third Grade Teacher 2's (T2) observation. This teacher was specifically working with the students to determine the language structure of homophones and moved beyond just identifying them as homophones by asking questions that called for the students to apply the words into their own sentences.

Third Grade Teacher 2 (T2): How can you tell the difference between word number five (*road*) and word number six (*rode*)? How are you going to tell which one I want you to use? What is the difference between *hour* and *our*? What would be a good clue to remember that word?

Apply and Depth of Knowledge Level 2 (AY/DOK2)

AY/DOK2 questions ask students to identify the meaning of word phrases and obtain or interpret information using text features. Again, remember these questions are different from understanding level questions in that students are being asked to apply the meanings rather than just identify, recall, or reproduce words. AY/DOK2 questions require students to apply skills and concepts.

The total number of AY/DOK2 questions was four. Kindergarten Teacher 2 (K2), Second Grade Teacher 1 (S1), Third Grade Teacher 1 (T1), and Third Grade Teacher 2 (T2) each posed one AY/DOK2 question to their students.

Kindergarten Teacher 2 (K2): How can I learn about the characters in my story?

Second Grade Teacher 1 (S1): How do you know this story occurred long ago?

Third Grade Teacher 1 (T1): What did the article tell us that gave us clues as to why cats have nine lives?

Third Grade Teacher 2 (T2): How do we apply the lesson of this story to our classroom?

Apply and Depth of Knowledge Level 3 (AY/DOK3)

AY/DOK3 questions necessitate that students apply the concept in a new context. This would allow the students the opportunity to strategically think and reason with the concept inside another framework. The total number of AY/DOK3 questions was one; Third Grade Teacher 1 (T1) posed the only recorded AY/DOK3 question.

Third Grade Teacher 1 (T1): When we dig down into text evidence, how can we find information to support our argument?

Apply and Depth of Knowledge Level 4 (AY/DOK4)

AY/DOK4 questions ask that students illustrate or demonstrate how multiple themes may be interrelated. This would require students to take subject focused issues found in areas such as history, geography, or society and correlate or connect them together. These questions are calling on students to extend their thinking. There were no recorded AY/DOK4 questions in the 12 observations made for this study.

Analyze and Depth of Knowledge Levels 1-4 (AZ/DOK)

AZ/DOK level questions are posed in order to get students to break content into constituent parts or determine how parts relate to one another. Students are asked to differentiate between what is relevant and irrelevant and should be able to focus, select, organize, or outline. Analyze level questions are categorized into four DOK levels whereby the rigor of posed question increases with its connection to each type of task or expected answer. The total number of AY/DOK level 1-4 questions was three.

Analyze and Depth of Knowledge Level 1 (AZ/DOK1)

AZ/DOK1 questions seek to have students identify specific information on graphic representations such as maps, charts, tables, and diagrams or specific text features such as headings and subheadings. DOK level 1 analyzing questions are posed so that students may recall and reproduce information. There were no recorded AZ/DOK1 questions in the 12 observations made for this study.

Analyze and Depth of Knowledge Level 2 (AZ/DOK2)

AZ/DOK2 questions ask students to categorize and compare literary elements and be able to identify and use such structures as signal words, transitions words, or different texts. Students are asked to identify or analyze relevant and irrelevant information, facts, and opinions. AZ/DOK2 questions allow students a chance to demonstrate skills and concepts.

There were three recorded AZ/DOK2 questions. However, they were very brief in their formation and presentation. In all three questions recorded, the teacher phrased or rephrased a statement and then asked if the statement was fact or opinion. While the intent of the question met the AZ/DOK2 level, the closed function of the question limited its power. Second Grade Teacher 2 (S2) posed one of these questions and Third Grade Teacher 1 (T1) posed two.

Second Grade Teacher 2 (S2): The author said music is hard fun. Is that a fact or opinion?

Third Grade Teacher 1 (T1): Dogs are better than cats. Is that a fact or opinion? Is it your opinion?

Analyze and Depth of Knowledge Level 3 (AZ/DOK3)

AZ/DOK3 questions are proffered in order to get students to analyze information within data sets or texts. They should allow students the opportunity to analyze interrelationships among concepts or problems and make a critique of a text. AZ/DOK3 questions give students an opportunity to strategically think and reason. There were no recorded AZ/DOK3 questions in the 12 observations made for this study.

Analyze and Depth of Knowledge Level 4 (AZ/DOK4)

AZ/DOK4 questions are extended to students so that they may analyze multiple sources or multiple works by the same author, across genres, time periods, or themes. Students should

gather, analyze, and organize multiple information sources. AZ/DOK4 questions help students extend their thinking. There were no recorded AZ/DOK4 questions in the 12 observations made for this study.

Evaluation and Depth of Knowledge Levels 3-4 (E/DOK)

E/DOK level questions are posed in order to challenge students to make judgments based on criteria, detect inconsistencies, and critique. Evaluation level questions are categorized into two DOK levels (3 and 4) whereby the rigor of the posed question increases with its connection to each type of task or expected answer. The total number of E/DOK level 3-4 questions was 27.

Evaluation and Depth of Knowledge Level 3 (E/DOK3)

E/DOK3 questions should allow the student a chance to strategically think and reason by offering them an opportunity to cite evidence and develop a logical argument for their conjecture while verifying the reasonableness of the result.

All of the evaluation questions posed during the 12 observations were recorded at the E/DOK3 level. Eight of the 12 teachers posed evaluation questions. There were a total of 27 questions recorded. Kindergarten Teacher 1 (K1), First Grade Teacher 1 (F1), First Grade Teacher 2 (F2), and Second Grade Teacher 2 (S2) posed no evaluation type questions. Second Grade Teacher 3 (S3) posed one question. Kindergarten Teacher 3 (K3), Third Grade Teacher 1 (T1), and Third Grade Teacher 2 (T2) posed two each. Kindergarten Teacher 2 (K2) and Second Grade Teacher 1 (S1) asked three. First Grade Teacher 3 (F3) asked the students five evaluation questions. Third Grade Teacher 3 (T3) proffered nine evaluation type questions.

While these 27 questions were found on the matrix at the E/DOK3 level, it should be noted that of these 27 posed questions, 18 would be considered the most basic of evaluation questions because while they were posed and answered by students, the students were not asked

to cite any evidence as to their judgment. However, Third Grade Teacher 3's (T3) questions were more substantial for time and effort was given in order to allow the students an opportunity to strategically think and reason. The lesson allowed the students time and occasion to develop and express a logical argument based on the evidence they could cite from the magazine articles they had read closely and held as a reference.

Kindergarten Teacher 2 (K2): Was that okay? Should she have felt that way? Who agrees?

Kindergarten Teacher 3 (K3): Did you love that story? Do you like that word?

First Grade Teacher 3 (F3): Did you like the story? (Question was repeated four times).

Second Grade Teacher 1 (S1): Did you think that was fair? Do you think it was fair a long time ago? Is it equal now for everyone?

Second Grade Teacher 3 (S3): Did you like them both [the read aloud stories]?

Third Grade Teacher 1 (T1): Have you started making your decision now that you have read all the information? Has your opinion changed?

Third Grade Teacher 2 (T2): Was it a good race? So, how does Bear feel about the second agreement now?

Third Grade Teacher 3 (T3): Is it our fault we eat too much processed foods or it is the fault of the company's who make it? Whose fault is it we eat so much processed food? Why might it be our fault? So, whose fault are you saying it is? Why might it be the company's fault? Why would it be the company's fault? Is it their fault because we buy it? So, whose fault are you saying it is? So, whose fault is it?

Evaluation and Depth of Knowledge Level 4 (E/DOK4)

E/DOK4 questions require the student to extend his or her thinking. Students should be evaluating for relevancy, accuracy, and completeness of information from multiple sources and then should seek to apply this understanding in a new way while providing justification for the application. There were no recorded E/DOK4 questions in the 12 observations made for this study.

Create and Depth of Knowledge Levels 1-4 (C/DOK)

C/DOK questions are asked so that students may reorganize elements into new patterns or structures. Students should be able to generate, hypothesize, design, plan, or produce. Create level questions are categorized into three DOK levels whereby the rigor of the posed question increases with its connection to each type of task or expected answer.

Create and Depth of Knowledge Level 1 (C/DOK1)

C/DOK1 questions are expected to enhance students' ability to brainstorm ideas, problems, or perspectives on a topic. There were no recorded C/DOK1 questions in the 12 observations made for this study requiring students to spend any quality time on brainstorming or coming up with multiple notions beyond the briefest of ideas.

Create and Depth of Knowledge Level 2 (C/DOK2)

C/DOK2 level questions are designed to generate conjectures or hypotheses based on observation, prior knowledge, or experience. These are asked so students may expound skills and concepts. There were no recorded C/DOK2 questions in the 12 observations made for this study.

Create and Depth of Knowledge Level 3 (C/DOK3)

C/DOK3 questions should be posed so that students think and reason. The questions should garner from the students synthesized information within the source or text. Students should be able to create a model for the situation or develop an alternative solution. There were no recorded C/DOK3 questions in the 12 observations made for this study.

Create and Depth of Knowledge Level 4 (C/DOK4)

C/DOK4 questions ask students to extend their thinking by producing information across varied sources or texts. Students should be asked to articulate a new voice, alternate theme, new knowledge, or another viewpoint. There were no recorded C/DOK4 questions in the 12 observations made for this study.

Research Question 3

During the 90-minute literacy block, what is the function of the initially posed or generated follow-up question asked by the teacher (i.e., clarification questions, cueing questions, focusing questions, or probing questions) based on the work of Costa (2001), Hughes (as cited in Fusco, 2012), and Lowery (as cited in Fusco, 2012)?

Question Functions and Placement on Function Code Sheet

Every question posed serves a specific function. The function of a question offers an explanation as to why it is asked. The most common functions were selected for the function code tally sheet and for the purposes of this study, these were:

- closed,
- open-ended,
- verification as defined by Costa,
- verification as defined by Hughes,
- cueing,
- focus,
- refocus,
- probing,
- support,
- clarifying as defined by Costa,
- clarifying as defined by Hughes,
- integrating,
- valuing, and
- feeling.

Each transcribed question was placed on a function code recording sheet after much consideration had been given to the definition of the function as defined by Costa, Hughes, and Lowery and after the question was carefully compared to the examples cited. This provided the most assurance the question met the function's definition and was coded correctly.

It is important to note that a question is labeled according to its function regardless of where it was placed on Hess' Cognitive Rigor Matrix (Hess et al., 2009). For example, Kindergarten Teacher 2 (K2) asked the question, "Was that okay?" which will fall on Hess' Cognitive Rigor Matrix (Hess et al., 2009) as an evaluation question because the teacher is calling for the students to judge whether or not they believed it was acceptable for the little girl

in the story to bring something for show and tell that was presented differently than all the other children in the story. Therefore, the students are being asked to make a judgment. However, the posed function of this question is closed because the students can answer this question with a simple yes or no. Placing a question on the function code sheet required careful consideration in order to alleviate a weighted picture of the function types that the questions were met to convey.

Question Functions Observed in the Literacy Blocks

The functions of the posed questions were recorded across the various purpose types that could be asked. Using the function code tally sheet, the posed question could be labeled and assessed for its effective purpose. Once all the posed questions were placed on a function code tally sheet, the recorded data could be assessed. The recorded purposes for the majority of the questions asked in this study were found to align with the function categories that garnered basic information from the students with the key purposes of the recorded function being to see if students could relay back given information by allowing them to provide an answer that they essentially already knew or by proffering an answer that would be affirming to the teacher or an answer the teacher expected or sought.

The functions that were recorded the most in the 12 observed 90-minute literacy blocks were (a) verification (Costa) with 1,122 posed questions, (b) closed with 518 posed questions, (c) probing with 146 asked questions, (d) focus with 88 orally presented questions, and (e) cueing with 54 questions posed to the students (Table 9).

Table 9

Function Types of Questions Posed

Function Type	Number Recorded by Teachers in											
	Kindergarten			First Grade			Second Grade			Third Grade		
	K1	K2	K3	F1	F2	F3	S1	S2	S3	T1	T2	T3
Closed	88	29	55	35	75	26	81	17	18	21	44	29
Open	0	5	1	0	0	0	0	0	0	1	0	0
Verify-C	117	120	140	149	104	80	62	71	74	21	109	75
Verify-H	0	1	0	0	2	0	5	2	1	3	0	3
Cueing	8	4	0	0	3	6	4	3	7	1	10	8
Focus	9	14	1	3	6	1	5	2	2	8	16	21
Re-focus	0	0	0	0	0	0	0	0	0	0	0	0
Probing	6	20	12	3	22	3	6	21	7	7	17	22
Support	0	9	1	0	4	1	3	1	0	2	0	2
Clarify-C	1	6	1	0	2	0	2	0	2	3	0	13
Clarify-H	6	2	0	0	0	0	1	0	0	0	0	0
Integrating	1	0	0	0	3	0	0	0	0	1	2	2
Valuing	0	0	0	1	3	0	0	0	0	1	1	0
Feeling	0	1	0	0	0	0	0	0	1	0	1	0

Closed Questions

Costa (2001) defined a closed question as one the student can answer with a response of "yes or no" or "I can." They are said by Costa to serve little purpose. However, there were 518 closed questions recorded in this study. Kindergarten Teacher 1 (K1) orally presented the most; she posed 88 closed questions during the 90-minute block. The lowest number of recorded closed questions was presented by Second Grade Teacher 2 (S2) who posed 17 closed questions in the 90-minute literacy block.

Kindergarten Teacher 1 (K1): Is this a school bus? Is this a pedal? Are they busy? Does the graphic match the text? Do wheels zoom? Does that help us work? Can you tell me these letters?

Kindergarten Teacher 2 (K2): Are characters only people? Can you sound this out? Can they drive a car? Did you hear the /t/ in there [the presented word]?

Kindergarten Teacher 3 (K3): Did you love that story? What about an alligator, would he be soft? What about when you get really scared, would you use an exclamation point then? Does the letter "h" say /j/?

First Grade Teacher 1 (F1): Do they look like real animals? Do you think he makes these characters? Did they start making toys and things to go with the book? Is it a map to tell me where I am going? If I have two "l's" together, do I say /l/-/1/? Can I chunk /ill/ together?

First Grade Teacher 2 (F2): Is it okay to have some pride? Do you think it takes a big person to admit you are wrong? Is that what the story said? Is that a good thing for a hunter to do? Do you think they could have remained friends? Is that the same as *bee*?

First Grade Teacher 3 (F3): Did you like the story? Can you write his name? If they are twins, does he look like him? Did you get all the characters? Was the author and the illustrator the same in this story?

Second Grade Teacher 1 (S1): Do you think that was fair long ago? Is it equal for everyone now? Do you think that would take a while? Is that true, too? Do all schools say the *Pledge of Allegiance*? Can anyone relate our school to any of this?

Second Grade Teacher 2 (S2): Would you be nervous standing in front of a big crowd? Do you practice a lot? Does it give us more information? Have you ever tried to play an instrument before? Is it a whole breath?

Second Grade Teacher 3 (S3): Did you like them both? Did he get his typewriter? Are they photographs? Is it humorous? Did it entertain you? Can you retell what happened on this page?

Third Grade Teacher 1 (T1): Does it really mean cats have nine lives? Do cats really die and come back to life? Should I picture cats dying and coming back to life nine times? Is that a fact or an opinion? Is that your opinion?

Third Grade Teacher 2 (T2): Can sunlight get there easily? Can people grow better crops there? Does it look like they are going shopping? Are they all spread out with room to run and play? Are tops worth anything? Was the turtle faster?

Third Grade Teacher 3 (T3): Can processed food be healthy? Any other lessons learned on food? Could they have put cheese flavor on here that was like a chemical or extract? If you eat junk food all the time, will you stay skinny? Did you get a pop and fade? Can you buy natural food at a store?

Open-Ended Questions

Lowery (as cited in Fusco, 2012) defined opened questions as those that require the student to analyze, synthesize, or problem solve and are often thought of as the "what if" kinds of questions. They usually do not have a defined answer but may be divergently answered by the students and more than one answer would be acceptable as a correct response. There were seven open-ended questions recorded within the twelve 90-minute literacy blocks; Kindergarten Teacher 2 (K2) posed five open-ended questions, Kindergarten Teacher 3 (K3) and Third Grade Teacher 1 (T1) presented one open-ended question each to her students.

Kindergarten Teacher 2 (K2): What do you think that dog could be saying to that bird? What could that dog be saying to that bat? What do you think the bat might say back? What do you think the horse is saying to the chicken? What do you think the chicken might say back?

Kindergarten Teacher 3 (K3): How do you move?

Third Grade Teacher 1 (T1): Wonder how that helped him?

These questions while not the purest of open-ended questions, did lend themselves to the notion of "what if." What if the animals in the story's pictures were speaking; "What might they say?" is for all practical purposes the intention of each posed question presented by Kindergarten Teacher 2 (K2). These five questions along with the two other questions presented by Kindergarten Teacher 3 (K3) and Third Grade Teacher 1 (T1) met the basic definition of an open question and called for the students to analyze the pictures or words in the presented texts and create a response whereby each given answer had the opportunity to be divergent in nature and considered correct.

Verification Questions (Costa)

Costa (2001) determined that verification questions require the student to remember, define, or recall a fact. Generally, the student and the teacher know the answer given or expected. These are the questions that are familiar to any school environment and this study supports that they are still the most common question posed to students. In the twelve 90-minute literacy block observations in this study, 1,122 verification (Costa) questions were posed to the students. In all but one class, these function types of questions were the ones most frequently asked. In the one class where they were the second most popular function type posed, they were surpassed only by closed function questions that are generally answered with yes or no. First Grade Teacher 1 (F1) asked the most verification questions, which was recorded at 149. Third Grade Teacher 1 (T1) posed the fewest with 21.

Kindergarten Teacher 1 (K1): What shape is a wheel? Who drives a fire truck? What sound goes with the letter “a”? What are graphics?

Kindergarten Teacher 2 (K2): What is a tan? What is our new sight word? What does a table of contents do? Is “t” a consonant or a vowel? What is on her dress? When do bears hibernate?

Kindergarten Teacher 3 (K3): What is this part of the book? What does /h/ say? What is an adjective? What two words rhyme in that sentence? What is upside down? What part of the book is this called?

First Grade Teacher 1 (F1): What is the genre? What sound does this “e” make? Is it a noun or an adjective? What did Dr. Seuss’s parents call him?

First Grade Teacher 2 (F2): Which one is fiction? Is he an omnivore, an herbivore, or a carnivore? What is the mom teaching her baby to do? Is *lion* a proper or common noun? What is a homophone? What do we call this part of a letter?

First Grade Teacher 3 (F3): How many cupcakes are on the plate in the illustration? Where is Fritz in the middle of the story? What is sticking out of his mouth? Where did the story take place? Where was Fritz sleeping? What is the setting of our story?

Second Grade Teacher 1 (S1): What is one way all schools are the same? What helps the trombones play different notes? Who owns the jacket? What does *ancient* mean? Where did the Olympic Games start?

Second Grade Teacher 2 (S2): How often do you practice? Where did it come from? What is her name? How do you spell it? What type of story is this? What punctuation would you put before the word *but*?

Second Grade Teacher 3 (S3): What does it mean to *rehearse*? What does *demand* mean? Who are the characters? What happened next? What did Farmer Brown write in his note?

Third Grade Teacher 1 (T1): What is a *fracture*? Do cats live longer than dogs? What does *agile* mean? What month will it be? What does it say right before that? What is a *termite*?

Third Grade Teacher 2 (T2): What is the topic on page 429? What is *grunted*? What happens first in the story? What is Rabbit's problem? What are Hare's children doing?

Third Grade Teacher 3 (T3): What are some new flavors? What percentage of our diet is processed food? What does devote mean? What are processed foods? What is a natural food? How many taste buds are in your mouth?

Verification Questions (Hughes)

Hughes (as cited in Fusco, 2012) offered another definition for verification types of questions. He purported that verification questions were asked so that students could be accurate in their presented answers. The teacher is asking the question in order to allow the student a chance to explain, reason, or verify their response. There were 17 verification (Hughes) questions posed in order to help students be as accurate as possible in their response. Second Grade Teacher 1(S1) asked five verification (Hughes) questions, Third Grade Teacher 1 (T1) and Third Grade Teacher 3 (T3) each asked three, Second Grade Teacher 2 (S2) and First Grade Teacher 2 (F2) each posed two verification (Hughes) questions during the observation, and Kindergarten Teacher 2 (K2) and Second Grade Teacher 3 (S3) each posed one verification (Hughes) question during the 90-minute literacy block. Five teachers did not pose any verification (Hughes) questions during the observation.

Kindergarten Teacher 2 (K2): How did you know Amelia was different?

First Grade Teacher 2 (F2): What do you mean by *eye* and *I*? What are two ways we can use the word *eight* and *ate*?

Second Grade Teacher 1 (S1): How did you know it was an alphabet? How do you know this was long ago? What about the word *father's* in Father's Day? How do you know to put a capital "M" for *May*?

Second Grade Teacher 2 (S2): How is that? What would make it hard fun?

Second Grade Teacher 3 (S3): How did you decide it was a good idea or a bad idea?

Third Grade Teacher 1 (T1): What does that mean? What does that sentence mean? Do you remember anything in the article about cats scratching?

Third Grade Teacher 3 (T3): How do you know that? How do you know what flavors you are tasting?

Cueing Questions

Cueing questions as defined by Costa (2001) are those presented in order to provide students with clues to the direction or purpose of the question asked. They are used to clue the student into the content the teacher wants the student to learn or value. There were 54 cueing questions posed to the students during the twelve 90-minute literacy blocks. Third Grade Teacher 2 (T2) asked the most cueing questions with 10 posed in order to provide direction or purpose. Kindergarten Teacher 1 (K1) and Third Grade Teacher 3 (T3) each asked eight cueing questions, Kindergarten Teacher 2 (K2) and Second Grade Teacher 1 (S1) offered four each, First Grade Teacher 2 (F2) and Second Grade Teacher 2 (S2) each proffered three cueing queries, First Grade Teacher 3 (F3) asked six, Second Grade Teacher 3 (S3) delivered seven, Third Grade Teacher 1 (T1) posed one, and First Grade Teacher 1 (F1) and Kindergarten Teacher 3 (K3) posed the fewest with zero each.

Kindergarten Teacher 1 (K1): How can a helicopter be used for work? How can we use a wagon to help us work? How do wheels help us work?

Kindergarten Teacher 2 (K2): How do the five senses help us learn? How can my smelling help me? How did she feel when she came to school and figured out everybody else put their show and tell in the basket and she had worn hers to school?

First Grade Teacher 2 (F2): How is a proper noun different from a common noun? How does what they saw and what they heard relate to the title?

First Grade Teacher 3 (F3): How does Fritz feel in this picture? How would you get to the moon? How else could Fritz feel?

Second Grade Teacher 1 (S1): How are schools different? How is our school similar to what we just read about?

Second Grade Teacher 2 (S2): Does anyone know why we call Thanksgiving; Thanksgiving? So, why does he use color? What does color have to do with concentration?

Second Grade Teacher 3 (S3): What is Duck all about? How do you say they are different from one another? What could we say this would cause?

Third Grade Teacher 2 (T2): How does the author show us Bear is mad? How did Bear and Hare's actions create a sequence of events? How is Rabbit's current home different from her former home?

Third Grade Teacher 3 (T3): How do processed chemicals and foods make us sick? How can you look at two boxes of processed food and determine which one is healthier? How do flavorists work their magic? How do flavorists make things taste so good?

Focus Questions

Focus questions defined by Costa (2001) are those that are asked in order to place emphasis on detailed information. These questions are asked so that additional specific information may be garnered from the student's reply. There were 88 focus questions recorded during the 12 observations. Third Grade Teacher (T3) posed the majority at 21 focus questions

presented while Kindergarten Teacher 3(K3) and First Grade Teacher 3 (F3) only posed one to each of their classes. The other teachers all fell between this range with Third Grade Teacher 3 (T3) asking 16 and Kindergarten Teacher 2 (K2) offering 14. Kindergarten Teacher 1 (K1) posed nine followed by Third Grade Teacher 1 (T1) with eight. First Grade Teacher 2 (F2) posed six. Second Grade Teacher 1 (S1) delivered five probing questions and First Grade Teacher 1 (F1) posed three. Second Grade Teacher 2 (S2) and Second Grade Teacher 3 (S3) each asked two probing questions to their students.

Kindergarten Teacher 1 (K1): Would this be work, play, or travel? What do you think the text of our story will be? What are we talking about when we say they zoom?

Kindergarten Teacher 2 (K2): What could be something in your room that is a treasure? What do you know about Amelia's personality? What do we know about climate in a tropical place?

Kindergarten Teacher 3 (K3): What makes a crocodile and an alligator different?

First Grade Teacher 1 (F1): What do we use color words for? What makes a story or a poem funny?

First Grade Teacher 2 (F2): What did we notice that was similar to our other story? What did he mean by that phrase? What do you think all the eyes on the peacock's feathers do to a predator?

First Grade Teacher 3 (F3): What else lets us know Fritz is in the kitchen?

Second Grade Teacher 1 (S1): What is something you could say was ancient? What are some subjects that are important now? Why might some children wear warmer clothes than others to school?

Second Grade Teacher 2 (S2): If I associate a song with bright colors, what kind of song do you think that will be? What is the hard part about?

Second Grade Teacher 3 (S3): What about an opening sentence for the whole thing? What about the opening sentence?

Third Grade Teacher 1 (T1): What told me in the sentence it was a cat? Which one do you think the movie director is trying to portray as smarter? What does that mean, nine lives?

Third Grade Teacher 2 (T2): What other clues do you see? What is the difference between Bear and his daddy? What can we see in that picture that the text does not tell us?

Third Grade Teacher 3 (T3): What do preservatives do to our bodies? What about those flavors are like magic? What causes us to want all those snack foods? What else do they have besides crunchiness and flavor? What changes have happened that causes moms not to cook snacks anymore? What can shoppers do to eat healthier?

Refocus Questions

A teacher will present a refocus question when she wants to better understand the student's thinking toward the expected learning goal (Hughes, as cited in Fusco, 2012). Often she is trying to determine where the student's thinking is or where it should be to correctly understand the intended skill, text, or topic. There were no refocusing questions recorded during the study. The lack of refocusing questions was most likely due to the large number of closed, probing, and verification (Costa) questions recorded, coupled with the many cueing and focusing questions documented. The minimal use of these types of questions as well as the ones in the continuation of the study (support, clarifying, integrating, valuing, and feeling) seem to suffer

from the teacher's desire to converge on one correct answer. The teacher may have the students home in on an acceptable answer that she supports as correct, satisfactory, or is known by the student and teacher. The study seems to support that recall, basic understanding, and comprehension are still the primary focus of thinking in the classroom.

Probing Questions

Queries that are asked to pursue more information and stretch students thinking are probing questions (Costa, 2001). Most probing questions ask students why they are engaged in the thoughts, ideas, or answers they have generated. The 12 teachers in this study posed 146 probing inquiries to their students during the 90-minute literacy block. Third Grade Teacher 3 (T3) and First Grade Teacher 2 (F2) asked the highest number of probing questions; both posed 22 each followed closely by Second Grade Teacher 2 (S2) with 21 and Kindergarten Teacher 2 (K2) with 20 probing questions. Third Grade Teacher 2 (T2) asked 17 and Kindergarten Teacher 3 (K3) delivered 12. Kindergarten Teacher 1 (K1) and Second Grade Teacher 1 (S1) posed six each. Second Grade Teacher 3 (S3) and Third Grade Teacher 1 (T1) proffered seven. First Grade Teacher 1 (F1) and First Grade Teacher 3 (F3) asked the fewest probing questions in the study with each posing three probing questions to her students.

While many of these recorded questions do not start with the word "why," which is often the key word in probing questions along with the words "what do you think," the intention of these documented probing questions is clear. Each question in the examples intends to glean from the student extended thinking as to why or what they are reasoning, rationalizing, or believing and their answers would primarily be found beyond the text.

Kindergarten Teacher 1 (K1): Why do people use wheels? Why is it work? Why is it faster to ride?

Kindergarten Teacher 2 (K2): Who do you think our characters are going to be in this story? What can you predict about our story? What do you think will happen?

Kindergarten Teacher 3 (K3): What do you think about the monkey? Why does that word not say *alligator*? What do you think that means?

First Grade Teacher 1 (F1): What would you like to add? What? What do you think?

First Grade Teacher 2 (F2): What would you say? What do you think *pride* means? What could be the possible consequences? Why do you think it would scare the predators away?

First Grade Teacher 3 (F3): Why else is Fritz happy? Why do you think Fritz is happy?

Second Grade Teacher 1 (S1): Why would they do that? Why would the teacher say it and they say it back again? Why would the author put that amazing fact in there?

Second Grade Teacher 2 (S2): Why would an author write a book with informational text? Why do you think the author chose to tell us music is hard fun? Why did you practice?

Second Grade Teacher 3 (S3): Why do you think he is snoring? Why would Duck be pacing back and forth? Why is the sound different?

Third Grade Teacher 1 (T1): Why did the article say that? Why? Why does the article say cats have nine lives?

Third Grade Teacher 2 (T2): What is it you think made the bear lazy? Why do you say that? What do you think about what he said?

Third Grade Teacher 3 (T3): Why might it be our fault? Why do you think we eat so much processed food? Why did that change? Why would a flavorist potentially make a lot of money?

Support Questions

Support questions allow students to label their inferences or classifications (Hughes, as cited in Fusco, 2012). There were 23 support questions posed within the study. Kindergarten Teacher 2 (K2) asked the most support questions with nine posed to her students. First Grade Teacher 2 (F2) posed four support questions during the literacy block. Second Grade Teacher 1 (S1) posed three. Third Grade Teacher 1 (T1) and Third Grade Teacher 3 (T3) each posed two support questions. Kindergarten Teacher 3 (K3), First Grade Teacher 3 (F3), and Second Grade Teacher 2 (S2) all asked one. The four remaining teachers did not offer any support questions to the students. Of the recorded examples below, the questions meet the definition by allowing students an opportunity to infer whereby they are concluding from presented evidence or reasoning rather than just gleaning answers from the presented text.

Kindergarten Teacher 2 (K2): What can you tell about this character's face? How can I learn about characters in a story? What can I learn about Amelia by looking at the picture?

Kindergarten Teacher 3 (K3): How can you tell he is mad?

First Grade Teacher 2 (F2): How is this story like the story about the leopard and his spots?

First Grade Teacher 3 (F3): What evidence shows you he is in the bedroom?

Second Grade Teacher 1 (S1): What can you relate to on this page? How do the illustrations fit the title?

Second Grade Teacher 2 (S2): What colors do you think of when you think of happiness?

Third Grade Teacher 1 (T1): How do these two things tie together? How did you decide that means long?

Third Grade Teacher 3 (T3): How can you tell that from the picture? How do the lunch changes affect your lunch choices in the cafeteria?

Clarifying Questions (Costa)

Clarifying questions as defined by Costa (2001) are those asked because the teacher needs clarification of the student's given answer; the teacher is not sure what the student means or is trying to express. There were 30 clarifying (Costa) questions posed during the study. Third Grade Teacher 3 (T3) asked students to clarify responses more than any other teacher in the sample. She asked 13 clarifying (Costa) questions in order to understand the students' responses clearly. Kindergarten Teacher 2 (K2) posed six clarifying (Costa) questions ensued by Third Grade Teacher 1 (T1) who asked three. First Grade Teacher 2 (F2), Second Grade Teacher 1 (S1), and Second Grade Teacher 3 (S3) each posed two clarifying (Costa) questions, followed closely by Kindergarten Teacher 1 (K1) and Kindergarten Teacher 3 (K3) with one question each. The other four teachers did not seek any clarification as defined by Costa (2001) from their students.

Kindergarten Teacher 1 (K1): What about this picture?

Kindergarten Teacher 2 (K2): Tell me more besides names that we always capitalize? Tell me more about Amelia?

Kindergarten Teacher 3 (K3): This is an upside down "u," is that what you are telling me?

First Grade Teacher 2 (F2): How could you hear a fish?

Second Grade Teacher 1 (S1): What else? The alphabet was different, what else?

Second Grade Teacher 3 (S3): Who can build on what she said?

Third Grade Teacher 1 (T1): What are you inferring? What could that mean? What is your main argument?

Third Grade Teacher 3 (T3): So, whose fault are you saying that it is? Can you give me a reason? What do you mean by work their magic?

Clarifying Questions (Hughes)

Hughes (as cited in Fusco, 2012) determined that clarification questions were asked because the student needed elucidation so he or she could advance in meaning and come to a clearer understanding of the presented topic, work, skill, or idea. There were only nine questions posed that met Hughes's definition of clarification. However, even though there are nine recorded questions by the function definition, the question, "What do you think?" appeared six times in the eight recorded questions on the tally sheets (Table 8). These nine questions were asked by only 3 of the 12 teachers. Kindergarten Teacher 1 (K1) posed six of these, followed by Kindergarten Teacher 2 (K2) who asked two and Second Grade Teacher 1 (S1) who delivered one.

Kindergarten Teacher 1 (K1): What do you think? What do you think about all these cars?

Kindergarten Teacher 2 (K2): What do you think? What do you think about her face?

Second Grade Teacher 1 (S1): What does homeschooling mean to you?

Integrating Questions

Integrating questions as defined by Lowery (as cited in Fusco, 2012) are those that ask students to analyze, conclude, or develop an idea independently. Seven of the 12 teachers did not offer any questions that demonstrated this function type. However, there were nine integrating questions recorded during the study and First Grade Teacher 2 (F2) posed the majority with three

posed to help foster independent ideas or conclusions. Third Grade Teacher 2 (T2) and Third Grade Teacher 3 (T3) each posed two integrating questions to students and Kindergarten Teacher 1 (K1) and Third Grade Teacher 1 (T1) each offered one integrating question to their students.

Kindergarten Teacher 1 (K1): Did you make conclusions about your drawings?

First Grade Teacher 2 (F2): If you could take one lesson from this story, what would it be? What do you think the moral of the story is?

Third Grade Teacher 1 (T1): Have you made a decision based on the information you have read?

Third Grade Teacher 2 (T2): How could we apply the lesson of this story to our classroom?

Third Grade Teacher 3 (T3): Is it our fault we eat too much processed food or is it the fault of the companies who make it? What lessons have we learned from reading this article and the article in our other magazine?

Valuing Questions

A valuing question, according to Lowery (as cited in Fusco, 2012), is one that is delivered so that students may develop an opinion, judgment, or preference. Only four teachers proffered a question that allowed students a chance to express value. These four teachers posed a total of six value questions whose function was to help students develop an opinion, judgment, or preference. First Grade Teacher 2 (F2) posed the most with three. First Grade Teacher 1 (F1), Third Grade Teacher 1 (T1), and Third Grade Teacher 2 (T2) each posed one value question. The examples below show the teachers' efforts to allow students an opportunity to express an opinion they esteem.

First Grade Teacher 1 (F1): Why do you like to read books by Dr. Seuss?

First Grade Teacher 2 (F2): Why do you agree? How would you change the ending of the story? What would have been a kind thing for Fred to do?

Third Grade Teacher 1 (T1): Has your opinion changed?

Third Grade Teacher 2 (T2): What is your point of view about the race?

Feeling Questions

Lowery (as cited in Fusco, 2012) defined feeling questions as those that require students to describe feelings or express emotions. During the 12 observations of the 90-minute literacy blocks, three feeling questions were posed. Nine of the 12 teachers did not pose any feeling questions where the children could express their own feelings about an idea or topic or voice feelings they believed a character in the story or text could reveal or portray. Kindergarten Teacher 2 (K2), Second Grade Teacher 3 (S2), and Third Grade Teacher 2 (T2) each posed one question that called for children to express feelings.

Kindergarten Teacher 2 (K2): How would you feel if you were Amelia?

Second Grade Teacher 3 (S3): How do you think Farmer Brown felt when he got the typed letter from the animals?

Third Grade Teacher 2 (T2): If you were Bear, how would you feel about the second agreement?

Research Question 4

During the 90-minute literacy block, once orally posed questions are presented, how does the teacher allocate for student responses(e.g., no response taken, wait time of 3-5 seconds, teacher answered response, single student response, more than one student response, or whole group responses) (Costa, 2001)?

Student Responses

Asking a question is only half of the equation when offering quality inquiries to students. How the student has an opportunity to respond is as critical to the success of a posed question as the question itself. This study looked at the most basic of student responses (Table 10) offered to the proffered questions posed during the twelve 90-minute literacy blocks.

Table 10

Types of Student Responses Accepted by Teachers

Student Responses	Teacher Accepted Responses in											
	Kindergarten			First Grade			Second Grade			Third Grade		
	K1	K2	K3	F1	F2	F3	S1	S2	S3	T1	T2	T3
NRT	36	37	19	24	34	50	17	18	12	12	19	19
WT	2	3	3	3	0	0	0	3	0	0	4	1
TA	11	5	5	9	3	1	6	1	3	5	2	5
SSR	140	145	88	65	147	51	75	79	85	36	83	123
MTO	44	21	89	88	38	8	58	16	3	15	89	25
WG	3	0	7	2	2	7	13	0	9	1	3	2

KEY: NRT – No response from student taken by teacher, WT – Teacher provided between 3 and 5 seconds of wait time for student to respond, TA – Teacher answered the question, SSR – Single student response accepted, MTO – More than one student answered question, WG – Whole group answer was generated.

Historically, data support that teachers want to master the ability to ask questions speedily and often. While the sheer number of questions recorded in this study indicates this practice still exists, the number of questions posed in which the students were not given a chance to answer also supports this behavior. There were 297 questions posed in which students did not

deliver a response. Generally, this was either due to (a) lack of wait time, (b) the teacher immediately posing another question, or (c) she repeated the same question quickly.

Every teacher in the study posed questions and did not allow for student responses. The highest number of no student responses taken by the teacher occurred with First Grade Teacher 3 (F3); 50 times it was recorded that no response time was given. Second Grade Teacher 3 (S3) and Third Grade Teacher 1 (T1) exhibited this behavior the least and each teacher did not allow for student responses 12 recorded times during their 90-minute literacy blocks. The mean for teachers in this sample not accepting a response was 24.75 times in a 90-minute literacy block.

Costa (2001) found that a teacher behavior that curbed student responses was when teachers answered their own questions; this occurred 56 times during the study. Kindergarten Teacher 1 (K1) answered her own questions 11 times while First Grade Teacher 3 (F3) and Second Grade Teacher 1 (S1) generated the expected answer once. The mean for teachers in this study answering their own posed questions was 4.66 times in a 90-minute literacy block.

Costa (2001) found that teachers consistently called upon single students to answer questions and often these students were selected because they indicated by a raised hand they wanted to answer the posed question. Nevertheless, either by student volunteers or by teacher selection, every teacher in this study garnered answers from single students. One question was posed and one student provided the only answer accepted. These responses were the most recorded in the study. There were 1,117 single student responses given in the study. Generally, these were garnered with the direction of “Raise your hand” or “Do not blurt out.” Often, the teacher would first say a student’s name and pose the question directly to the selected student. First Grade Teacher 2 (F2) acquired the most single student responses with 147. Third Grade

Teacher 1 (T1) garnered the least with 36 single student responses. The mean for teachers in this sample accepting a single student response was 93.08 times in a 90-minute literacy block.

The Tennessee TEAM evaluation model (Tennessee Department of Education, 2013c) encourages educators to solicit active responses such as whole class signaling, shared responses, group answers, and choral responses. This study categorized these as responses given by more than one student (MTO) and those responses demonstrated by the whole group (WG). More than one student responses were recorded during the twelve 90-minute literacy blocks at the frequency of 494 times. Third Grade Teacher 2 (T2) and Kindergarten Teacher 3 (K3) each had 89 MTO responses followed closely by First Grade Teacher 1 (F1) with 88. Second Grade Teacher 3 (S3) allowed for three MTO responses, which were the fewest in the study. While more than one student was allowed or expected to reply, these MTO responses were found to be largely simple, short answers such as “the car,” “yes,” “no,” by the showing of raised hands to indicate agreement, or by 3- to 4-word phrases such as “her pink dress.” Such strategies as “turn and talk to your partner” were minimally observed. The use of the MTO response and the SSR response coupled with such directives as “raise your hand” or “don’t blurt out” seem to be bound by the teacher’s need to establish control, order, or routine. The mean for teachers in this sample accepting MTO responses was 41.16 times in a 90-minute literacy block.

Minimal whole group (WG) responses were recorded with 49 whole group responses documented. Second Grade Teacher 1 (S1) allowed for 13 WG responses. Kindergarten Teacher 2 (K2) and Second Grade Teacher 1 (S1) accepted no WG responses. Whole group responses included choral responses from the class and whole group written responses such as work placed on individual marker boards and held up for the teacher to observe. The mean for teachers in this sample accepting whole group responses was 4.08 times in a 90-minute literacy block.

Wait Time

Wait time is defined as the amount of time a teacher waits for a student to respond to the given question. The Tennessee TEAM model (Tennessee Department of Education, 2013c) indicates that effective wait time should be 3-5 seconds. Therefore, for this study, wait time was recorded as occurring if the time that elapsed from the end of the posed question was at least 3-5 seconds.

The 12 teachers in this study were asked to determine if two statements about wait time on the questionnaire regarding their questioning strategies and practices were true or not true in regard to their knowledge base or practice concerning effective questioning. All 12 of the teachers in the study stated they provided wait time after questions; all 12 marked the statement "I provide wait time after questions" as true to their knowledge base or practice. Nine of the 12 teachers believed the wait time they provided was sufficient but only two believed they were conscious about the amount of wait time given after a posed question. The 12 teachers varied in the amount of wait time they believed they provided to students, which ranged from as high as 30 seconds per question to as low as 3 seconds per question (Table 11).

Table 11

Teacher Perception of the Amount of Wait Time Given

Teacher	Perception of Wait Time Given by											
	Kindergarten			First Grade			Second Grade			Third Grade		
	K1	K2	K3	F1	F2	F3	S1	S2	S3	T1	T2	T3
Perceived wait time in seconds.	10	10	7	15	7	5	5	10	8	3	30	10
			Mean: 10		*Median: 9*		*Mode: 10*					

There were 19 instances when the 12 teachers in this study waited 3-5 seconds for students to respond before articulating another question. Five of the teachers did not exhibit any points where they offered acceptable wait time according to the TEAM model standard. Third Grade Teacher 2 (T2) had the highest number of acceptable wait time occurrences with four noted of at least 3-5 seconds. Kindergarten Teacher 2 (K2), Kindergarten Teacher 3 (K3), First Grade Teacher 1 (F1), and Second Grade Teacher 2 (S2) all had three occurrences of sufficient wait time while Third Grade Teacher 1 (T1) had a rate of one.

In regards to wait time, the results and analysis of the data show that the 12 teachers who participated in these observations are still rapidly firing questions to students, generally waiting one second before delivering the next question, are most likely still uncomfortable with the sound of silence, and want controlled or well disciplined environments demonstrated by a relatively quiet classroom.

Conclusion

Results of this study show that 297 of the posed questions did not allow for accepted or garnered responses. Teachers answered their own proffered questions 56 times. Single student responses were generated as the accepted answer 1,117 times. These data along with the sheer number of questions posed within the teachers' 90-minute literacy blocks, which was 2,032, created a mean of 169.3 posed questions per teacher per literacy block. This indicates that on average the teachers in this study posed 1.9 questions every minute. The findings also give support to document that very little wait time was provided during the 12 observations. Wait time of at least 5 seconds was only recorded in this study 19 times. This created a mean of 1.5 indicating that, on average, teachers in this study only offered ample wait time at the end of one or two of their numerously posed questions.

Overarching Research Question

During a 90-minute literacy block, how do K-3 teachers use questions to support students' literacy development?

During the 90-minute literacy blocks observed in this study, it appears that the use of questions has not dramatically changed since Stevens's 1912 study. The same can be said when this study's results are compared to the outcomes determined by Acar and Kilic (2011) and Fusco (2012) in regard to the cognitive level of questions posed, the power of the question as reflected in its function, and the way teachers accept student responses.

The results of this study support that teachers may have experienced some professional development concerning questioning strategies, are delving into Common Core State Standards, are being observed using the TEAM rubric, and realize that ample wait time should be established, but the relationship between what they know as best practice and the delivery of these best practices are somewhat still disconnected. Therefore an analysis of this study's data indicates the following as to what typically occurs during a current early childhood classroom teacher's 90-minute literacy block in regard to the use of questioning to increase literacy development and comprehension.

- Teachers are still primarily posing questions that call for students to remember and understand. These are the basic cognitive levels of questioning. Teachers predominately pose questions that ask for students to simply retrieve knowledge or facts from long-term memory, recognize information presented, recall, locate, identify, classify, give examples, summarize, or explain. The use of higher-level cognitive questions appears minimally and when used the questions are often basic in nature to the definition of the level of cognitive engagement they may create. This may primarily be because most

questions appear to have an expected teacher answer that he or she would consider to be the most correct or most acceptable answer.

- Teachers struggle to pose questions in the higher cognitive levels of analyze, create, and evaluate as demonstrated by the questions they generated on the teacher questionnaire.
- Teachers still pose questions in which the function of the question is minimal in its motor power or its ability to engage students in active thinking and learning. Teachers still present a large number of closed questions and questions that simply require children to verify an answer by remembering, defining, or recalling a fact, which is often aleady known by the teacher and the student.
- Unnecessary questions still exist in the literacy blocks. These questions are mainly procedural questions or agreement questions. Agreement questions are those, which generally are simply requiring students to agree with the teacher's posed correct answer or comment.
- While teachers are aware of wait time and believe they offer it to students, wait time still does not adequately exist after a posed question.
- Students' responses to the question are as critical as the question posed. Of the most common responses accepted by teachers, which include multiple student responses, whole group responses, and no response taken, the data in this study show that teachers still primarily rely on single student responses more than any other method of gleaning an answer, which limits the students' possibilities for active engagement.
- Teachers are asking many questions and are still delivering them in the quick succession of one after another.

- Wait time is critical to the thought process of students. All 12 of the teachers in this study indicated that they believed they offered ample wait time to the students after posing a question. However, wait time was not consistently observed or documented in this study. Therefore, there seems to be a sufficient gap between belief and practice in regard to wait time. This teacher belief is reflected in this study's 12 teachers stating they believed they provided wait time from as little as 3 seconds to as long as 30 seconds after a question is asked. This indicates that these teachers believe they display an average wait time of at least 9 seconds per question in their classrooms. This would allow for ample wait time because quality wait time is defined by Costa (2001) as a pause of at least 3-5 seconds provided by the teacher once the question is posed. However, the teachers in this study were only documented to present wait time beyond 3 seconds on 19 occasions. Therefore, this study supports that teachers believe they are providing sufficient wait time to students but are lacking in self-awareness; they know what to do but they are not doing it.

CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Chapter 5 provides a summary of the findings, conclusions, implications, and recommendations for educators and other readers who may wish to increase their ideas or knowledge about how early childhood educators are currently using questioning strategies to deliver literacy instruction. Using effective questioning strategies in early childhood classrooms is important because the implementation of the Common Core State Standards require an accountable discourse in order to maximize thinking and learning in the classroom. Add to this expanse is the Tennessee TEAM evaluation rubric designed to include in its measure how effectively teachers pose questions to students.

The purpose of this study was to see how many and what kinds of cognitive level questions were presented to students, the functions these questions served, and how the teachers allowed for student responses. Twelve early childhood teachers in a Northeast Tennessee School District who serve students in grades kindergarten, first, second, or third were observed and their orally posed questions were transcribed and categorized for cognitive level according to Hess' Cognitive Rigor Matrix (Hess et al., 2009), and the Question's Function based on the work of Costa (2001), Hughes (as cited in Fusco, 2012), and Lowery (as cited in Fusco, 2012). The responses were also noted and categorized by the most common student responses accepted as defined by Costa (2001). Teachers in kindergarten, first, second, and third grades participated in this study because a Tennessee license in early childhood education includes these grades and these are aligned with the implementation of the Common Core State Standards.

The 12 teachers in this study were observed and recorded as each presented a 90-minute literacy block. The observed and recorded questions presented during the literacy blocks were

examined using evaluative inquiry and a mixed methods embedded data design. The study combined qualitative and quantitative data together in order to observe, record, and analyze the frequency of what types of cognitive level questions teachers posed, what the function of those posed questions served, and what kinds of student responses were garnered or accepted.

Summary of Findings

Content analysis was used to identify repeated performances of the teacher asked questions, allowing reflection on what actually occurred during the 90-minute literacy block when each teacher delivered questioning strategies to her students. Content analysis provided a system for the researcher that allowed the study to be objectively and analytically authenticated. This type of analysis created a milieu for the question inside the context of systematic definitions and characteristics, which were determined by Hess' Cognitive Rigor Matrix (Hess et al., 2009), and the Question's Function based on the work of Costa (2001), Hughes (as cited in Fusco, 2012), and Lowery (as cited in Fusco, 2012) and the most common student responses as noted in the work presented by Costa (2001).

The frequency of the kinds of questions posed, their function, and the accepted or garnered student responses are reflected in basic measures of central tendency – in particular the sum of the data values and the mean of the data sums. These quantitative measures allowed the researcher to see how many of the various types of questioning strategies were used most frequently by the teachers and which ones were not. Combining these two types of analysis, the study was an examination of the primary categories and themes that were presented.

Conclusions

The following conclusions are based on the findings from examining the data collected in this study:

1. Many questions were posed to students during each 90-minute literacy block. The total number of questions posed in this study was 2,497. Of this number, a large portion of them fell beyond the Cognitive Rigor Matrix and for all practical purposes served no cognitive value, usefulness, or purpose during the presentation of the lesson. These questions included those asked to guide procedure, behavior, or those that were posed in such a manner that all the students were required to do was agree with the teacher's comment or posed question. Of the 2,497 orally posed questions, 465 of them were not of cognitive value. These data support that teachers still deliver management and procedural questions as indicated by Massey et al. (2008). However, Massey et al. (2008) also found that management questions were the most frequently asked questions at 44.8%; in this study, the teachers only posed management type questions at a rate of 18.62%. Therefore, this study shows that these types of questions are lower in number than in the past. However, it does support that unnecessary questions, which are those posed without a level of cognitive rigor such as procedural or agreement questions are still regularly posed to students.
2. There were 2,497 orally posed and documented questions in the study. Of these, 2,032 could be placed on Hess' Cognitive Rigor Matrix (Hess et al., 2009). The cognitive levels of these orally posed 2,032 questions primarily fell in the lower cognitive levels as determined by Hess' Cognitive Rigor Matrix (Hess et al., 2009). In this study the teachers asked the most questions defined by Hess as R/DOK1,

U/DOK1, and U/DOK2 questions. There were 1,082 R/DOK1 questions posed, 552 U/DOK1 questions, and 229 U/DOK2 questions delivered in this study for a total of 1,863 of the 2,032 cognitive questions being categorized at the three lowest cognitive question levels. The percentage of the lowest cognitive level (R/DOK1) questions was 53.24% representing a little more than half of all the questions posed in the 90-minute literacy blocks. Therefore, the findings of this study coincide with the work of Acar and Kilic (2011) that found that 57% of all the questions posed required students to recall, remember, or required specific feedback calling for the student to explain, define, produce, generalize, or identify. Findings from this study indicate that teachers are still primarily asking basic remember and understand questions to their students.

3. Why a particular question is posed is found in the label of its function. Of the 2,032 cognitive leveled questions posed in this study, the function of the majority was found to be closed or verification (Costa). There were 1,122 questions posed whereby their function label was defined as verification (Costa), which is 55.21%. Costa (2001) defined the function of a verification question as one that is asked even though the students and the teacher already know the answer. The function of a closed question as defined by Costa (2001) as one that the student can answer with a simple "yes," "no," or "I can." There were 518 closed questions recorded in this study. This calculates to 25.49%. Therefore, the percentage of closed and verification (Costa) question functions combined was 80.70%. Clearly, the majority of the functions were those that are considered the most basic and do not purport engaged thinking beyond rudimentary information. This study shows the functions of the posed questions were

basic in nature and a disconnect between the cognitive level of the question posed and the purpose of the posed question does not exist.

4. The success of a posed question is not limited to its cognitive level and its purpose but also must be viewed in light of the expected or accepted response. This study was used to examine the most typical responses teachers accepted after a question was posed. Six typical responses were documented and the three most commonly found in this examination were: (1) the teacher took no response after the question was posed, (2) more than one student response was accepted or requested by the teacher, or (3) a single student response was accepted. The teachers in this study did not glean a response from the students 297 or 24.31% of the documented times during the observations. Generally, this lack of student response was due to the teacher rapidly firing another question immediately after the posed one. This finding continues to support what has been historically known. Teachers may not always ask a high cognitive level question with a strong purpose but they are able to produce a question often and with quick speed thereby squelching the students' time to think or their need to respond adequately if at all (Stevens, 1912).
5. In regard to student accepted responses, more than one student response (MTO) was accepted 494 times during the observations. These responses counted as 24.31% of the responses taken by the teachers. MTOs occurred when a small group of students (primarily ranging from two to five or six students) answered the question together or simultaneously. However, these MTOs were generally answered with very short responses such as "it says cat" or with a simple "yes" or "no." While more than one student can respond and does so, these answers are limited because they are generally

seen in relation to verification (Costa) questions or closed questions. The power of the MTO is limited to the power and level of the question posed making the response very limited in its ability to engage thinking and learning.

The predominant vehicle teachers used in this study to accept an answer was the single student response (SSR). Single student responses were recorded 1,117 times, which accounted for 54.97% of all the responses accepted in the study. These generally occurred in two ways: (1) a student who was hasty to volunteer spoke up quickly with the answer or (2) the teacher prefaced the question with a student's name directing the question to a specific student for a response. These findings continue to support that many students are relegated to the position of on-looker while extroverted or high achieving students produce an answer or whereby the teacher consistently calls on the first two or three students who immediately raise their hand (Costa, 2001). Therefore, findings from this study indicate that teachers are still accepting or requesting answers as their predecessors have typically done so for numerous years.

6. Wait time was minimal in this study. Wait time was recorded during student responses and there were only 19 times recorded when teachers paused longer than 3-5 seconds after they posed a question. Teachers in this study seem to support that wait time is not adequately offered to students consistently. They continue to support a wait of less than 3 seconds (Table 10) and may still practice such behaviors as being uneasy with silence, posing questions rapidly one after another, accepting single student responses that inhibit the need for wait time, and still seek to control the feedback provided by students.

7. Finally, there are areas in this study that greatly support that teachers appear to have a disconnect between beliefs and practice. The teachers in this study seem to know and understand questions are important and that questions should be posed so that students can maximize thinking beyond just remember and understand. The teachers in this study have indicated that they believe they offer students ample wait time (Table11), but the data do not support their belief (Table10). Therefore, the teachers in this study exemplify that they either do not have enough knowledge or practice at planning and delivering questions that are considered higher in expectation and cognitive rigor or they lack the self-awareness needed to realize they know what should be occurring in their class literacy blocks in regard to posing quality questions, but they are not delivering these types of questions regularly.

Implications for Practice and Recommendations for Further Research

The results of this study indicate that while teachers may have knowledge about the cognitive levels of questions and believe they understand and implement techniques such as wait time, there is a clear disconnect between what teachers know as best practice concerning questioning strategies and the implementation of such strategies in the classroom. With teachers facing more in-depth observations as defined by the Tennessee TEAM model and the full implementation of the Common Core State Standards, it is necessary for them to continue to improve their ability to effectively engage students in thinking and learning by engaging them in quality questions that produce a quality response. The Tennessee TEAM Evaluation System Educator Acceleration Model Evaluation Handbook states that questioning is a systematic method that, when delivered effectively, reveals a great deal about a teacher's effectiveness (Tennessee Department of Education, 2013c)

While half of the teachers in this study stated that they had received professional development in questioning techniques, it appears the training may not have been delivered in enough depth to change practice. Future professional development opportunities should include but not be limited to (a) the cognitive levels of questions and how to plan, form, and deliver them; (b) the function or power of the posed question and its relationship to the cognitive level; and (c) how a student response is effectively accepted including how to establish a routine for effective wait time.

Administrators at the school district level, building level principals, district literacy coaches, and those professionals involved in teacher training can help increase teacher effectiveness by providing effective, in-depth training on questioning strategies. In-depth training opportunities such as coaching and modeling provided by system level literacy coaches who are well trained in questioning strategies are needed. In addition, training sessions where teachers could not only learn to identify and label questions according to Hess' Cognitive Rigor Matrix (Hess et al., 2009) and Webb's DOK levels, but also where they could plan questions for lessons, practice the questions, deliver the questions, and reflect on the use of the questions would likely increase effective strategies and help eliminate the disconnect between belief and practice by offering teachers an opportunity to become very self-aware of effective implementation of questioning strategies. Finally, it is helpful to immerse teachers in literature that will help them identify, develop, and use effective questioning strategies. This could be done in literature or book study groups conducted by principals, curriculum supervisors, literacy coaches, or teacher leaders. Three excellent references to explore in this manner would be the works by Costa (2001), Walsh and Sattes (2011), and Peterson and Taylor (2012). Perhaps the most important suggestion is for teachers to be aware that for the practice of these three key factors to impact

instruction, these components cannot be seen or delivered in isolation but must be considered and conveyed together in order to achieve effective student discourse and engagement.

Results of this study indicate that teachers can still improve on their ability to create, frame, and deliver quality questions resulting in active student responses to increase academic engagement. Additional research needs to be conducted to continue examining how effective questioning is used in the classroom to increase discourse, active engagement, and literacy instruction. Recommendations for further research include:

- Replicate this study with teachers who have had extensive training in effective questioning strategies compared to those who have not participated in such training opportunities.
- Replicate this study with teachers who have received an overall score of 5 specifically in questioning on the TEAM rubric rather than those teachers who have been recommended by an administrator with an overall composite evaluation score of 3, 4, or 5.
- Replicate this study with teachers who serve students beyond the early childhood (K-third grade) years, and particularly those who serve at the elementary level (fourth through sixth grade).
- Create a focus group of teachers who would allow the researcher to record their questions and code them as in this study, subject them to intensive questioning professional development strategies, and then document their steps to change; then repeat this study to again record their questions and code them in order to compare pre and post behaviors, changes in the rigor and power of the posed questions, and the change in discourse.

- This study did not examine the relationships among degrees, years of experience, specific student demographics, or specific types of training teachers had received. Therefore, all of these factors studied in connection with questioning strategies could shed further light on what happens in the classroom.
- This research could also be replicated across the state of Tennessee and in other states that use the TEAM model to gather information regarding the use of effective questioning strategies and discourse during literacy instruction at the state and national levels.

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APPENDICES

APPENDIX A

Instructional TEAM Model Rubric

	Significantly Above Expectations (5)	At Expectations (3)	Significantly Below Expectations (1)
Standards and Objectives ☐	• All learning objectives are clearly and explicitly communicated, connected to state standards and referenced throughout lesson. • Sub-objectives are aligned and logically sequenced to the lesson's major objective. • Learning objectives are: (a) consistently connected to what students have previously learned, (b) know from life experiences, and (c) integrated with other disciplines. • Expectations for student performance are clear, demanding, and high. • There is evidence that most students demonstrate mastery of the daily objective that supports significant progress towards mastery of a standard.	• Most learning objectives are communicated, connected to state standards and referenced throughout lesson. • Sub-objectives are mostly aligned to the lesson's major objective. • Learning objectives are connected to what students have previously learned. • Expectations for student performance are clear. • There is evidence that most students demonstrate mastery of the daily objective that supports significant progress towards mastery of a standard.	• Few learning objectives are communicated, connected to state standards and referenced throughout lesson. • Sub-objectives are inconsistently aligned to the lesson's major objective. • Learning objectives are rarely connected to what students have previously learned. • Expectations for student performance are vague. • There is evidence that few students demonstrate mastery of the daily objective that supports significant progress towards mastery of a standard.
Motivating Students ☐	• The teacher consistently organizes the content so that it is personally meaningful and relevant to students. • The teacher consistently develops learning experiences where inquiry, curiosity, and exploration are valued. • The teacher regularly reinforces and rewards effort.	• The teacher sometimes organizes the content so that it is personally meaningful and relevant to students. • The teacher sometimes develops learning experiences where inquiry, curiosity, and exploration are valued. • The teacher sometimes reinforces and rewards effort.	• The teacher rarely organizes the content so that it is personally meaningful and relevant to students. • The teacher rarely develops learning experiences where inquiry, curiosity, and exploration are valued. • The teacher rarely reinforces and rewards effort.
Presenting Instructional Content ☐	Presentation of content always includes: • visuals that establish the purpose of the lesson, preview the organization of the lesson, and include internal summaries of the lesson; • examples, illustrations, analogies, and labels for new concepts and ideas; • effective modeling of thinking process by the teacher and/or students guided by the teacher to demonstrate performance expectations; • concise communication; • logical sequencing and segmenting; • all essential information; • no irrelevant, confusing, or non-essential information.	Presentation of content most of the time includes: • visuals that establish the purpose of the lesson, preview the organization of the lesson, and include internal summaries of the lesson; • examples, illustrations, analogies, and labels for new concepts and ideas; • modeling by the teacher to demonstrate performance expectations; • concise communication; • logical sequencing and segmenting; • all essential information; • no irrelevant, confusing, or non-essential information.	Presentation of content rarely includes: • visuals that establish the purpose of the lesson, preview the organization of the lesson, and include internal summaries of the lesson; • examples, illustrations, analogies, and labels for new concepts and ideas; • modeling by the teacher to demonstrate performance expectations; • concise communication; • logical sequencing and segmenting; • all essential information; • no irrelevant, confusing, or non-essential information.
Lesson Structure and Pacing	• The lesson starts promptly. • The lesson's structure is coherent, with a beginning, middle, and end.	• The lesson starts promptly. • The lesson's structure is coherent, with a beginning, middle, and end.	• The lesson does not start promptly. • The lesson has a structure, but may be missing closure or introductory elements.

	• The lesson includes time for reflection. • Pacing is brisk and provides many opportunities for individual students who progress at different learning rates. • Routines for distributing materials are seamless. • No instructional time is lost during transitions.	• Pacing is appropriate and sometimes provides opportunities for students who progress at different learning rates. • Routines for distributing materials are efficient. • Little instructional time is lost during transitions.	• Pacing is appropriate for less than half of the students and rarely provides opportunities for students who progress at different learning rates. • Routines for distributing materials are inefficient. • Considerable time is lost during transitions.
Activities and Materials 	Activities and materials include all of the following: o support the lesson objectives; o are challenging; o sustain students' attention; o elicit a variety of thinking; o provide time for reflection; o are relevant to students' lives; o provide opportunities for student-to-student interaction; o induce student curiosity and suspense; o provide students with choices; o incorporate multimedia and technology; and o incorporate resources beyond the school curriculum texts (e.g., teacher-made materials, manipulatives, resources from museums, cultural centers, etc.). • In addition, sometimes activities are game-like, involve simulations, require creating products, and demand self-direction and self-monitoring. • The preponderance of activities demand complex thinking and analysis. • Texts and tasks are appropriately complex.	Activities and materials include most of the following: o support the lesson objectives; o are challenging; o sustain students' attention; o elicit a variety of thinking; o provide time for reflection; o are relevant to students' lives; o provide opportunities for student-to-student interaction; o induce student curiosity and suspense; o provide students with choices; o incorporate multimedia and technology; and o incorporate resources beyond the school curriculum texts (e.g., teacher-made materials, manipulatives, resources from museums, cultural centers, etc.). • Texts and tasks are appropriately complex.	Activities and materials include few of the following: o support the lesson objectives; o are challenging; o sustain students' attention; o elicit a variety of thinking; o provide time for reflection; o are relevant to students' lives; o provide opportunities for student to student interaction; o induce student curiosity and suspense; o provide students with choices; o incorporate multimedia and technology; and o incorporate resources beyond the school curriculum texts (e.g., teacher made materials, manipulatives, resources from museums, etc.).
Questioning	Teacher questions are varied and high-quality, providing a balanced mix of question types: o knowledge and comprehension; o application and analysis; and o creation and evaluation. • Questions require students to regularly cite evidence throughout lesson. • Questions are consistently purposeful and coherent. • A high frequency of questions is asked. • Questions are consistently sequenced with attention to the instructional goals. • Questions regularly require active responses (e.g.,	Teacher questions are varied and high-quality providing for some, but not all, question types: o knowledge and comprehension; o application and analysis; and o creation and evaluation. • Questions usually require students to cite evidence • Questions are usually purposeful and coherent. • A moderate frequency of questions asked. • Questions are sometimes sequenced with attention to the instructional goals. • Questions sometimes require active responses (e.g., whole class signaling, choral responses, or	Teacher questions are inconsistent in quality and include few question types: o knowledge and comprehension; o application and analysis; and o creation and evaluation. • Questions are random and lack coherence. • A low frequency of questions is asked. • Questions are rarely sequenced with attention to the instructional goals. • Questions rarely require active responses (e.g., whole class signaling, choral responses, or group and individual answers). • Wait time is inconsistently provided.

	whole class signaling, choral responses, written and shared responses, or group and individual answers). • Wait time (3-5 seconds) is consistently provided. • The teacher calls on volunteers and non-volunteers, and a balance of students based on ability and sex. • Students generate questions that lead to further inquiry and self-directed learning. • Questions regularly assess and advance student understanding • When text is involved, majority of questions are text based	group and individual answers). • Wait time is sometimes provided. • The teacher calls on volunteers and non-volunteers, and a balance of students based on ability and sex. • When text is involved, majority of questions are text based	• The teacher mostly calls on volunteers and high-ability students.
Feedback	• Oral and written feedback is consistently academically focused, frequent, high-quality and references expectations • Feedback is frequently given during guided practice and homework review. • The teacher circulates to prompt student thinking, assess each student's progress, and provide individual feedback. • Feedback from students is regularly used to monitor and adjust instruction. • Teacher engages students in giving specific and high-quality feedback to one another.	• Oral and written feedback is mostly academically focused, frequent, and mostly high-quality. • Feedback is sometimes given during guided practice and homework review. • The teacher circulates during instructional activities to support engagement, and monitor student work. • Feedback from students is sometimes used to monitor and adjust instruction.	• The quality and timeliness of feedback is inconsistent. • Feedback is rarely given during guided practice and homework review. • The teacher circulates during instructional activities, but monitors mostly behavior. • Feedback from students is rarely used to monitor or adjust instruction.
Grouping Students	• The instructional grouping arrangements (either whole-class, small groups, pairs, individual; heterogeneous or homogenous ability) consistently maximize student understanding and learning efficiency. • All students in groups know their roles, responsibilities, and group work expectations. • All students participating in groups are held accountable for group work and individual work. • Instructional group composition is varied (e.g., race, gender, ability, and age) to best accomplish the goals of the lesson. • Instructional groups facilitate opportunities for students to set goals, reflect on, and evaluate their learning.	• The instructional grouping arrangements (either whole class, small groups, pairs, individual; heterogeneous or homogenous ability) adequately enhance student understanding and learning efficiency. • Most students in groups know their roles, responsibilities, and group work expectations. • Most students participating in groups are held accountable for group work and individual work. • Instructional group composition is varied (e.g., race, gender, ability, and age) to most of the time, accomplish the goals of the lesson.	• The instructional grouping arrangements (either whole-class, small groups, pairs, individual; heterogeneous or homogenous ability) inhibit student understanding and learning efficiency. • Few students in groups know their roles, responsibilities, and group work expectations. • Few students participating in groups are held accountable for group work and individual work. • Instructional group composition remains unchanged irrespective of the learning and instructional goals of a lesson.

APPENDIX B

Common Core State Standards Initiative (2014)
Anchor Standards » College and Career Readiness Anchor Standards for Reading

The K–5 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Key Ideas and Details

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

Craft and Structure

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6. Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.1
8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range of Reading and Level of Text Complexity

10. Read and comprehend complex literary and informational texts independently and proficiently.

APPENDIX C

Functions of Questions Defined by Costa (2001), Hughes (as cited in Fusco, 2012), and Lowery (as cited in Fusco, 2012)

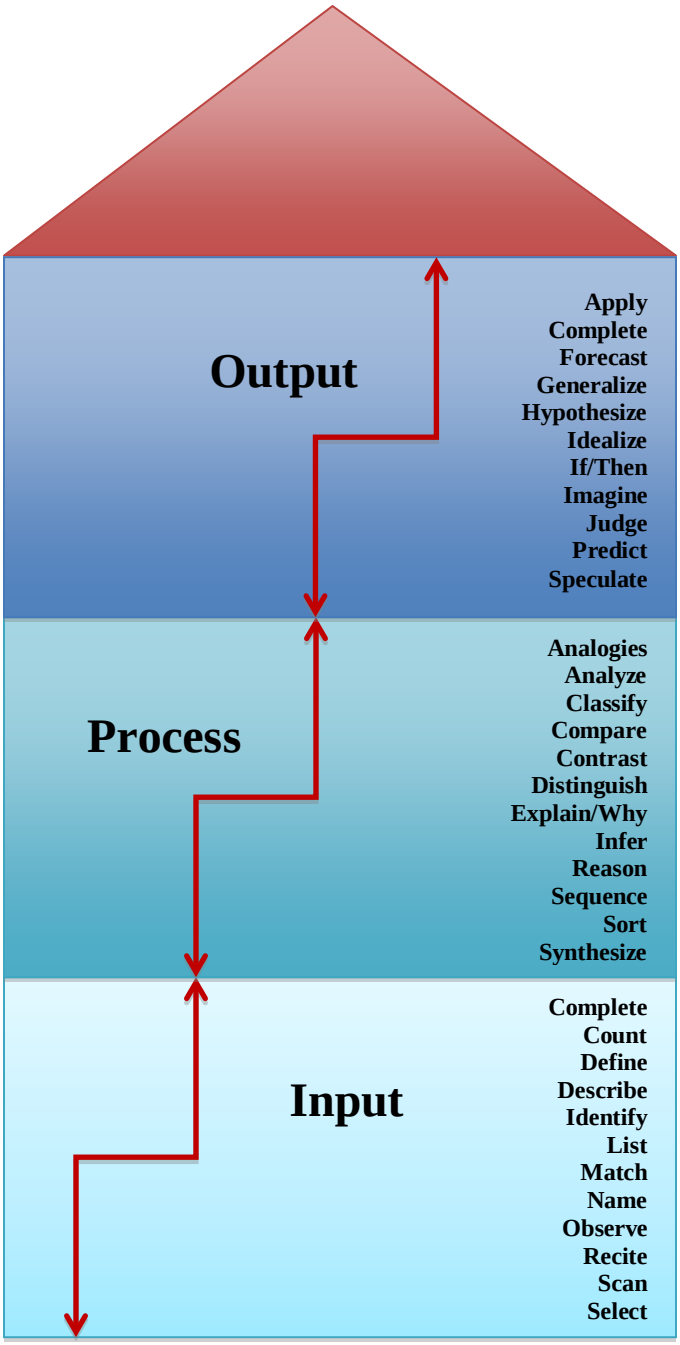
Function	Definition	Example
Closed (Costa, 2001)	Student can answer question with yes, no, or I can.	Can you add 6+7?
Open- ended (Lowery, as cited in Fusco, 2012)	Student is asked to analyze, synthesize or problem solve.	What if….?
Verification (Costa, 2001)	Student is asked to remember, define, or recall a fact and the student and the teacher usually know the answer.	What is 2+2? What is a rectangle? What is the name of? How many times did you?
Verification (Hughes, as cited in Fusco, 2012)	Student is asked question to get accuracy. The teacher is asking the student to explain their reasoning or verify their response.	How do you know this shape is a polygon and this shape is not?
Cueing (Costa, 2001)	Teacher's question provides clues to the direction or purpose of the question asked.	How do bees help the farmer?
Focus (Costa, 2001)	Teacher's question places emphasis on detailed information so more specifics may be gathered from student answer.	What characteristics are on planet earth that makes life possible here?
Re-focus (Hughes, as cited in Fusco, 2012)	Teacher's question is used to better understand the student's thinking towards the expected learning goal.	You are telling us about a comma, we are talking about things we have in common. Tell us what you know about that.
Probing (Costa, 2001)	Question is asked to pursue more information and stretch the students thinking.	Why do you think that will happen?
Support (Hughes, as cited in Fusco, 2012)	Question allows student to label their inferences or classifications.	How did you decide those animals are mammals?

Function	Definition	Example
Clarifying (Costa, 2001)	Question is asked because the teacher needs clarification of the student's answer. The teacher is not sure what the student means.	Tell me more about…..
Clarifying (Hughes, as cited in Fusco, 2012)	Question is asked because the student needs clarification in order to gain clear meaning about words, topics, or ideas.	What are you thinking when you say the communicative property of addition?
Integrating (Lowery, as cited in Fusco, 2012)	Question is asked so that the student may analyze, conclude, or develop an idea independently.	What will happen if we put the vinegar and the baking soda together?
Valuing (Lowery, as cited in Fusco, 2012)	Question asks student to develop an opinion, a judgment, or a preference.	What changes could you or would you make?
Feeling (Lowery, as cited in Fusco, 2012)	Question asks students to describe feelings or express emotions.	How do you feel about bullying?
Miscue – Rhetorical (Costa, 2001; Lowery, as cited in Fusco, 2012)	The answer to the question is present in the question or no response is expected to the given question.	Is the sky blue? Is the Pope Catholic? If you get cut, will you not bleed? Who is buried in Grant's tomb?
Miscue – Procedural (Costa, 2001; Lowery, as cited in Fusco, 2012)	The question is asked to manage the class and not the lesson.	Do you need to sharpen your pencil? What station should you be working in?
Miscue – Behavioral (Costa, 2001; Lowery, as cited in Fusco, 2012)	Questions are used to control student actions are generally cause defensiveness, resistance, and self-protection.	Why didn't you complete you homework? Why are acting so immature?
Agreement (Costa, 2001)	Question is asked to invite others to agree with given opinion or answer.	This is really the best solution, isn't it? The three basic parts of a plant are root, stem, and leaves, right?

APPENDIX D

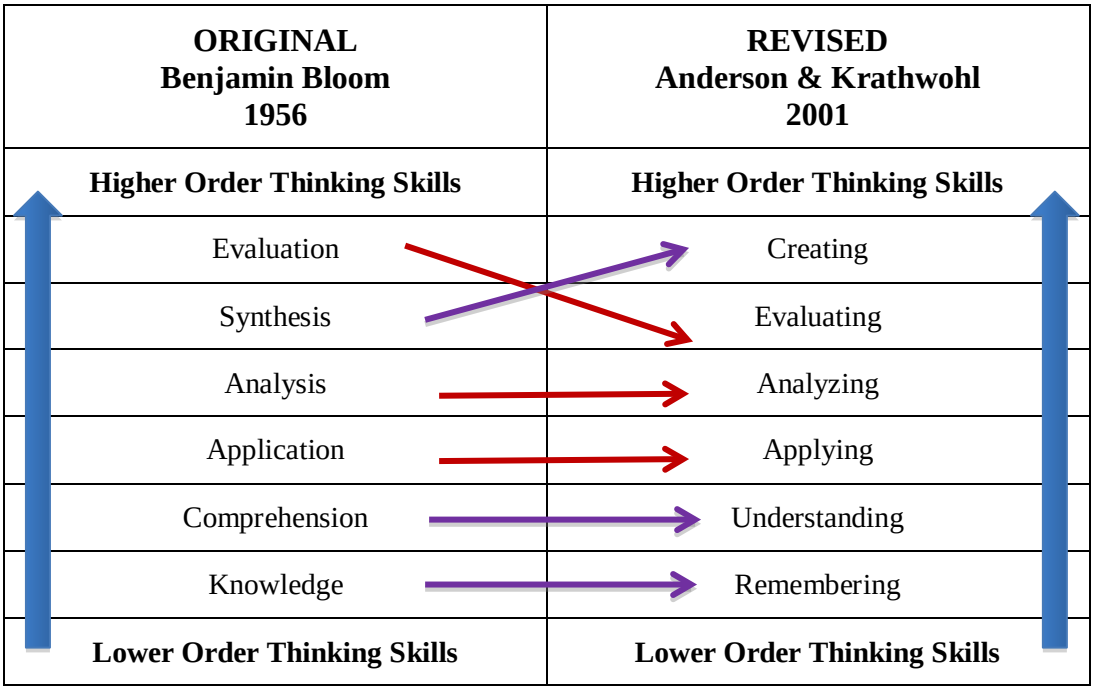
The Three-Story Intellect

Adapted from the work of Robin Fogarty, as published in Costa (2001, p. 362).



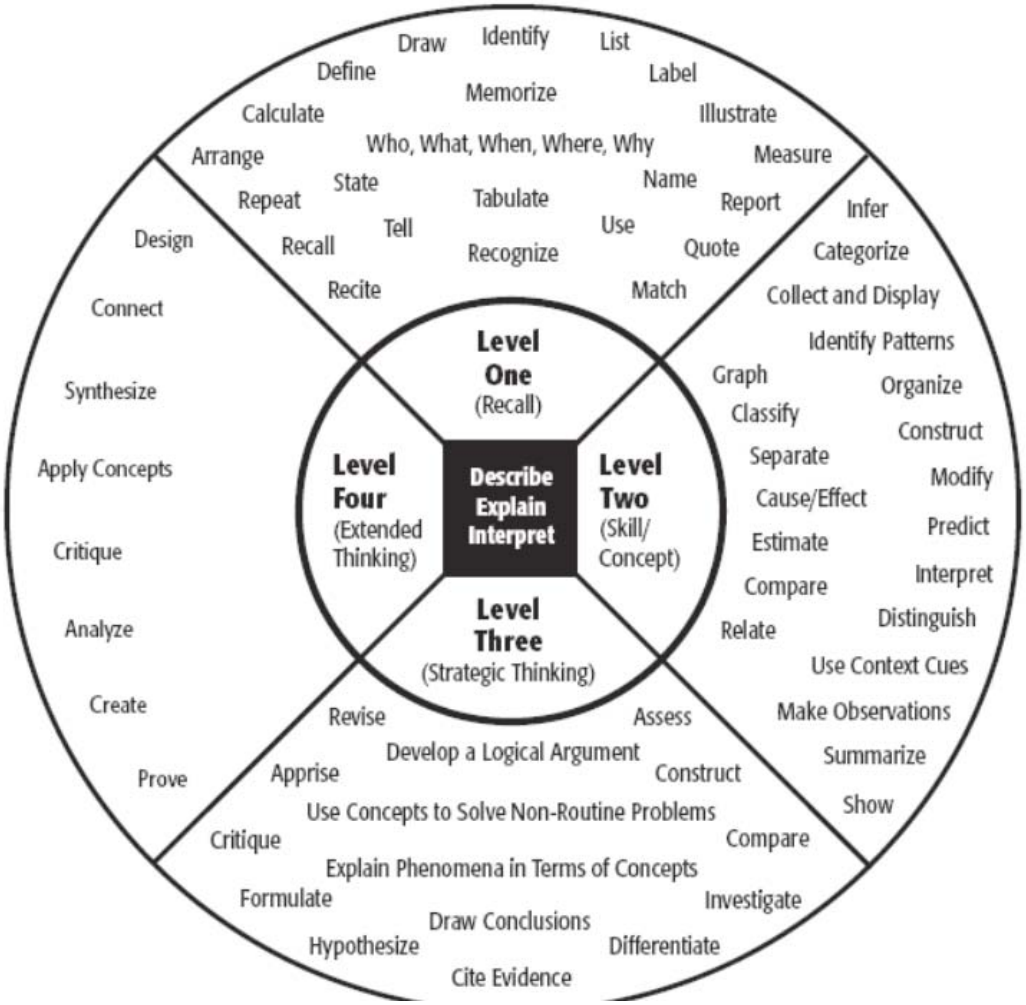
APPENDIX E

Original and Revised Bloom's Taxonomy Graphic



APPENDIX F

Webb's Depth of Knowledge Wheel



Level One Activities	Level Two Activities	Level Three Activities	Level Four Activities
Recall elements and details of story structure, such as sequence of events, character, plot and setting.	Identify and summarize the major events in a narrative.	Support ideas with details and examples.	Conduct a project that requires specifying a problem, designing and conducting an experiment, analyzing its data, and reporting results/ solutions.
Conduct basic mathematical calculations.	Use context cues to identify the meaning of unfamiliar words.	Use voice appropriate to the purpose and audience.	Apply mathematical model to illuminate a problem or situation.
Label locations on a map.	Solve routine multiple-step problems.	Identify research questions and design investigations for a scientific problem.	Analyze and synthesize information from multiple sources.
Represent in words or diagrams a scientific concept or relationship.	Describe the cause/effect of a particular event.	Develop a scientific model for a complex situation.	Describe and illustrate how common themes are found across texts from different cultures.
Perform routine procedures like measuring length or using punctuation marks correctly.	Identify patterns in events or behavior.	Determine the author's purpose and describe how it affects the interpretation of a reading selection.	Design a mathematical model to inform and solve a practical or abstract situation.
Describe the features of a place or people.	Formulate a routine problem given data and conditions.	Apply a concept in other contexts.	
	Organize, represent and interpret data.		

Webb, Norman L. and others. "Web Alignment Tool" 24 July 2005. Wisconsin Center of Educational Research. University of Wisconsin-Madison. 2 Feb. 2006. <http://www.wcer.wisc.edu/WAT/index.aspx>.

APPENDIX G

Hess' Cognitive Rigor Matrix for Reading (Hess et al., 2009, Table 3, p. 8)

Revised Bloom's Taxonomy levels	Webb's Depth-of-Knowledge Levels Level 1 Recall and Reproduction	Level 2 Skills and Concepts	Level 3 Strategic Thinking/ Reasoning	Level 4 Extended Thinking
Remember Retrieve knowledge from long-term memory, recognize, recall, locate, identify	Recall, recognize, locate basic facts, ideas, principles Recall or identify conversions: between units of measure Identify facts/details in texts			
Understand Construct meaning, clarify, paraphrase, represent, translate, illustrate, give examples, classify, categorize, summarize, generalize, infer a logical conclusion, predict, compare/contrast, match like ideas, explain, construct models	Compose/decompose numbers Evaluate an expression Locate points on a grid Symbolize math relationships Write simple sentences Describe/explain how or why	Specify and explain relationships Give non-examples/examples Make and record observations Summarize results, concepts, ideas Infer or predict from data or texts Identify main ideas	Explain, generalize, or connect ideas using supporting evidence Explain phenomena in terms of concepts Write full composition to meet specific purpose Identify themes	Explain how concepts or ideas specifically relate to other content domains or concepts Develop generalizations of the results obtained or strategies used and apply them to new problem situations
Apply Carry out or use a procedure in a given situation; carry out (apply to a familiar task), or use (apply) to an unfamiliar task	Follow simple/routine procedures Solve a one-step problem Calculate, measure, apply a rule Apply an algorithm or formula Represent in words or diagrams a concept or relationship Apply rules or use resources to edit spelling and grammar	Select a procedure according to task needed and perform it Solve routine problem applying multiple concepts or decision points Retrieve information from a graph and use it solve a multi-step problem Use models to represent concepts Write paragraph using appropriate organization, text structure	Use concepts to solve non-routine problems Design investigation for a specific purpose or research question Conduct a designed investigation Use reasoning, planning, and evidence Revise final draft for meaning or progression of ideas	Select or devise an approach among many alternatives to solve a novel problem Conduct a project that specifies a problem, identifies solution paths, solves the problem, and reports results Illustrate how multiple themes (historical, geographic, social) may be interrelated
Analyze Break into constituent parts, determine how parts relate, differentiate between relevant-irrelevant, distinguish, focus, select, organize, outline, find coherence, deconstruct (e.g., for bias or point of view)	Retrieve information from a table or graph to answer a question Identify or locate specific information contained in maps, charts, tables, graphs, or diagrams	Categorize, classify materials Compare/ contrast figures or data Select appropriate display data Extend a pattern Identify use of literary devices Identify text structure of paragraph	Compare information within or across data sets or texts Analyze and draw conclusions Generalize a pattern Organize/interpret data Analyze author's craft or viewpoint	Analyze multiple sources of evidence or multiple works by the same author, or across genres Analyze complex/abstract themes Gather, analyze, and organize information Analyze discourse styles
Evaluate Make judgments based on criteria, check, detect inconsistencies or fallacies, judge, critique			Cite evidence and develop a logical argument for concepts Describe, compare, and contrast solution methods Verify reasonableness of results Justify conclusions made	Gather, analyze, and evaluate relevancy and accuracy Draw and justify conclusions Apply understanding in a novel way, provide argument or justification for the application
Create Reorganize elements into new patterns/structures, generate, hypothesize, design, plan, construct, produce	Brainstorm ideas, concepts, or perspectives related to a topic or concept	Generate conjectures or hypotheses based on observations or prior knowledge	Synthesize information within one source or text Formulate an original problem Develop a complex model for a given situation	Synthesize information across multiple sources or texts Design a model to inform and solve a real-world, complex, or abstract situations

APPENDIX H

Hess' Cognitive Rigor Matrix Tally Sheets

Teacher_____ School_____ Grade_____

Revised Bloom's Taxonomy Level	**Webb's Depth of Knowledge Levels**			
	Level 1 Recall and Reproduction	Level 2 Skills and Concepts	Level 3 Strategic Thinking and Reasoning	Level 4 Extended Thinking
Remember Retrieve knowledge from long term memory, recognize, recall, locate identify	Recall, recognize, or locate basic facts, details, events, or ideas explicit in texts. Read words orally in connected text with fluency & accuracy. Define terms.			
Transcribed Questions				
Notes				

Hess' Cognitive Rigor Matrix Tally Sheets

Teacher_____ School_____ Grade_____

Revised Bloom's Taxonomy Level	**Webb's Depth of Knowledge Levels**			
	Level 1 Recall and Reproduction	Level 2 Skills and Concepts	Level 3 Strategic Thinking and Reasoning	Level 4 Extended Thinking
<u>Understand</u> Construct meaning, clarify, paraphrase, represent, translate, illustrate, give examples, classify, categorize, summarize, generalize, infer a logical conclusion), predict, compare/contrast, match like ideas, explain, construct models	Identify or describe literary elements (characters, setting, sequence, etc.). Select appropriate words when intended meaning/ definition is clearly evident. Describe/explain who, what, where, when, or how.	Specify, explain, or show relationships; explain why, cause-effect. Give examples or non-examples. Summarize results, concepts, or ideas. Make basic inferences or logical predictions from data or texts. Identify main ideas or accurate generalizations of texts. Locate information to support explicit-implicit central ideas.	Explain, generalize, or connect ideas using supporting evidence (quote, example, text reference). Identify/ make inferences about explicit or implicit themes. Describe how word choice, point of view, or bias may affect the readers' interpretation of a text.	Explain how concepts or ideas specifically relate to *other* content domains or concepts. Develop generalizations of the results obtained or strategies used and apply them to new problem situations.
Transcribed Questions				
Notes				

Hess' Cognitive Rigor Matrix Tally Sheets

Teacher_____ School_____ Grade_____

Revised Bloom's Taxonomy Level	**Webb's Depth of Knowledge Levels**			
	Level 1 Recall and Reproduction	Level 2 Skills and Concepts	Level 3 Strategic Thinking and Reasoning	Level 4 Extended Thinking
Apply Carry out or use a procedure in a given situation; carry out (apply to a familiar task), or use (apply) to an unfamiliar task	Use language structure (pre/suffix) or word relationships (synonym/ antonym) to determine meaning of words.	Use context to identify the meaning of words/phrases. Obtain and interpret information using text features.	Apply a concept in a new context.	Illustrate how multiple themes (historical, geographic, or social) may be interrelated.
Transcribed Questions				
Notes				

Hess' Cognitive Rigor Matrix Tally Sheets

Teacher_____ School_____ Grade_____

Revised Bloom's Taxonomy Level	**Webb's Depth of Knowledge Levels**			
	Level 1 Recall and Reproduction	Level 2 Skills and Concepts	Level 3 Strategic Thinking and Reasoning	Level 4 Extended Thinking
Analyze Break into constituent parts, determine how parts relate, differentiate between relevant-irrelevant, distinguish, focus, select, organize, outline, find coherence, deconstruct (e.g., for bias or point of view).	Identify whether specific information is contained in graphic representations (e.g., map, chart, table, graph, T-chart, diagram) or text features (e.g., headings, subheadings, captions)	Categorize/compare literary elements, terms, facts, details, events. Identify use of literary devices. Analyze format, organization, and internal text structure (signal words, transitions, semantic cues) of different texts. Distinguish: relevant-irrelevant information; fact/opinion. Identify characteristic text features; distinguish between texts, genres.	Analyze information within data sets or texts. Analyze interrelationships among concepts, issues, or problems. Analyze or interpret author's craft (literary devices, viewpoint, or potential bias) to critique a text. Use reasoning, planning, and evidence to support inferences.	Analyze multiple sources of evidence, or multiple works by the same author, or across genres, time periods, or themes. Analyze complex/abstract themes, perspectives, or concepts. Gather, analyze, and organize multiple information sources. Analyze discourse styles.
Transcribed Questions				
Notes				

Hess' Cognitive Rigor Matrix Tally Sheets

Teacher_____ School_____ Grade_____

Revised Bloom's Taxonomy Level	**Webb's Depth of Knowledge Levels**			
	Level 1 Recall and Reproduction	Level 2 Skills and Concepts	Level 3 Strategic Thinking and Reasoning	Level 4 Extended Thinking
Evaluate Make judgments based on criteria, check, detect inconsistencies or fallacies, judge, critique			Cite evidence and develop a logical argument for conjectures. Describe, compare, and contrast solution methods. Verify reasonableness of results. Critique conclusions drawn.	Evaluate relevancy, accuracy, & completeness of information from multiple sources. Draw & justify conclusions. Apply understanding in a novel way, provide argument, or justification for the application.
Transcribed Questions				
Notes				

Hess' Cognitive Rigor Matrix Tally Sheets

Teacher_____ School_____ Grade_____

Revised Bloom's Taxonomy Level	**Webb's Depth of Knowledge Levels**			
	Level 1 Recall and Reproduction	Level 2 Skills and Concepts	Level 3 Strategic Thinking and Reasoning	Level 4 Extended Thinking
Create Reorganize elements into new patterns/ structures, generate, hypothesize, design, plan, produce	Brainstorm ideas, problems, or perspectives related to a topic/concept.	Generate conjectures or hypotheses based on observations or prior knowledge and experience.	Synthesize information within one source or text. Develop a complex model for a given situation. Develop an alternative solution.	Synthesize information across multiple sources or texts. Articulate a new voice, alternate theme, new knowledge, or perspective.
Transcribed Questions				
Notes				

APPENDIX I

Functions of Questions Talley Sheet

Defined by Costa (2001), Hughes (as cited in Fusco, 2012), and Lowery (as cited in Fusco, 2012)

Talley Sheet

Teacher_____ School_____ Grade Level_____

Function/Definition/Example	Transcribed Question(s)	Notes
Closed (Costa) – Student can answer question with yes, no, or I can. *Can you add 6+7?*		
Open- ended (Lowery) – Student is asked to analyze, synthesize or problem solve. *What if….?*		
Verification (Costa) – Student is asked to remember, define, or recall a fact and the student and the teacher usually know the answer. *What is 2+2? What is a rectangle? What is the name of? How many times did you?*		
Verification (Hughes) – Student is asked question to get accuracy. The teacher is asking the student to explain their reasoning or verify their response. *How do you know this shape is a polygon and this shape is not?*		

Function/Definition/Example	Transcribed Question(s)	Notes
Cueing (Costa) – Teacher's question provides clues to the direction or purpose of the question asked. *How do bees help the farmer?*		
Focus (Costa) – Teacher's question places emphasis on detailed information so more specifics may be gathered from student answer. *What characteristics are on planet earth that makes life possible here?*		
Re-focus (Hughes) – Teacher's question is used to better understand the student's thinking towards the expected learning goal. *You are telling us about a comma, we are talking about things we have in common. Tell us what you know about that.*		
Probing (Costa) – Question is asked to pursue more information and stretch the students thinking. *Why do you think that will happen?*		
Support (Hughes) – Question allows student to label their inferences or classifications. *How did you decide those animals are mammals?*		

Function/Definition/Example	Transcribed Question(s)	Notes
Clarifying (Costa) – Question is asked because the teacher needs clarification of the student's given answer. The teacher is not sure what the student means. *Tell me more about…*		
Clarifying (Hughes) – Question is asked because the student needs clarification in order to gain clear meaning about words, topics or ideas. *What are you thinking when you say the communicative property of addition?*		
Integrating (Lowery) – Question is asked so that the student may analyze, conclude or develop an idea independently. *What will happen if we put the vinegar and the baking soda together?*		
Valuing (Lowery) – Question asks student to develop an opinion, a judgment, or a preference. *What changes could you or would you make?*		
Feeling (Lowery) – Question asks students to describe feelings or express emotions. *How do you feel about bullying?*		

Function/Definition/Example	Transcribed Question(s)	Notes
Miscue – Rhetorical (Costa & Lowery) – The answer to the question is present in the question or no response is expected. *Is the sky blue? Is the Pope Catholic? If you get cut, will you not bleed? Who is buried in Grant's tomb?*		
Miscue – Procedural (Costa & Lowery) – The question is asked to manage the class and not the lesson. *Do you need to sharpen your pencil? What station should you be working in?*		
Miscue – Behavioral (Costa & Lowery) – Questions are used to control student actions are generally cause defensiveness, resistance and self-protection. *Why didn't you complete you homework? Why are acting so immature?*		
Agreement (Costa) – Question is asked to invite others to agree with given opinion or answer. *This is really the best solution, isn't it? The three basic parts of a pant are root, stem and leaves, right?*		

APPENDIX J

Teacher Questionnaire

Grade Level_____ School_____

1. How do you plan for questions in your literacy block?

2. Why do you use questioning strategies in your literacy block?

3. Have you ever participated in professional development on the topic of effective questioning? If so, please describe.

4. Please answer the following questions. If they are true to your knowledge base or current practice, please mark T on the line. If the statement does not describe your current practice or is not part of your knowledge base, please leave the line blank.

   a. ___ I know about Bloom's Taxonomy and I consider it when asking questions.

   b. ___ I know about Webb's Depth of Knowledge and consider it when asking questions.

   c. ___ Most of the questions I ask relate to the focus of my lesson.

   d. ___ I plan for questions in advance of the lesson.

   e. ___ I do not plan for questions in advance of the lesson.

   f. ___ I just let questions naturally flow during the lesson.

   g. ___ I am flexible with the questions I plan.

   h. ___ I do not have to use all the questions I plan.

   i. ___ I use the questions exactly the way I plan for them.

   j. ___ I post the planned questions, refer to them, or write them down for reference.

   k. ___ I provide wait time after questions and I think my average wait time is about _____seconds for each question.

   l. ___ I think the amount of wait time I give after asking a question is sufficient.

   m. ___ I am not conscious of the amount of wait time I give to most questions.

   n. ___ I follow up questions with related questions.

   o. ___ I repeat questions to various students to get diverse answers or opinions.

   p. ___ I use the student generated answers to guide future instructional lessons/plans.

   q. ___ After the lesson, I evaluate the success of the questions I asked.

   r. ___ I allow for multiple responses to my questions.

5. Please rate the following according to what you believe currently occurs during your literacy block. Please check the one that applies to your current practice.

Question	Often	Sometimes	Rarely
How often do you ask knowledge or remembering level (rote/recall) questions?			
How often do you ask comprehension or understanding level questions?			
How often do you ask application questions?			
How often do you ask synthesis or create level questions?			
How often do you ask evaluation level questions?			
How often do you ask questions of the entire class and expect class or group responses?			

Please write an example of each kind of question listed below:

Knowledge/ Remember	
Comprehension/ Understand	
Application/ Applying	
Analysis/ Analyzing	
Synthesis/ Evaluating	
Evaluation/ Creating	

APPENDIX K

Types of Student Responses Accepted by Teachers for this Study

Student Response Type	Definition
No Response Taken	The question was posed and no response was garnered from the students or taken by the teacher.
Wait Time	Teacher provided at least 3-5 seconds for the student to have time to generate a response.
Teacher Answered	Teacher answered the posed question before students had an opportunity to respond.
Single Student Response	Only one student was given an opportunity to answer the posed question.
Multiple Student Response	More than one student responded to the question, often using minimal or one-word responses.
Whole Group Response	The whole group generated a response by word or signal. Often answered with yes/no, minimal, or one-word responses.

APPENDIX L

Teacher Generated Questions that Met Bloom's Cognitive Level Definitions

Bloom's Cognitive Level	Teacher Generated Questions
Knowledge/ Remember	What is a verb? What is the definition of force? What is 2+2? What have you learned about ___? Do these words rhyme? What does the setting of the story mean? What sound does the diagraph /ch/ say? What part of speech is the word jump? Can you tell me what this letter is? What was the first animal in the story? What is the author's purpose? Describe the story's setting?
Comprehension/ Understand	How does the word ___ help us understand this sentence? What is the main idea of the story? How can you illustrate the water cycle? What was Jack like? How do you know? Can you retell this page to me? What did the turtle paint on the zebra in our story? What was the lesson in this fable? What is the noun in this sentence? What does the author want us to know? What does the setting of the story mean?

Bloom's Cognitive Level	Teacher Generated Questions
Application/ Applying	When could you use this in real life? How is this story similar to your own life? What happens to the area if you increase each side by 2? How do the text features help you understand this story? How can this be used? Have you ever seen a habitat like this in Tennessee? Have you ever felt this way? How can I use the context clue to understand this word?
Analysis/ Analyzing	Why did the character choose this path? How is this story the same as yesterday's? What does the character's way of dealing with these two problems tell you about him?
Synthesis/ Evaluating	Some say the character is ___. Some say he is ___. Based on evidence from the story, what do you think? What story did you like best, why? How were the effects of Hurricane Katrina similar to how Rockaway Island was affected by Hurricane Sandy? Justify why you believe the character feels this way in the book?
Evaluation/ Creating	How many ways can you ____? Design a new coat for an animal in the story. How would this new coat affect the story? Predict the ending of this story. How can you solve this? Write a new ending for the story.

APPENDIX M

Contact Letter to Principals

Date: _____

To:_____

Principal of _____

From: Angie Baker

Subject: Requesting volunteers to participate in my doctorial study regarding teachers and questioning strategies inside the literacy block.

My name is Angie Baker and I am a doctoral student in the Department of Teaching and Learning at East Tennessee State University in the field of Early Childhood Education. As partial fulfillment of the requirements for the degree of Doctor of Philosophy in Early Childhood Education in the Clemmer College of Education, I am currently completing my doctoral dissertation, which is an exploratory critical study of questioning strategies posed by early childhood teachers during literacy blocks.

I am trying to find teachers who would be willing to share their typical teaching experience during one literacy session. I would be very grateful if you would assist me with my research by identifying teachers in grades kindergarten, first, second, and third grade who have an overall composite score on the Tennessee TEAM evaluation of a 3, 4, or 5. The teachers who elect to participate will be asked to complete a brief survey about their questioning strategies and allow me to video one entire literacy block using an iPad2. They will simply be expected to teach their literacy block just as they do each day.

If you chose to assist me in my research, your role as contact person would be to forward me the list of teachers who you know fit the criteria mentioned above. All information collected will be handled with strict confidentiality. Your cooperation is very important to this research and I would like to thank you in advance for your assistance and time.

Sincerely,

Angie Baker, Doctoral Student
East Tennessee State University
angie.baker@sullivank12.net
Cell: 423-502-5196
Office: 423-354-1760
Address: 904 Fordtown Road, Kingsport, TN 37663

APPENDIX N

Letter to Participants

Dear Participant:

My name is Angie Baker and I am a doctoral student in the Department of Teaching and Learning at East Tennessee State University in the field of Early Childhood Education. As partial fulfillment of the requirements for the degree of Doctor of Philosophy in Early Childhood Education in the Clemmer College of Education, I am currently completing my doctoral dissertation, which is an exploratory critical study of questioning strategies posed by early childhood teachers during literacy blocks.

The purpose of this study is to make observations of current K-3 teachers' literacy blocks to record their use of questions as part of literacy instruction regarding reading comprehension. The observations will look for (1) how many and what types of cognitive level questions are presented to students in the literacy block, (2) what is the intended function of the questions posed and (3) how teachers respond to student answers.

The research project contains two parts. First, a brief questionnaire designed to ask some basic questions about your use, knowledge and planning of questions during the literacy block needs to be completed. It should only take about 15 minutes to complete. Secondly, I using an iPad2 will film you for one entire 90-minute literacy block. Your instruction time will not be interrupted, the students will not be part of the film, and you are encouraged to change nothing about what you do daily. The filming will begin 30 minutes prior to the block to make all comfortable with the recording visitor in the classroom.

The research study wishes to have 12 teachers from various schools in the county. Participants will be selected using a stratified random sampling from the informed consent forms that are returned. If you wish to be part of the possible sample, please return the attached informed consent to me using the preaddressed envelope via the interschool mail. Please do so within 5 days. Returning the informed consent does not mean you will be selected to participate. If you are selected, I will contact you personally to set up your 90-minute literacy block observation and a time to complete the questionnaire.

Sincerely,

Angie Baker, Doctoral Student
East Tennessee State University
angie.baker@sullivank12.net
Cell: 423-502-5196
Office: 423-354-1760
Address: 904 Fordtown Road, Kingsport, TN 37663

APPENDIX O

Consent and Release to be Filmed

CONSENT AND RELEASE TO BE FILMED FOR DISSERTATION RESEARCH

I, _____, a teacher at _____ School hereby agree and consent to allow Angie Baker to film one entire 90-minute literacy block using an iPad2. I understand my instruction time will not be interrupted, the students will not be part of the research gleaned from the film, and I am changing nothing about my daily instructional routine. The filming will begin 30 minutes prior to the block to make all comfortable with the recording visitor in the classroom. The resulting video will not be made available to the public, the Internet, or in other format. I understand and agree that as a participant I will not be specifically identified, my anonymity will be closely guarded and my rights and privacy will be maintained. As the undersigned, I further agree to release the Sullivan County School District, and its employees, agents, or others participating in the making of the video from any liability, of whatever kind or nature, flowing as a direct or indirect consequence of my participation in the filming. There will be no opportunity made available whereby any royalty or other compensation for any use of the video will be possible for the video is for research purposes only and will remain only in the possession of the researcher in a secure location.

Date: _____

Signature

APPENDIX P

Cover Letter for Student to be Present for Filming

COVER LETTER ATTACHED TO CONSENT AND RELEASE FOR STUDENT TO BE PRESENT IN CLASS WHILE TEACHER PARTICIPATES IN RESEARCH STUDY

Dear Parent or Guardian,

My name is Angie Baker and I am a doctoral student in the Department of Teaching and Learning at East Tennessee State University in the field of Early Childhood Education. I am also the Principal of Miller Perry Elementary School. As partial fulfillment of the requirements for the degree of Doctor of Philosophy in Early Childhood Education in the Clemmer College of Education, I am currently completing my doctoral dissertation, which is an exploratory critical study of questioning strategies posed by early childhood teachers during literacy blocks.

The purpose of this study is to make observations of current K-3 teachers' ninety-minute literacy blocks to record their use of questions as part of literacy instruction regarding reading comprehension. The observations will look for 1) how many and what types of cognitive level questions are presented to students in the literacy block, (2) what is the intended function of the questions posed and (3) how teachers respond to or elicit student answers. Your child's teacher will be participating in my study. Therefore your child will be present in the room when the filming of the teacher's instruction during one entire 90-minute literacy block occurs. I will use an iPad2 to record the literacy block. The regular daily instruction time will not be interrupted. The filming will begin 30 minutes prior to the block to make all comfortable with the recording visitor in the classroom and the teacher will not be changing what naturally occurs in class.

It is NOT the intent to study the students, only the teacher. We will make every effort NOT to capture students on the recording, but there is a chance they could appear on the film. Since your student will be present we wish to obtain your consent and understanding of the process. Therefore, please carefully read and return the attached consent form. Students who do not have a returned consent form will have arrangements made whereby they will NOT have an opportunity to be captured on the recording.

Although your child's rights and privacy will be fully maintained, the Secretary of the Department of Health and Human Services, the ETSU IRB, and personnel particular to this research do have access to the study records. ETSU IRB has given approval for this research. If you do not want wish participate, it will not affect your child in any way. Participation in this research experiment is voluntary and you may refuse to participate by simply not returning this letter/form to your child's teacher.

If you have any research-related questions, you may contact me, Angie Baker, at angie.baker@sullivank12.net or by using the information below. I am working on this project under the supervision of Dr. L. Kathryn Sharp, the chair of my dissertation committee. You may reach her at sharplk@mail.etsu.edu

The chairperson of the Institutional Review Board at East Tennessee State University is available at (423) 439-6055 if you have questions about your rights as a research subject. If you have any questions or concerns about the research and want to talk to someone independent of the research, you may call the IRB Coordinator at 423/439-6055 or 423/439/6002.

Sincerely,

Angie Baker, Doctoral Student
East Tennessee State University
angie.baker@sullivank12.net
Cell: 423-502-5196
Office: 423-354-1760
Address: 904 Fordtown Road, Kingsport, TN 37663

APPENDIX Q

Consent and Release for Student to be Present in Class for Filming

CONSENT AND RELEASE FOR STUDENT TO BE PRESENT IN CLASS WHILE TEACHER PARTICIPATES IN A DISSERTATION RESEARCH STUDY

I, _____, am the parent or guardian of _____, a student at _____ School. The undersigned hereby agree and consent to allow the above listed student to be present in the classroom during the time Angie Baker will film one entire 90-minute literacy block using an iPad2. I understand the teacher's instruction is the focus of the study and not any student in the class. No student responses, images, or participation in the film will be used in the study. The literacy block instructional time will not be interrupted, the students will not be part of the research gleaned from the film, and the teacher will be changing nothing about his or her daily instructional routine. The filming will begin 30 minutes prior to the literacy block to make all comfortable with the recording visitor in the classroom. The resulting video will not be made available to the public, the Internet or in other format. I understand and agree that as a by-stander participant, my child will not be specifically identified, his or her anonymity will be closely guarded, and his or her rights and privacy will be maintained. As the undersigned, I further agree to release the Sullivan County School District, and its employees, agents, or others participating in the making of the video from any liability, of whatever kind or nature, flowing as a direct or indirect consequence of my child's image appearing on the film. There will be no opportunity made available whereby any royalty or other compensation for any use of the video will be possible for the video is for research purposes only and will remain only in the possession of the researcher in a secure location.

Date: _____

Parent or Guardian's Signature

VITA

ANGELA HELTON BAKER

Education:

2014: East Tennessee State University, Ph.D. Early Childhood Education and Development

2009: National Board Certification – Early Childhood Generalist

2007: Lincoln Memorial University, Ed.S. Educational Leadership

2000: National Board Certification – Early Childhood Generalist

1996: East Tennessee State University, M.Ed. in Early Childhood Education

1983: East Tennessee State University, B.S. in Elementary and Special Education with K endorsement

Educational Service:

2011-Present: Sullivan County Schools, Principal, Miller Perry Elementary School

2010-2011: Kingsport City Schools, Assistant Principal, Andrew Jackson Elementary School

2000-2008: Northeast State Community College, Adjunct Professor in Early Childhood Teaching and Learning

Courses: Creative Development, Foundations of Early Childhood

1996-2000: East Tennessee State University, Adjunct Faculty Member - Early Childhood Department

Courses: Creative Development, Program Planning

1990-2010: Johnson City Schools, Keystone & Towne Acres Elementary- Special Education Teacher

Keystone Elementary School – Special Education Teacher

Mountain View Elementary School- Teacher – Classroom Teacher

1984-1990: Saint Dominic Elementary, Kingsport, TN, Teacher and Director of Child Development Center

1983-1984: Child Study Center at East Tennessee State University, Teacher

Awards:

2012: Cusp Reward School, Miller Perry Elementary Schools

2008: Recognized by JCEA for Community Service Project – *Books for Babies*

2002, 2006: Who's Who Among America's Teachers

1998: Innovative Practices Teacher Award

1997: Mountain View Elementary Teacher of the Year

1997: Johnson City Schools System Wide Elementary Teacher of the Year

1994: Towne Acres Elementary School Teacher of the Year

1993: Tennessee School Board Award of Excellence in Educational Programs

Presentations:

Over the past 20 years, I have made numerous presentations concerning best practice and early childhood. These have included:

NAEYC Conferences in Dallas; New Orleans; Washington, DC; and Orlando

Ohio State Department Early Childhood Conference

ETSU Early Childhood Conference

TAEYC in Gatlinburg

Southern Early Childhood Association