THE EFFECTS OF LITERACY COACHING ON TEACHER STRATEGY USE AND STUDENT READING COMPREHENSION

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THE EFFECTS OF LITERACY COACHING ON TEACHER STRATEGY USE AND STUDENT READING COMPREHENSION

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A Dissertation
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THE EFFECT OF LITERACY COACHING ON TEACHER STRATEGY USE AND
STUDENTS’ READING COMPREHENSION

Jennifer Falcone Mitchell, Ed.D.

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The purpose of this study was to examine the effect of literacy coaching on teacher strategy use and student reading comprehension. A convenience sample of 20 third-grade teachers and their students (n=330) participated in this study. Literacy coaches were identified as experts in the area of literacy, reading, and teaching methodologies. They provided job-embedded staff development to teachers with the intent of improving teacher effectiveness and student learning. The coaching consisted of three levels (in-class coaching, consultant coaching, and no coaching). Before treatment, the researcher provided an initial 3-hour presentation on summarization, the instructional focus of the study. Then, seven literacy coaches in seven schools administered the coaching treatment during an 8-week coaching cycle. The two treatment groups (in-class and consultant) received different numbers and/or combinations of follow-up coaching training. This study utilized a pre-post test, quasi-experimental design. Parametric and nonparametric statistics were used to analyze the data.

In order to measure whether the type of coaching (in-class coaching, consultant coaching, or no coaching) impacted teacher strategy use, the Concern Based Adoption Model’s (CBAM) Levels of Use (LoU) structured interview was administered pre and post treatment to investigate gains achieved by the teachers in the implementation of summarization. The Kruskal-Wallis test indicated a significant difference in teachers’ use of
summarization among teachers in the different coaching conditions. The in-class coaching
group attained significantly more growth than the no coaching group. However, no
significant differences were found between the consultant coaching group and the in-class
coaching group or between the consultant coaching group and the no coaching group.

The second research question examined how literacy coaching (in-class coaching,
consultant coaching, and no coaching) affected students’ reading comprehension. A one-way
analysis of covariance (ANCOVA) was used to analyze this question. Reading
comprehension was measured pre- and post-treatment using an instrument developed by the
researcher, the Assessment for Reading Comprehension (ARC-A and ARC-B). Students’ pre
reading comprehension (ARC-A) and overall reading achievement (Degrees of Reading
Power) served as covariates to produce adjusted means to equate post-treatment reading
achievement scores based on initial reading ability. ANCOVA results indicated a significant
difference among the three coaching groups. Results of the Bonferroni procedure indicated
that the in-class coaching group’s ARC-B scores were significantly higher than those of both
the consultant coaching group and the no coaching group.
School of Professional Studies  
Department of Education and Educational Psychology  
Doctor of Education in Instructional Leadership

Doctor of Education Dissertation

The Effect of Literacy Coaching on Teacher Strategy Use and Student Reading Comprehension

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DEDICATION

To Jessica, for her precious friendship, valued insight, and endless support that carried me along the way. Thank you will never be enough.

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CHAPTER ONE: INTRODUCTION TO THE STUDY

In 2000, President George Bush authorized the No Child Left Behind Act (NCLB) of 2001. The federal legislation embodied in NCLB mandates that every child will read on grade level by the end of third grade (United States Department of Education, 2002a). This legislation placed an emphasis on education and provided an unprecedented increase in federal funding to states with the intent of improving low performing schools (National Conference of State Legislature, 2007; Trahan, 2002). Along with this funding came higher levels of accountability for state education systems to guarantee that no child was left behind (Paige, 2001; United States Department of Education, 2002a). NCLB requires states to increase student testing, ensure that highly qualified teachers are positioned in every classroom, and guarantee that all students, regardless of socioeconomic factors, achieve a proficient level of education by the 2014-2015 school year (NCSL, 2007; United States Department of Education, 2002a). States are required to have students demonstrate proficiency on academic standards on state assessments. School districts must report that all students are making adequate yearly progress (AYP); furthermore teacher quality standards were added to the NCLB legislation. In response, educators across the country have begun to seek alternative methods for improving teachers’ instructional practices, and ultimately, student learning (Trahan, 2002; Wren & Reed, 2005).

Many of the federal dollars in NCLB are directed through Title I funding to students in high-poverty schools as part of the improvement plan designed to close the achievement gap in public schools (Paige, 2000). However, Reading First, the academic component of NCLB, provides federal funding for professional development programs that focus on research-based teaching methods (United States Department of Education, n.d.). This part of
the improvement plan highlights the need to enhance the quality of teachers and administrators. States are currently mandated to develop standards for identifying highly qualified teachers as well as implementing a system designed to assess practicing teachers’ qualifications. In order to support these processes, an emphasis has been placed on professional development designed to enhance the quality of educators (Trahan, 2002; United States Department of Education, 2002b).

Reading First legislation identifies job-embedded staff development as an essential component in the process of transferring learning from traditional workshops to classroom application (Learning Points Associates, 2004). One form of job-embedded staff development is literacy coaching. Literacy coaching is designed to provide context-specific, ongoing support to teachers with the intent of improving instructional practices (Joyce & Showers, 2002; Killion & Harrison, 2006; Neufeld & Roper, 2003; Russo, 2004). Learning Points Associates suggested that coaching may positively influence student achievement because it aids teachers in the development of new instructional strategies and substantially increases the amount of time teachers spend on their own professional development. At the heart of this reform is the belief that teachers make a difference and that the quality of a teacher is a major determinant of student academic progress (Sanders & Horn, 1998).

Rationale and Related Literature

Research focusing on teacher effectiveness and student achievement proposes that one of the most important contributors to student achievement is the classroom teacher’s knowledge and employment of research-based instruction (Brophy, 1986; Marzano, 2001; Rowan, Correnti, & Miller, 2002; Sanders & Horn, 1994, 1998). This literature stated that a teacher’s instructional practices can determine teacher effectiveness (Ding & Sherman, 2006;
Taylor, Pearson, Clark, & Walpole, 1999). Studies suggest that within any given school there is a great deal of variation in the quality of instruction from teacher to teacher (Marzano, Pickering, & Pollock, 2001). This variability results in a range of teacher effectiveness within schools. Additional research findings suggested that effective teachers manage to increase achievement regardless of which curriculum materials, pedagogical approach, or reading program are selected (Allington, 2002; Darling-Hammond, 1996).

Teacher effectiveness can be significantly enhanced by staff development designed to increase the transfer of new instructional strategies into teachers’ repertoire of classroom practice (Joyce & Showers, 2002; Lyons & Pinnell, 2001). Research conducted by Joyce and Showers (Joyce & Showers, 1980, 1984, 1995; Showers, 1982, 1984) provided some evidence that staff development should incorporate a combination of training components including the presentation of theory, demonstration, practice, feedback, and coaching when transfer of newly learned skills is the objective. Their research identified a training model that emphasized intensive, classroom-based peer coaching. Showers (1982, 1984) defined peer coaching as collaborative problem-solving that occurs between two or more classroom teachers to facilitate the transfer of training from workshop to classroom application. Results of their research indicated that teachers who received scaffolded support through peer coaching had higher transfer, or use, of the teaching strategy on which they were being coached than the teachers who participated in traditional workshops with demonstrations and opportunities to practice the strategy. Results of a number of studies have supported Joyce and Showers’s findings (Debruhl, 1993; Digranes, 1988; Finney, 1997; Morton, 2004). These researchers indicated the need for further studies on the transfer of training with more controlled designs. In addition, Schultze (1984) and Wynn (1986) recommended the need to
examine which training components (theory, demonstration, practice, feedback, or coaching) have greater impact on transfer of new learning to classroom practice, and Craven (1989), Debruhl, and Wynn cited the need to observe how this transfer affects student learning.

In contrast to the peer-coaching model described by Joyce and Showers, a different form of coaching has evolved since the passage of NCLB and Reading First legislation. This job-embedded model of coaching provides comprehensive, job-embedded staff development that is designed to scaffold adult learning. This role is often filled by faculty members with extensive knowledge and expertise in the area of reading research and teaching methodologies (Killion & Harrison, 2006; Learning Points Associates, 2004; Wren & Reed, 2005). In many cases, reading specialists or consultants have begun to perform the role of literacy coaches. Rather than working directly with struggling readers, these specialists work with teachers to support them in becoming more effective educators (IRA, 2000). Much of the existing literature on this form of coaching consists of anecdotal case studies that describe the role of coaches, as well as the professional development activities coaches use to scaffold learning for teachers (Bean, 2004; Lyons & Pinnell, 2001; Neufeld & Roper, 2003; Poglinco et al., 2003; Sturtevant, 2003; Walpole & McKenna, 2004). This literature acknowledged that coaches have the potential to increase the overall quality of instructional practices and teacher effectiveness. However, there is limited research that explores how literacy coaches affect the transfer of skills to the classroom or how they impact student learning (Buly, Coskie, Robinson, & Egawa, 2004; Russo, 2004; Wren & Reed).

Studies that have been conducted on coaching and student achievement have reported mixed results. A quasi-experimental study conducted by De Alba-Johnson et al. (2004) found that teachers who were coached in a given instructional strategy showed greater classroom
application of these strategies than uncoached teachers. However, the researchers did not clearly indicate what specific coaching strategies were used as part of the treatment. Rasmussen (2005) and Walton (1998) reported mixed results in terms of how the transfer of training impacted student achievement, and both cited the need for more research. Ross (1992) and Schuster (2004) both found that coaching had a positive impact on student achievement. However, these studies suffered from methodological limitations. Schuster’s evaluation research did not use an experimental design to control for the treatment, and the sample was limited to students in need of supplemental reading instruction. Ross’s study was correlational in nature and focused on coaches who were content experts rather than instructional experts. In addition, researchers indicated the need to determine the specific professional development training and coaching factors that lead to improved student achievement (Schuster; Walton). As more districts employ coaching programs to comply with Reading First recommendations, it is evident that more research is needed to investigate the connection between these programs and the transfer of skill application, as well as student achievement.

Problem Statement

Recent federal involvement in school reform has increased accountability levels for all school districts. Every student must demonstrate adequate yearly progress (AYP), and all educators must meet the criteria of a highly qualified educator. Federal monies are available to support the professional development needs of school communities (Paige, 2001; Trahan, 2002; United States Department of Education, 2002a). Therefore, many districts across the country have begun to implement coaching programs as a form of job-embedded staff development with the intent of increasing the effectiveness of teachers and student
achievement (IRA, 2004b). A growing body of research describes a wide range of roles and responsibilities that coaches execute as job-embedded staff developers (Buly et al., 2004; Killion & Harrison, 2005; Learning First, 2004; Nuefeld & Roper, 2003). However, more research is needed that quantifies (a) the impact coaches may have on strategy implementation in the classroom and (b) the impact coaching may have on student learning (Bean, 2004; Buly et al.; IRA, 2004a; Lyons & Pinnell, 2001; Neufeld & Roper, 2003; Poglinco et al., 2003; Sturtevant, 2003; Walpole & McKenna, 2004; Wren & Reed, 2005).

This study addresses these needs by comparing three literacy coaching conditions (in-class coaching, consultant coaching, and no coaching) in order to determine their effect on teacher strategy use and student achievement. For the purposes of this study, literacy coaches are defined as job-embedded staff developers who are highly trained experts in the area of reading and literacy. The number and type of contact coaches had with teachers depended on the coaching condition. Differing levels of scaffolded instruction and training was provided by the coaches to teachers in the three coaching conditions as the teachers sought to implement a new strategy in the classroom.

Significance of the Study

This study is significant and needed because it connects prior research on effective staff development and effective teaching with the current status of educational reform in America. The results of this study will help teachers, school administrators, and educational policy makers understand how different coaching programs affect teachers’ use, or transfer, of research-based reading strategies. In addition, this study will provide insight on whether or not student reading comprehension is impacted by this form of job-embedded staff development. As the educational community gains a better understanding of which types of
programs and training activities help children become competent readers, they will be able to make better decisions about staff development programming to increase student learning.

Definition of Key Terms

1. A *literacy coach* is a job-embedded staff developer who is a knowledgeable expert in the area of reading research and teaching methodologies. This person scaffolds learning for teachers and helps them recognize their instructional knowledge and strengths. A variety of staff development training components is used to provide ongoing, sustained support and training to teachers (Learning Points Associates, 2004).

2. *Job-embedded staff development and learning* describes the flexible, school-based, on-going, and sustained support that coaches provide teachers as they strive to become more competent educators (Learning Points Associates, 2004).

3. *Staff development training components* are designed to facilitate the transfer of instructional practices. Components include presentation of theory, modeling or demonstration of research-based practices, practice of targeted strategies, the provision of feedback, and in-class coaching.

The description of each professional development component is as follows:

a. *Presentation of theory* may include discussions, readings, lectures, and in-service workshops in which teachers learn the rationale or underlying reasons behind particular teaching strategies or practices (Joyce & Showers, 2002).

b. *Demonstration* provides opportunities for teachers to directly observe new teaching practices or strategies through modeling or visual media (Joyce & Showers, 2002).
c. *Practice* affords teachers a chance to apply new teaching methods or strategies within a professional development session, in small groups, or in the context of the classroom (Joyce & Showers, 2002).

d. *Feedback* provides an opportunity for a more knowledgeable other to offer assistance and support in regards to a teacher’s professional practice (Costa & Garmston, 2002).

e. *In-class coaching* is a form of collaboration with a more knowledgeable peer or professional on newly learned activities and strategies. This process takes place within the context of teachers’ classrooms and provides an opportunity for teachers and coaches to seek solutions to problems that arise during implementation (Joyce & Showers, 2002).

4. *Transfer of Training* is the transfer of new skills or teaching practices into a classroom teacher’s repertoire of skills (Joyce & Showers, 1980).

5. *Coaching strategies* are collaborative activities that scaffold adult learning. They include in-service sessions, demonstration lessons, development of instructional materials, conferring, conducting observations with feedback, co-planning, analysis of student work, and co-teaching (Casey, 2006; Joyce & Showers, 2002; Killion & Harrison, 2005; Toll, 2005; Wren & Reed, 2005).

6. A *coaching cycle* takes place during a unit of study or a predetermined period of time. The coaching cycle adheres to the gradual release of the responsibility model developed by Pearson and Gallagher (1983) and begins with the coach modeling or demonstrating a selected instructional strategy or teaching practice. Next, multiple opportunities for the teacher to practice what has been modeled are provided. Finally,
scaffolds are removed as responsibility is shifted from the coach to the teacher (Casey, 2006).

7. *Reading* is a complex system of deriving meaning from print that requires all of the following: (a) skills and knowledge to understand how phonemes are connected to print, (b) ability to decode unfamiliar words, (c) ability to read fluently, (d) sufficient background information and vocabulary to foster reading comprehension, (e) development of appropriate active strategies to construct meaning from print, and (f) development and maintenance of motivation to read (National Institute for Literacy, 2006).

8. *Reading Comprehension* was determined by a criterion-referenced, multiple choice, and open-ended response assessment that measured a student’s level of comprehension. This assessment was based upon the student’s ability to form a general understanding, develop an interpretation, make reader and text connections, and examine the content and structure of a piece of text (Connecticut State Department of Education, 2006).

### Research Questions and Hypothesis

1. Is there a relationship between the type of coaching conditions (in-class coaching, consultant coaching, and no coaching) and the change over time in teachers’ *levels of use*, or implementation, of a research-based instructional strategy as measured by the *Levels of Use* (LoU) structured interview?

H$_1$. Teachers who participate in one of the two coaching programs (in-class coaching or consultant coaching) will attain greater growth in regard to strategy
implementation, as measured by the LoU, than teachers placed in the no-coaching program.

2. Are there reading comprehension differences exhibited among three student groups that receive instruction from teachers who have experienced the three levels of coaching (in-class coaching, consultant coaching, and no coaching) after accounting for initial differences in reading comprehension and achievement?

H2. Third grade students taught by teachers who participated in one of the two coaching programs (in-class coaching or consultant coaching) will receive higher mean scores on the reading comprehension assessment than students taught by teachers who were in the no-coaching program.

Methodology

Description of Setting and Sample

A convenience sample of students enrolled in seven public elementary schools in an urban community (population of 83,000) in the Northeast was selected to participate in this study. The research sample was drawn from the total population of approximately 900 third grade students and 36 third grade teachers who attend 1 of the 12 elementary schools within the district. The seven schools included in this research sample were chosen because the district’s reading and language arts coordinator confirmed that these schools adhered to coaching models as previously described. Participants included (a) 370 third grade students, divided among 21 classrooms and (b) the 21 teachers who head these classrooms. There are 42.4% of students within the district who are eligible for free/reduced-priced meals, and the total student minority population is 56.8%. All schools were identified as Title I schools.
**Instrumentation**

The LoU structured interview was administered to teachers to determine teachers’ behavior (pre- and post-treatment) in regard to an innovation being administered by the coach. The LoU is one of three diagnostic instruments of the Concerns-Based Adoption Model (CBAM). This instrument scaled teachers on their current level of implementation of the innovation (1 through 8). Inter-rater reliability for the LoU was established at .98 (Cronbach’s alpha) and validity data were collected using ethnographic protocols such as interviews and observations (Southwest Educational Development Laboratories, 2006).

Coaches utilized the *Structured Coaching Log* (SCL; see Appendix B) to document all professional development components, coaching strategies, and the number of coach to teacher contacts that occurred during the study. Content validity for the SCL was collected during a pilot study. Once revisions were made to the original instrument, a panel of experts identified the SCL as a valid instrument.

The *Assessment of Reading Comprehension* (ARC-A and ARC-B; see Appendix C and Appendix C) was used to measure student reading comprehension. The ARC was developed by the researcher to assess differences in student reading comprehension after the administration of the coaching treatments. Reliability and validity data for the ARC were collected during a pilot study. Coefficient values for both forms of the instrument were .85 (Cronbach’s Alpha) and the alternate forms reliability correlation for the ARC was .76, indicating a high positive correlation between ARC-A and ARC-B. A panel of literacy experts determined that the ARC had strong content validity. The *Degrees of Reading Power (DRP)* was administered pre-treatment to assess students’ initial reading achievement. These data were utilized as covariates.
Research Design, Data Analysis, and Procedures

This study was quasi-experimental and utilized a nonrandomized control-group, pre-test-post-test design. The first research question examined how the independent variable, three levels of a coaching programs (in-class coaching, consultant coaching, and no coaching), facilitated the transfer of a research-based instructional strategy into classroom teachers’ repertoire of skills. The second question examined the effect of the three levels coaching on students’ reading comprehension. This design was selected to investigate the relationship between coaching and changes in both teacher strategy use and students’ reading comprehension in a school setting where random assignment of teachers or students to a treatment group was not feasible (Isaac & Michael, 1995).

The coaching treatments for this study utilized the professional development training components identified by Joyce and Showers (Joyce & Showers, 1980; Showers, 1982, 1984) and the concept of a literacy coach defined by Reading First literature (Learning Points Associates, 2004). The district had not yet adopted a district-wide coaching model. The researcher provided staff development for the seven coaches to ensure they followed the coaching treatment protocols. The researcher provided the district’s administrative team with a summary of three research-based strategies. Based on the district’s needs, the administrative team chose one strategy, summarization, to become the focus for the study. The researcher provided a 3-hour in-service workshop on this strategy to the third grade teachers in all three groups before the start of the study.

The three groups received different numbers and combinations of follow-up training: (a) the control group received the initial 3-hour workshop and no coaching, (b) the consultant coaching group had approximately two coach-to-teacher contacts (30 to 45 minutes in length)
per week that focused on staff development training components, including the presentation of theory, demonstration or modeling, and opportunities to practice new skills outside of the classroom, and (c) the in-class coaching group had approximately three coach-to-teacher contacts (45 to 90 minutes in length) per week that incorporated all consultant coaching program staff development components in addition to feedback and in-class coaching.

Descriptive analysis and nonparametric statistics were utilized to examine the first research question concerning how teachers changed over time in regard to their level of use of the research-based instructional strategy. Pre-treatment, teachers were administered the LoU to determine initial use of the research-based strategy. These data were utilized to create equal groups and to control for teacher prior experience with the strategy presented during the initial training. Teachers were assigned to one of the coaching conditions for an 8-week cycle based on his/her pre LoU results. Coaches focused on increasing the transfer level, or classroom implementation, of the researched-based strategy into teachers’ classroom practice. Teachers were re-administered the LoU after the 8-week coaching treatment. Due to the small sample size, descriptive (means and standard deviations) and nonparametric statistics (Kruskal-Wallis) were employed to analyze whether or not gains in the dependent variable, teachers’ LoU scores, were greater in one of the three conditions ($p \leq 01$). The purpose of this question was to build on the existing body of research by exploring which professional development components and strategies were linked to higher levels of implementation of a new innovation.

In response to the second research question, parametric were used to compare the reading comprehension scores of third grade students with teachers who participated in three different coaching programs (in-class coaching, consultant coaching, and no coaching). The
dependent variable was student reading comprehension as measured by the Assessment of Reading Comprehension, Form B (ARC-B). The coach in each school worked with three different classrooms that were assigned to a different coaching condition. This minimized the effect individual coaches had on the dependent variable. Differences between the levels of the independent variable were analyzed using Analysis of Covariance ($p \leq 05$). The covariate was students’ pre reading achievement as measured by the DRP and students’ pre reading comprehension as measured by the ARC-A. This statistic was chosen to determine whether a difference between the mean scores of the ARC-B were statistically different for the three levels of the independent variable (in-class coaching, consultant coaching, and no coaching) after controlling for initial differences in reading ability (Gall, Gall, & Borg, 2003).

Limitations

Due to the small teacher sample size of teacher participants (N=20), results from the analysis of research question one should be accepted with some degree of hesitancy. Although the research attempted to minimize the number of extraneous variables that impacted the study, threats to internal validity existed. These are discussed in greater length in chapter five. The results of this study are not generalizable to other districts because random assignment to group was not possible; classroom groups were intact and fixed before the study began (Isaac & Michael, 1997).

Organization of the Study

This study is organized in five chapters. Chapter one introduces the study. Chapter two provides a review of the relevant literature and empirical studies that support the study. Chapter three presents the methodology of the study including the design, subjects,
procedures, instrumentation, data analysis, and limitations. Chapter four presents the results of the study. Lastly, chapter five presents conclusions, discussions of the results, recommendations, and suggestions for future research.
CHAPTER TWO: REVIEW OF THE LITERATURE

The purpose of this review is to provide an understanding of previous related research that has been conducted as well as to provide a rationale for the selection of the variables and methodologies included in this study. This chapter reviews the theoretical framework of sociocultural learning theory and literature pertaining to literacy coaching as a form of job-embedded staff development designed to increase teachers’ level of use of instructional strategies and student learning. First, sociocultural learning theory is discussed with respect to the following concepts: (a) the Zone of Proximal Development and scaffolded instruction and (b) cognitive apprenticeships. In the second section, effective staff development in relation to teacher change is discussed. Next, the impact of effective teaching and instruction on student learning is considered. Finally, current literature on: (a) the evolution of literacy coaching and (b) empirical research on coaching and student achievement is examined. These four constructs were identified to support the relationship among literacy coaching, the transfer of staff development, and student reading achievement. Combined, these four constructs create a vital link that supports the efficacy of literacy coaching. A framework for this research can be found within Appendix A.

Sociocultural Learning Constructs Related to Coaching

The theoretical framework underlying literacy coaching is rooted in sociocultural learning theory. In this theory, learners make meaning within a community of learners. Thus, rather than a focus on the individual, an emphasis is placed on the social aspects of learning and cognition (Bonk & Kim, 1998). Vygotsky (1978), one of the founding fathers of sociocultural learning theory, argued that internal construction of reality is the result of social
interactions with more capable peers. This section of the literature review begins with an explanation of two Vygotskian constructs, the Zone of Proximal Development (ZPD) and scaffolding. The ZPD and scaffolding are essential components of learning environments (Driscoll, 2005; Moll, 1990; Tharp & Gallimore, 1988). Next, cognitive apprenticeships will be discussed as a situated, cognitive process that supports adult learners. The situated learning construct of cognitive apprenticeships will be presented in detail as an authentic model for learning and applying new knowledge. This portion of the literature review describes how the sociocultural perspective supports coaching as an effective model of training when the goal is to have teachers assimilate new teaching strategies into their own classrooms.

The Zone of Proximal Development and Scaffolding Instruction

Vygotsky (1978) identified the ZPD as the gap between the learner’s actual developmental level and his or her potential level of development under the guidance of a more capable peer. Moll (1990) defined the concept of the ZPD as the transfer of knowledge, especially skills, by those knowing more to those knowing less through collaborative activity. This construct captures the learner within a social situation of learning and development. Vygotsky viewed education and learning as not only central to cognitive development, but as the cornerstone of sociocultural activity (Moll, 1990). Although Vygotsky’s work mainly discussed the learning processes of children, similar procedures are evident in adult learning. Dunphy and Dunphy (2003) claimed that for any domain of skill, a ZPD can be created and assistance can be provided by a more capable peer or expert.

Wood, Bruner, and Ross (1976) coined the term scaffolding to describe Vygotsky’s notion that intervention by a peer, adult, or more competent other can enable a person to
achieve a learning goal that goes beyond his or her unassisted efforts. As the learner’s abilities increase, the more knowledgeable other gradually withdraws scaffolding structures to incrementally transfer responsibility to the learner (Palincsar, 1986; Winn, 1994). Thus, scaffolding is an effective learning tool used to bridge the gap between the actual and potential developmental levels (Brown & Palincsar, 1989; Moll; 1990; Vygotsky, 1978).

Learning, from a sociocultural viewpoint, requires direct explanation, distributed practice, and thoughtful application of new learning across time (Truscott & Truscott, 2004). This process requires scaffolded instruction that assists the learner to work beyond his or her current level of knowledge (Gallimore & Tharp, 1990; Truscott & Truscott, 2004; Vygotsky, 1978). Gallimore and Tharp referred to six different methods for assisting, or scaffolding, learning. These methods include modeling, explicit instruction, questioning, cognitive structuring (explanations and background knowledge), contingency management (rewards and praise), and feedback. These strategies are seen as ways to provide initial support as the learner becomes more able to assume responsibility.

Gallimore and Tharp (1990) described a learner’s progress through the ZPD as a gradual process in a four-stage model. The stages are as follows:

1. Stage I: Performance is assisted by the more capable other; a heavy emphasis on scaffolding is placed within this stage. The amount of regulation depends on the nature of the task and the characteristics of the learner. If the learner exhibits limited understanding, the expert will offer explicit directions and modeling. Further assistance can be given by questioning and by providing feedback. Once conception of the overall performance has been acquired, responsibility for the task performance itself is progressively handed over to the learner.
2. Stage II: The learner is required to carry out a task without assistance for others. However, the performance is not fully developed or automatized. What was previously guided by the expert is now being guided independently by the learner. Learners regulate their own learning by consistently talking to and assisting themselves in any way possible.

3. Stage III: This stage involves the emergence of the learner from the ZPD. All evidence of self-regulation has vanished and learning is internalized. Assistance from the expert is no longer needed. Performance of the task has been developed, or fossilized.

4. Stage IV: The last stage entails de-automatization of performance, which leads to recursion back through the ZPD. Lifelong learning involves a recurrence of both self-regulation and other-regulation to assist performance. Enhancement, improvement, and maintenance of performance occur regularly during the learning process.

Both the ZPD and scaffolding are essential to effective staff development and coaching. As previously stated, although Vygotsky’s (1978) concept of the ZPD has primarily been connected to the learning processes of children, coaches use similar processes when the goal is to transfer newly learned strategies from a staff development training session into classroom application (Casey, 2006; Sweeney, 2003; Wren & Reed, 2005). Sweeney (2003) described the scaffolded interactions between the coach and teacher as a gradual release of responsibility of the instructional practice. First, the coach models or demonstrates a new instructional practice. The teacher then practices the approach while the coach provides necessary support. At this point, the coach provides feedback to improve instructional practice and scaffolds learning for teachers by providing sustained support.
through a collaborative process. Finally, the teacher integrates the new teaching strategy into his or her own teaching practice.

**Cognitive Apprenticeships as a Situated Learning Experience**

Vygotsky’s ZPD and scaffolded learning have been incorporated into situated learning theory; this theory describes a collaborative, context-based approach to learning (Lave & Wenger, 1991). Situated learning focuses on the relationship between learning and the social situation in which it occurs (Lave & Wenger; Wilson, 1993). Lave & Wenger conceptualized learning as having the following three interrelated components: (a) learning is best situated in the context of authentic or everyday practice, (b) the transfer of knowledge is limited to similar situations, and (c) learning is primarily a social phenomenon. Learning is viewed as situated, social, and distributed (Putnam & Borko, 2000). As Brown, Collins, and Duguid (1989) stated, knowledge and learning have to be understood within the setting in which they occur; learning is thus “fundamentally situated” (p. 32). Situated learning shifts the focus from the individual to the sociocultural setting and considers the activities of the people within that setting (Driscoll, 2005).

One specific approach to authentic, situated learning is cognitive apprenticeship. Brown et al. (1989) described this construct by stating, “cognitive apprenticeship methods try to enculturate students into authentic practices through activity and social interaction in a way similar to that evident – and evidently successful – in craft apprenticeship” (p. 258). In other words, apprenticeship embeds the learning of skills and knowledge into people’s social and functional context (Collins, Brown & Newman, 1989). Cognitive apprenticeships teach authentic learning activities through the guided experiences of an expert within the field or domain of the desired learning. The goal of cognitive apprenticeships is to develop the
knowledge and skills of the novice through participation in different roles in which the learner gradually assumes more responsibility for the task (Brown et al.; Lave & Wenger, 1991).

Collins et al. (1989) indicated four critical elements of cognitive apprenticeships: the learners must (a) come to understand the purposes or uses to which their knowledge will be put in the future, (b) be actively engaged in using the knowledge rather than passively receiving it, (c) become familiar with the different conditions under which their new knowledge can be applied, and (d) obtain knowledge in multiple contexts so that new learning can be applied to a similar context as well as transferred to new situations or contexts. Learners observe, enact, and practice new learning with scaffolded support from the expert teacher. Cognitive apprenticeship teaching methods are designed to bring tacit learning processes into the open where they are made explicit (Collins et al., 1989). This is accomplished by having experts orally explain how to complete an authentic task while they are actually doing the activity (LeGrand-Brandt, Farmer, & Buckmaster, 1993).

Cognitive apprenticeships are based on a modeling, coaching, and fading paradigm (Collins et al., 1989; Lave & Wenger, 1991; LeGrand-Brandt et al., 1993). LeGrand-Brandt et al. identified five phases within the cognitive apprenticeship model. These phases, as well as the distinct roles of the expert and the learner, are described fully in Appendix E: Cognitive Apprenticeship Phases. The first phase, modeling, involves the expert demonstrating the real-life activity that the learner wants to perform. In the second phase, approximating, the expert provides scaffolding, coaching, and support for the learner. The third phase, fading, describes the process of the expert gradually decreasing the amount of scaffolding. In the fourth phase, self-directed learning, the expert only provides assistance
when needed. During the final phase, *generalizing*, the expert and learner discuss the generalizability, or application, of what has been learned. During the phases of cognitive apprenticeship, the expert, or modeler, gradually scaffolds knowledge and skills for the learner. Ultimately, the learner independently self-directs his or her learning and is able to generalize newly learned knowledge or skills to new situations or contexts. This process utilizes Vygotsky’s (1978) scaffolding and Zone of Proximal Development structures to help the adult learner construct knowledge.

Collins et al.’s (1989) identified six teaching methods that help learners acquire and integrate cognitive and metacognitive strategies for using, managing, and discovering knowledge. These teaching methods, or strategies, are described fully in Appendix F: Six Cognitive Apprenticeship Teaching Methods. The first three methods, modeling, coaching, and scaffolding, are the core of the cognitive apprenticeship model. They are designed to assist learners in the process of integrating cognitive skills and knowledge through a process of observation and guided practice. The next two methods, articulation and reflection, are teaching methods which are designed to help the learner focus his or her observations of expert problem solving and gain access to his or her own problem-solving strategies. The final method, exploration, is designed to encourage learner autonomy. This is achieved by having the learner carry out authentic expert problem-solving processes and by having the learner define and formulate problems to be solved.

*Section Summary*

In summary, this section has reviewed two Vygotskian constructs, the Zone of Proximal Development and scaffolding, and the situated learning concept of cognitive apprenticeships. The sociocultural theoretical constructs discussed in this section are
essential components of successful staff development. Coaches, as job-embedded staff
developers, implement many strategies and protocols embedded in the ZPD, scaffolded
learning, and cognitive apprenticeships while they work with teachers to improve their
teaching practices. Coaches scaffold learning for teachers by providing sustained support
through a collaborative process which embraces a gradual release of responsibility
continuum. The next section of the literature review will (a) provide an overview of literature
and research linking these sociocultural concepts to effective staff development, (b) review
the characteristics of effective staff development for teacher change, and (c) present an
instrument utilized to measure teacher change.

Effective Staff Development

*Sociocultural Theoretical Constructs and Staff Development*

The sociocultural approach to knowledge and learning has great implications for
teacher learning. From this perspective, staff development for teachers should be grounded in
their own professional practice, with a large part of the training taking place in their
a critical need for research on professional development that differs from traditional, stand-
up-and-deliver models to help school learning communities move toward lasting change” (p.
53). One-shot, in-service training reflects an old paradigm of learning and discounts the
complexities of teaching that occur within a social context (Little, 1993). Joyce and Showers
(2002) pointed out that this type of disconnected training is easily forgotten and lacks the
potential to support lasting change. Often, educational reformers do not recognize the fact
that public schools rarely provide vehicles through which fundamental change in teaching
practices can occur (Gallimore & Tharp, 1988). Gallimore and Tharp stated:
“The major barrier to change in teaching practices is the absence of activity in settings in public schools that would provide for assisted performances of those acts that must be employed in the classroom in the presence of students. Teachers, like their students, have ZPDs; they, too, require assisted performance.” (p. 190)

Summarizing research in this area, Putnam and Borko (2000) indicated that successful models of staff development incorporate a variety of contexts for learning. These programs included week-long summer institutes for learning that incorporated demonstrations and opportunities to practice in simulated classroom scenarios, as well as follow-up training during which staff members provided feedback and opportunities for reflection as they further explored issues associated with the new learning. Training should incorporate authentic activity that requires the construction of learning and knowing to be located in actual situations, not artificially constructed or simulated (Brown et al., 1989).

During the last two decades, researchers have analyzed how sociocultural learning constructs such as scaffolding and cognitive apprenticeships might provide the basis for learning and instruction in adult educational and training programs. Current research on effective staff development highlights particular programs such as coaching, mentoring, and school-based professional development and study groups as effective forms of training (Owen, 2004). These teacher training programs embed similar characteristics evident in scaffolded instruction, situated learning, and cognitive apprenticeships. The following section reviews four qualitative case studies that investigated the impact that sociocultural training models had on teacher learning. The first two studies investigated how general sociocultural concepts, such as scaffolded instruction and collaborative inquiry, impacted teacher learning.
The second two studies specifically explored the interaction between cognitive apprenticeships and adult learning.

*Sociocultural models of staff development.* Truscott and Truscott (2004) investigated the results of a multiyear consultation model of professional development that was based on socioconstructivist elements. This research utilized case-study methodology to investigate how this type of professional development model affected 12 elementary school teachers in their efforts to change their classroom practices. The consultation model incorporated a combination of workshops, demonstrations (direct instruction), inquiry groups, and coaching. This consultation training adopted a scaffolded approach to help teachers cooperatively design and implement strategies, modifications, and instructional techniques. The consultant was available to provide different levels of support (e.g., demonstrations, coaching) to teachers throughout the project. The researchers sought to determine: (a) whether or not teachers recognized the key elements of positive professional development (elements of the consultation model versus elements of traditional in-service models), (b) which elements of the model teachers found most helpful, and (c) which elements of the consultation model participants perceived to influence the change in teaching practices.

In order to answer the research question, a combination of questionnaires, interviews, and field notes were administered to gather teachers’ perceptions of the consultation training. Truscott and Truscott found that teachers perceived the consultant form of training to be different from traditional training in many areas. The data collected on the teachers’ perception of consultant training indicated that (a) 100% of teachers felt that this training provided them with choice, (b) 89% felt they were able to focus more on student needs, (c) 89% stated that this type of training featured direct instruction of new teaching skills, and (d)
89% felt that training provided them with valuable feedback during implementation of newly learned skills. Approximately half (56%) of the project’s social learning aspects (collaboration and scaffolded training) were less frequently identified as different from traditional staff development experiences. Eighty-nine percent of the teachers identified the social learning aspects (collaboration and consultation) as strengths of the training model. Changes in classroom practices were reported by 78% of the participants and better learning for students was mentioned by 89% of the subjects. This research project presented preliminary evidence to support a consultation model of training that incorporated critical elements of social learning theory. This model also demonstrated the potential to impact teacher learning as well as assist in the application of newly acquired skills (Truscott & Truscott, 2004).

Similarly, Butler, Lauscher, Jarvis-Sleinger, and Beckingham (2004) conducted evaluation research that examined a training program built upon the principles of collaborative inquiry, scaffolded learning, and situated training. The professional training model, Strategic Content Learning (SCL), was intended to support meaningful shifts in teacher practice. This program focused on training teachers in teaching protocols that engaged students in reflective, interactive discussions designed to guide and regulate their own learning. During the 2-year project, 10 teachers in grades 8 to 11 and researchers from universities worked collaboratively to learn productive ways to reflect on their own teaching practices with the intent of revising these practices. The project began with a 1 ½ hour introductory workshop designed to co-construct the instructional strategies that would become the focus of the program. This form of collaborative professional development included many sociocultural strategies including co-planning, co-teaching, coaching, and
debriefing. The researchers provided different professional development formats using a scaffolded continuum; as educators became more comfortable with teaching strategies, they became more independent in their classroom application. Similar to Vygotsky’s (1978) scaffolding procedures, there was an emphasis on strong support and guidance (co-teaching and coaching) during the beginning of the school year. As teachers became more comfortable with instructional strategies, the researchers slowly released the teachers to become more independent in their application of the strategies. Co-planning and debriefing were available as needed.

The researchers utilized qualitative inquiry in the form of case studies to investigate teacher learning that resulted from the SCL Collaborative Program (Butler et al, 2004). Data collection methods included interviews, observations, and document collection to investigate teacher learning over time. A coding system was used to analyze underlying patterns across data points. Findings suggested that teachers and students both became more active and reflective in terms of their own learning processes. Data also supported that the collaborative and scaffolded SCL process helped teachers gained new insights about teaching and helped create meaningful shifts in educational practice. Teacher participants noted that traditional in-service workshops would not have been enough to effect meaningful changes in practice.

This research contributes to the body of research examining the importance of collaborative learning communities that rely on sociocultural principles of knowledge building.

Cognitive apprenticeship models of staff development. Glazer (2004) investigated the impact of cognitive apprenticeship on teacher learning through a one-person qualitative case study. During an 8-week intervention, cognitive apprenticeship strategies were utilized in a partnership with an expert teacher until the teacher felt empowered to independently
implement a newly learned technology-enhanced mathematical investigations program (InterMath) without coaching or support. This study sought to understand what training factors influenced a teacher to feel empowered to integrate technology independently. Cognitive apprenticeship strategies such as modeling, coaching, fading, scaffolding, articulation, reflection, and exploration were used to support learning.

Data collection techniques included observations with field notes, 20-40 minute daily interviews using a semi-structured interview instrument, and artifacts (lesson plans from InterMath and other related instructional resources). Inductive analysis was used to identify emerging themes from resulting coded categories. Although the findings of this study were limited to this single case, the findings support the use of cognitive apprenticeship strategies as a way to augment the learning needs of a teacher as he or she gains independence with a new learning goal (Glazer, 2004). This process was identified as a catalyst for change as the teacher integrated technology into her repertoire of instruction.

Recently, the English government implemented a professional development training program, entitled the Nuffield Primary History Project (NPHP), that was created around Collins et al.’s (1989) cognitive apprenticeship theoretical framework. Nichol and Turner-Bisset (2006) conducted a study to determine the outcomes of this program and to identify to what extent cognitive apprenticeship structures underpinned teachers’ implementation of a wide range of expert teaching strategies in their own classrooms. Cognitive apprenticeship teaching protocols (demonstration, modeling, enactment, abstracted replay, reflection, mental modeling, and implementation) were put into practice to build upon teachers’ existing instructional knowledge by working closely with experts from higher education institutes. The researchers implemented a multiple case-study analysis of 15 teachers (11 primary
school teachers and 4 secondary) to determine how this form of professional development assisted in the assimilation of expert teaching protocols into the classroom.

Instrumentation consisted of a wide range of qualitative inquiry techniques including teacher archives (lesson plans, teaching materials, assessment instruments, reflections, and student work), interviews, and a formal needs analysis survey. The data were analyzed for patterns and evidence that demonstrated whether or not the NPHP professional development program impacted teacher implementation of new strategies. Based on their analyses, the researchers determined that this form of training maximized the transfer of teaching expertise in the classroom (Nichol & Turner-Bisset, 2006). The researchers stated that the results were inconclusive and recommended further exploratory studies.

Whereas the research described above is rooted in sociocultural theory, there is another body of literature that deals with the characteristics of effective staff development that affects teacher and student learning. This literature and research stems from the National Staff Development Council (NSDC) and the Eisenhower Professional Development Program. The NSDC is a nonprofit association that provides standards and guidelines for staff development designed to improve student learning. The NSDC works with many authors and researchers to publish journals and books that report information on effective staff development for school improvement. The Eisenhower Foundation is funded under the United States Government as part of Title II of the Elementary and Secondary Education Act. This program is dedicated to developing teachers’ knowledge and skills (Birman, Reeve, & Sattler, 1998). The following section highlights critical literature and research from these two organizations on the characteristics of effective staff development for teacher change.
Characteristics of Effective Staff Development for Teacher Change

The National Staff Development Council. The goal of effective staff development is the transfer of new knowledge and skills from training to classroom implementation (Birman et al., 1998; Birman, Desimone, Porter, & Garet, 2000; Joyce & Showers, 2002; Sweeney, 2003). Literature on effective staff development processes has identified certain training practices that have a greater affect on the transfer of training. Nichol and Turner-Bisset (2006) stated that critical to effective development training is the transferability and assimilation of new ideas, strategies, and specific approaches from the training course environment to the classroom. Researchers have consistently stated that traditional staff development training programs, such as isolated, one-day workshops, are disconnected from authentic learning experiences and do not provide the social and scaffolding processes needed for the transfer of new teaching practices into the classroom (Guskey & Sparks, 2002; Ingvarson, Meiers, & Beavis, 2005; Porter, Garet, Desimone, Yoon, & Birman, 2001).

Effective staff development involves systematic efforts to bring about the change in the classroom practice of teachers (Guskey, 2002). However, in many cases, professional development has yet to evolve from more traditional training methods, and many teachers continue to gravitate to the familiar teaching methods they remember from when they were students (Guskey, 2002; Sparks & Hirsh, 2000).

Sparks and Hirsch (2000) stated that in order to improve the American education system, an emphasis must be placed on the organization of staff development designed to upgrade the quality of teaching by all educators throughout their careers. In response, the National Staff Development Council (NSDC, 2001) created standards that offered guidance to school districts as they created staff development programs designed to facilitate the
teacher change process and to improve the quality of teaching (Guskey, 2002). The NSDC standards are broken down into the sub-categories of context standards, process standards, and content standards, which provide guidelines for implementing staff development that is designed to support teachers in the change process and ultimately improve student learning (Guskey; NSDC; Sparks & Hirsh). These standards are located in Appendix G: Staff Development Standards. Context standards provide guidelines for implementing training within professional learning communities under the guidance of skillful instructional leadership. Process standards define the methods and formats for successful adult learning, and content standards delineate the type of knowledge and skills to be included in staff development (NSDC).

Darling-Hammond and McLaughlin (1995), researchers associated with the National Staff Development Council, concluded that effective staff development must involve educators as both learners and teachers. They also identified six critical factors of high quality, effective staff development:

1. Teachers are engaged in concrete tasks of teaching, assessment, observation, and reflection that illuminate processes of learning and development.
2. Staff development is grounded in inquiry, reflection, and experimentation that is participant-driven.
3. Staff development is collaborative, involving the sharing of knowledge among educators and teachers' community of practice rather than focusing on individual teachers.
4. Learning activities are connected to teachers' authentic work with students.
5. Training is sustained as on-going, intensive learning that is supported by modeling.
6. Specific problems of practice are solved through coaching and collective inquiry.

7. Staff development is connected to other aspects of school change.

*The Eisenhower Professional Development Program.* Over the course of 3 years, Porter et al. (2000) conducted a series of studies that were prepared for the United States Department of Education and examined the impact of professional development training supported by the Eisenhower Professional Development Program. The Eisenhower Professional Development program was funded by the federal government and provided $335 million to support professional development experiences for teachers that enhanced their knowledge and skills and, ultimately, student learning (Birman, Reeve, & Sattler, 1998; Porter et al.). The study used longitudinal data from approximately 300 teachers by utilizing a combination of case studies and survey results to understand the characteristics of professional development that improved teachers’ practice and to determine if these characteristics were common to training offered under the program.

According to this body of research (Porter et al., 2000), professional development has a greater impact on teacher change when the training activity is collaborative, spans over an extended length of time, incorporates active learning, and promotes active learning opportunities for teachers. Results from these series of studies indicated that reform types of staff development (teacher networks, study groups, and mentoring partnerships) increase teachers’ use of recently learned strategies in the classroom. Findings also suggested that teachers in the same school may receive different professional development programs as well as different quality of training. The researchers concluded that more coherent, systemic, and high-quality training would increase the positive effects of professional development training on teaching practice.
A follow-up survey study conducted by Garet, Porter, Desimone, Birman, and Yoon (2001) analyzed a probability sample of 1,027 teachers to conduct an empirical comparison of the effects of different characteristics of professional development on teachers’ learning. The survey asked each teacher to self-report detailed information, including the extent to which specific Eisenhower-assisted professional development activities changed their teaching practice and the degree to which they gained new knowledge and skills. Data were analyzed based on an ordinary least squares regression.

Three core features were found to have significant positive effect on teachers’ changes in classroom practice. One was a focus on content to further teachers’ knowledge, skills, and teaching practices. The second core feature was the need to provide opportunities for active learning such as observations with feedback, lesson planning, and reviewing student work. The last core feature involved the need for teachers to perceive all training activities as coherent and connected. Three structural features were also found to significantly affect teacher learning. The first structural feature was the type of the activity; for example, teachers found study groups and mentorships more effective than traditional workshops. The second structural feature was collective participation in professional development by groups of teachers from the same school, department, or grade level. The last structural feature was the duration of the activity; activities that extended over time allowed teachers to try out new practices and to obtain feedback on their teaching.

The recommendations for effective staff development denoted above are often roles that are performed by job-embedded literacy coaches (Killion & Harrison, 2006; Learning Points Associates, 2004). Darling-Hammond (2000) and Miller, Harris, and Watanabe (1991) found that the most knowledgeable and best-trained teachers have had substantial support
from an instructional coach who facilitated on-going training designed to foster the application of new teaching practices into the classroom. The last category of literature discussed in this section will review a model and series of instruments designed to measure systematic reform and teacher change (Southwest Educational Development Laboratories, 2007). These instruments provide meaningful information for staff developers as they monitor the implementation of new programs or instructional strategies (Hall, Hord, George, Stiegelbauer, & Dirksen, 2006).

Measuring Teacher Change: The Concerns-Based Adoption Model’s Levels of Use

The Concerns-Based Adoption Model (CBAM) was developed in the 1970s at the University of Texas’s Research and Development Center for Teacher Education; CBAM evolved out of the work of Frances Fuller in response to the innovation focus approach to educational change that occurred in the 1960s and 1970s (Hord, Rutherford, Hulling-Austin, & Hall; 2005; SEDL, 2007). CBAM is a framework and set of instruments designed for understanding and managing change in people (Horsley & Loucks-Horsley, 1998). CBAM is an effective model for monitoring implementation of new initiatives, or change, and determining the content of follow-up support; CBAM also informs staff developers about teachers’ progress in the crucial phases of early implementation before impact on student achievement can be shown (Horsley & Loucks-Horsley, 1998). From CBAM instruments, school administrators and staff can generate formative data that can be analyzed to make modifications that support the implementation and sustainability of an instructional reform (Hall et al., 2006).

CBAM’s three diagnostic instruments are designed to describe, explain, and predict probable teacher concerns and behaviors throughout the school change process; these
instruments are: (a) Stages of Concern, (b) Levels of Use, and (c) Innovation Configurations (Hall et al., 2006; SEDL, 2007). These three diagnostic instruments assist evaluators, administrators, and researchers who are charged with measuring the implementation of a new practice in school settings (Hall et al.; SEDL). The Stages of Concern Questionnaire (SoC) identifies seven different stages of feelings and perceptions that educators experience when they are implementing a new program or practice. The Levels of Use (LoU) Structured Interview identifies eight behavioral profiles that describe different sets of actions and behaviors that educators engage in as they become more familiar with and more skilled in using an innovation or adopting a change. Innovation Configurations (IC) provide educators with a map that details different ways an innovation may be implemented; this is shown along a continuum from ideal implementation or practice to least desirable practice (SEDL).

The LoU structured interview describes the behavioral dimension of teacher change. This diagnostic instrument provides information on what teachers actually do in the classroom when making the transition from teaching one way to teaching differently (Horsley & Loucks-Horsley, 1998). It is thought that use or nonuse of any new program, practice, or strategy must be known for every individual within a school system or group when effective reform is the goal of training (Hall et al., 2006). This instrument presents eight behavioral profiles, or Levels of Use, in regard to a teacher’s implementation of an innovation (new program, practice, or instructional strategy). Hall, Dirksen, and George (2006) defined *Levels of Use* as

“distinct states that represent observably different types of behavior and patterns of innovation uses as exhibited by individuals and groups. These levels characterize a user’s development in acquiring new skills and varying use of the innovation. Each
level encompasses a range of behaviors” (p.6).

The first level, LoU 0, includes persons who have never heard of the innovation or considered using the information. The following seven levels (LoU I through LoU VI) describe behavioral actions teachers develop as they accumulate the knowledge and skills to effectively implement the targeted program or instructional practice. Appendix H: *Levels of Use* of the Innovation, provides a detailed description of the eight LoU levels. Data from this instrument provides meaningful information for trainers, staff developers, and coaches (Hall et al., 2006).

*Section Summary*

This section reviewed research and literature related to effective staff development. First, sociocultural constructs (both general and cognitive apprenticeships) were discussed as an effective framework for teacher learning and staff development. Next, literature from the National Staff Development Council and research from the Eisenhower Foundation were described to provide a concept and framework for effective staff development designed to foster teacher change. Last, the Concerns-Based Adoption Model’s Levels of Use instrument was discussed as a tool to measure teachers’ behavioral change in regard to new innovations. The next section will review research on teacher effectiveness, research-based instructional strategies, and the components of effective reading instruction.

Effective Teaching and Instruction

*Teacher Effectiveness*

As stated earlier, effective staff development is important when the goal is to enhance or change teachers’ instructional practices. There is an additional body of research that
suggests that effective teaching practices positively affect student learning. Research on teacher effectiveness has demonstrated that individual teachers can have a positive impact on student learning regardless of curriculum resources or instructional programs (Donovan, Sousa, & Walberg, 1987; Pressley, et al., 2001; Showers, 1984; Taylor, Pearson, Clark, & Walpole, 1999; Weatherby & Harkreader, 1999). A classroom teacher’s knowledge and employment of research-based instruction is an important variable that contributes to student achievement (Brophy, 1986; Marzano, Pickering, & Pollock, 2001; Rowan, Correnti, & Miller, 2002; Sanders & Horn, 1994, 1998). Rutherford (2003), a researcher for the Center for Research on Education, Diversity, and Excellence, stated, “it is the classroom teacher, ultimately, who has the most significant impact on student achievement . . . Leaving No Child Behind begins with leaving no teacher behind” (p. 1).

The effective teaching research conducted by Brophy and Good (Brophy, 1979, 1986, 1988; Good & Beckerman, 1978; Good & Grouws, 1979) in the 1970s and 1980s identified a series of teaching practices that were linked to student learning gains. Effective teaching has been characterized in terms of the specific teaching strategies teachers employ (Ding & Sherman, 2006; Sanders & Rivers, 1996; Taylor et al., 1999). This research showed that instructional practices such as anticipatory sets, direct instruction, wait time, homework, time on task, questioning strategies, and individual student feedback produced learning gains in the basic skills for students in low-income communities.

Additional research conducted by Sanders and Horn (Sanders, 1998; Sanders & Horn, 1994, 1998; Wright, Horn, & Sanders, 1997) indicated that teacher effectiveness is a major determinant of student academic progress. This body of research utilized the Tennessee Value-Added Assessment System (TVASS) to establish that teacher effectiveness, and not
student race, socioeconomic level, class size, or classroom heterogeneity, is a major predictor of academic success. The term *value added* focused on the gains in academic achievement over a given year that could be attributed to a district, a school, or an individual teacher (AERA, 2004). This research quantified the influence, or magnitude of the effect, one teacher can have on student achievement (Wright et al., 1997). One study conducted by Sanders and Rivers (1996) concluded that having a highly effective teacher compared to a teacher of average effectiveness resulted in two additional months of academic achievement for a student. Although this research established that good teaching matters, it does not provide specific evidence about what effective teaching looks like or how to create it (AERA, 2004).

*Research-Based Instruction*

Researchers continue to analyze different instructional strategies that impact student learning. Marzano, Pickering, and Pollock (2001) conducted a meta-analysis of specific instructional strategies that had high probability of enhancing student achievement for all students. This research utilized average effect sizes to synthesize the strength of various strategies that were investigated within numerous research studies. This analysis revealed nine categories of instructional strategies that affected student achievement; these strategies include: identifying similarities and differences, summarizing and note taking, reinforcing effort and providing recognition, homework and practice, nonlinguistic representations, cooperative learning, setting objectives and providing feedback, generating and testing hypotheses, and the use of questions, cues, and advance organizers (Marzano et al., 2001).

Appendix I identifies the effect size for each category of instructional strategies.

In addition to the research described above on general instructional practices, there has been an emphasis placed specifically on effective reading instruction. This is the result of
a Congressional request in 1997 to create a national panel to assess the status of current research that demonstrated various approaches to effective reading instruction (National Institute for Literacy, 2000). This led to the formation of the National Reading Panel, which identified five areas of reading instruction to investigate: phonemic awareness, phonics, fluency, vocabulary, and text comprehension. As a result, many researchers have written research handbooks that synthesize the results of multiple studies related to effective reading instruction as well as cite specific instructional strategies within these five areas of reading instruction (Armbruster & Osborn, 2002; Kamil, Mosenthal, Pearson & Bar, 2000; NIFL, 2000; Pressley, 2006; Vaughn & Linan-Thompson, 2004). The studies cited in these works describe research-based strategies for increased reading comprehension.

Research-Based Reading Comprehension Instruction

Particularly important to the current study is research on effective instruction in text comprehension; this was one of the five areas of reading instruction investigated by the National Reading Panel. Comprehension is the reader’s ability to make meaning from the text, form mental representations of these meanings, and use them to communicate with others information about what was read (NIFL, 2000). Studies have identified categories of research-based instruction that have demonstrated an increase in students’ reading comprehension. These strategies include identifying story or text structures (Arbruster & Osborne, 2002; Kamil et al., 2000; Marzano et al., 2001; NIFL); building prior knowledge (Kamil et al.; NIFL; Pressley, 2006); summarization (Kamil et al.; Marzano et al.; NIFL; Pressley), and questioning techniques (Armbuster & Osborn; Marzano et al.; NIFL; Pressley).
Although all of the strategies described above have improved students’ reading comprehension, research that supports summarization as effective instructional strategy is particularly critical to this current research study. The district that participated in this current study was provided with a synopsis of the research described above. The district also reviewed student assessment data. This information led to a district-wide decision to focus on the research-based strategy of summarization during the upcoming school year.

Research has found instruction in summarization to improve students’ comprehension of text. Students summarize text by distilling information into a synthesized form; this process provides students with a tool to understand the most important aspect of what was read (Marzano et al., 2001). The National Reading Panel (National Institute for Literacy, 2000) cited 18 studies that supported the use of summarization as an excellent tool to help students integrate ideas, improve their memory of what was read, and to generalize information from the text. In this study, the goal of the literacy coaches is to assist teachers in implementing summarization strategies in the classroom.

Taylor and Beach (1984) researched the effects of a hierarchical summary procedure on seventh-grade students who were reading social studies texts. Results from this study indicated that this instruction enhanced students’ recall of material. Rinehart, Stahl, and Erickson (1986) studied the effects of a summarization training program on the reading skills of 70 sixth-grade students. This research demonstrated that direct training in summarization is an effective tool for improving reading skills such as recall and main idea identification. Likewise, Armbruster, Anderson, and Ostertag (1987) investigated fifth-grade students who were assigned to two different groups; one group was provided with direct instruction in recognizing and summarizing conventional text structures and the second group received
traditional instruction involving the answering of questions. Results of this study found that direct instruction on summarization improved students’ ability to independently comprehend text.

*Measuring Reading Comprehension: No Child Left Behind, the National Assessment of Educational Progress, and Connecticut Mastery Test*

Recently, measuring the results of reading instruction has become a federal initiative. NCLB legislation increased each state’s accountability for annual testing and adequate yearly academic progress for all students (Connecticut State Department of Education, 2006; National Educational Association, n.d.). The National Assessment of Educational Progress (NAEP) is a criterion-referenced assessment of student comprehension. This particular instrument provides the only national assessment of what American students know and can do in various subjects. NCLB mandated that any state that wishes to receive Title I grant monies must participate in the biennial NAEP testing in reading and math in grades 4, 8 and 12 as well as in statewide assessments (National Center for Educational Statistics, n.d.; CSDE, 2006.). This assessment provides state and national data on student performance; NAEP allows a comparison of student performance among states.

The Connecticut Mastery Test (CMT), the state’s mandatory assessment for elementary and middle schools, has been revised to meet NCLB guidelines. Similar to NAEP, the CMT is also a criterion-referenced assessment administered to students in grades 3 through 8 in the subject areas of reading, writing, and math. Science is assessed in grades 5 and 8. Connecticut’s assessment program reflects NCLB guidelines with a focus on the continuous improvement of all student achievement, reducing the achievement gap, and

The construction of the reading assessment component for both the NAEP and the CMT are similar (CSDE, 2006). These instruments assess three different contexts for reading: reading for literary experience, reading for information, and reading to perform a task. Both assessments also evaluate students’ comprehension on four different levels of reading: forming a general understanding, developing an interpretation, making reader-to-text connections, and examining content and structure of text. In Connecticut, results from the CMT are used to measure adequate yearly progress under NCLB mandates (CSDE, 2003). The reading comprehension instrument utilized in the current study was modeled after CMT guidelines.

Section Summary

This section reviewed research on teacher effectiveness and research-based instruction. Results from these studies emphasized how important high quality teachers and research-based instruction are to student achievement. Research on reading comprehension instruction and information on national and state assessments to measure student achievement were reviewed as well. The characteristics of effective staff development described above are essential to maximize the support and training educators need to become more effective educators. Job-embedded coaching incorporates many elements of effective staff development. This type of training may provide a link between effective teaching and student achievement.
Coaching

Evolution from Reading Consultant, or Reading Specialist, to Literacy Coach

Literacy coaching has developed from different historical perspectives, each of which includes its own body of related literature. These perspectives include the federal government’s involvement in education, the evolving role of reading specialists in school, and literature on effective staff development. As a result of this evolution, many reading specialists who work in schools today have assumed the role of literacy coach (Dole, 2004). This form of job-embedded staff development has evolved under Reading First, the academic component of NCLB (Killion & Harrison, 2006; Learning Points Associates, 2004). The next section will discuss the federal government’s emphasis on reading achievement and the transformation of the reading consultant (reading specialist) into the literacy coach.

Elementary and Secondary Education Act (ESEA) and Title I

NCLB culminates more than four decades of the federal government’s role in public education (Dole, 2004; National Conference of State Legislature, 2007; Paige, 2001). In 1965, President Johnson initiated the Elementary Secondary Education Act (ESEA) to improve educational opportunities for impoverished students (NCSL, 2007). ESEA established federal funding for education under Title I, which provided compensatory reading education for at-risk students. The Title I model emphasized a pull-out format (i.e. children were taken out of regular classrooms for small group instruction) and was implemented by a Title I teacher who was often trained as a reading specialist or consultant (International Reading Association, 1998). The instructional focus was on supplemental intervention for
struggling students; little attention was paid to the type of instruction being provided by the classroom teacher (Dole).

The Reading Consultant (Reading Specialist)

Under Title I funding, many districts hired reading specialists, or reading consultants, to provide high quality instruction to remedial learners and to serve as a resource to teachers (Dole, 2004; International Reading Association, 2000). The International Reading Association (IRA, 2000) identified the reading specialist as a professional with advanced preparation and experience in reading, which included additional graduate education or a professional certificate in the area of reading. The IRA (1998) published standards that delineated a list of qualities and competencies required of the reading professional. Under these standards, the roles of the reading specialist included (a) the provision of instruction and assessment for remedial learners, (b) implementation of professional development, (c) supervision of a district’s reading program goals as well as para-professionals, (d) collaboration with parents and community members, and (e) demonstration of appropriate reading practice. These roles were designed to contribute to the improvement of student learning by focusing on instruction, assessment, and leadership (IRA, 2000).

Reauthorization of ESEA

In the 1980s, President Reagan assembled the National Commission on Excellence in Education, which produced the landmark report, A Nation at Risk. This report contributed to the sense that the public educational system was failing miserably. The fallout from this report created a wave of local, state, and federal educational reform. This included a federal mandate for states to provide common standards and expectations for student learning (Paige,
This movement to standards-based education continued under President George H. W. Bush. In 1989, the National Education Summit met; as a result, increased federal funding was provided to support state efforts to maintain the standards movement (National Conference of State Legislature, 2007). In the 1990’s, President Clinton continued to emphasize accountability for student learning when he signed the Improving America’s Schools Act (IASA) of 1994. This reauthorization and revision of the original ESEA highlighted the fact that standards and assessment would be used to hold schools and districts more accountable for student performance. Although states were allowed autonomy to develop their own standards, they had to comply with the general requirements of IASA to receive federal funds (NCSL, 2007).

No Child Left Behind

In 2002, President George W. Bush signed the No Child Left Behind Act (NCLB). NCLB represents the greatest change made to the Elementary and Secondary Education Act (ESEA) since it was enacted in 1965 (U.S. Department of Education, 2002a). The purpose of this law is to ensure that all children in America learn to read well by the end of third grade (USDE, 2002a). It has changed the federal government’s role in education with the provision of five principals of educational reform: (a) stronger accountability for school systems and states for results through assessment, (b) increased flexibility and local control, (c) expanded options for parents, (d) emphasis on scientifically-based reading instruction that has been proven to work, and (e) inclusion of the mandate that teachers must be highly qualified to instruct students (Connecticut State Department of Education, n.d; Dole, 2004; Trahan, 2002).
Reading First provides school districts with grant monies for instructional resources and high-quality staff development designed to establish scientifically-based reading programs for students enrolled in kindergarten through grade 3. These funds were intended to ensure that all teachers have the skills they need to teach these programs effectively. This program also supports the use of screening and diagnostic tools and classroom-based instructional reading assessments to measure how well students are reading and to monitor their progress (USDE, 2002a).

Revision of IRA’s Standards for Reading Professionals. In 2003, the International Reading Association revised the standards for reading professionals (IRA, 2004a). As a result, the role of the reading specialist shifted from one-to-one remedial support for identified struggling readers to supporting classroom teachers in an attempt to ensure excellent reading instruction for all learners (IRA, 2004b). Under these revised standards, the reading specialist must maintain specialized knowledge in the diagnosis and assessment needs of individual learners and research-based interventions that can lead to quality literacy programs (IRA, 2000).

Thus, these new IRA standards placed an emphasis on literacy leadership; this role was highlighted as an important function of the reading specialist. In this capacity, reading specialists increasingly collaborate and support the professional growth of teachers by leading staff development workshops and by modeling or demonstrating instructional strategies (IRA, 2000, 2004a). Today with the new emphasis on improving teacher instruction, the role of the reading specialist in many schools has changed. Now, rather than working with small groups of students, this person frequently works directly with teachers as a coach to plan, model, team teach, and provide feedback on lessons in collaboration with
classroom teachers; the role of the reading consultant (specialist) has become more closely linked to the literature on effective staff development (Dole, 2004; IRA, 2004b).

**Literacy coaching.** To improve teachers’ instructional practices in the area of reading, the Reading First initiative has helped to shift the emphasis from individual student improvement to teacher improvement (Dole, 2004; Learning Points Associates, 2004). With this change, many reading consultants, or reading specialists, have developed into literacy coaches (Dole; IRA, 2004b). The federal government defines a literacy coach as a job-embedded staff developer who is a knowledgeable expert in the area of reading research and teaching methodologies. This person scaffolds learning for teachers and helps them recognize their instructional knowledge and strengths. A variety of staff development training components are used to provide ongoing, sustained support and training to teachers (Learning Points Associates, 2004).

The Reading First plan identifies literacy coaches as essential to the support of staff development efforts. In this capacity, coaches provide ongoing, sustained professional support to teachers by providing coaching in small groups, at department level meetings, and on a one-on-one basis (Learning Points Associates, 2004). Literacy coaching is built upon a decade of staff development research that suggests this particular form of job-embedded training is an innovative way to improve teaching skills. (Richard, 2003). The purpose and roles of the coach are discussed in more detail later in this review of the literature.

**Coaching and the Transfer of Staff Development Training to Classroom Practice**

The work of Joyce and Showers has been in the forefront of effective staff development models throughout the transformation from reading specialist to literacy coach.
They developed a model of staff development and described the kinds of training necessary for transfer from workshop to classroom implementation (Joyce & Showers, 1980, 1995). The Reading First model of the literacy coach is built upon Joyce and Showers’ professional development model; therefore, many of the processes embedded within literacy coaching have existed for years (Dole, 2004). Results of Joyce and Showers’ (1980, 1995, 2002; Showers, 1982, 1984) research suggested that training programs must incorporate a combination of theory, demonstration, practice, feedback, and coaching for skills to transfer into the classroom. This literature identified a peer coaching model that emphasizes intensive, classroom-based collaborative problem-solving by teachers that is designed to facilitate the transfer of training (Joyce & Showers, 2002; Showers, 1982, 1984).

Joyce and Showers (1980) first coined the term peer coaching as a staff development component in the early 1980s. In their early research, they identified coaching for application as an integral component of staff development. Coaching was identified as the collegial analysis of teaching for the purpose of integrating skills and strategies into classroom practices. Transfer of training was crucial to acquire changes in the learning environment that would affect student learning. Findings by Joyce and Showers (1995, 2002) indicated that new learning of knowledge and skills did not automatically transfer to classroom practices. The major purpose of coaching was to help teachers implement innovative teaching to the extent that there was a positive effect on student learning (Joyce & Showers, 1995, 2002).

Seminal research conducted by Showers (1982, 1984) showed statistically significant differences in favor of better transfer when traditional training methods were followed by peer coaching. These studies used mixed research methods such as observations, interviews,
and statistical analyses to determine whether or not peer coaching had a significant effect on transfer. Both the control groups and treatment groups received traditional in-service workshop presentations on a specific teaching strategy. The workshop provided theory behind the teaching strategy, demonstrations, and opportunities to practice the strategy during the training. In addition to the in-service workshop, teachers in the treatment groups collaborated with peer coaches and received in-class observations and technical feedback by other classroom teachers to enhance the use of the teaching strategy in the classroom. Teachers who were not peer-coached practiced new strategies less and developed fewer technical skills than the peer-coached teachers.

Results from these studies indicated that a large increase in transfer of training occurred when coaching was added to initial training experiences that included theory explanation, demonstration, and practice (Joyce & Showers, 1995, 2002; Showers, 1982, 1984). Table 1 details the effect sizes different combinations of training had on the transfer of training. Showers (1982, 1984) recommended that future studies incorporate training for the coaches.
<table>
<thead>
<tr>
<th>Training Components</th>
<th>Knowledge</th>
<th>Skill</th>
<th>Transfer of Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation of Theory</td>
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<td>.50</td>
<td>.00</td>
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<tr>
<td>Demonstration</td>
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<td>.26</td>
<td>.00</td>
</tr>
<tr>
<td>Theory + Demonstration</td>
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<td>.86</td>
<td>.00</td>
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<tr>
<td>Theory + Demonstration + Practice</td>
<td>--</td>
<td>.72</td>
<td>.00</td>
</tr>
<tr>
<td>Theory + Demonstration + Practice +</td>
<td>1.31</td>
<td>1.18</td>
<td>.39</td>
</tr>
<tr>
<td>Feedback</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory + Demonstration + Practice +</td>
<td>2.71</td>
<td>1.25</td>
<td>1.68</td>
</tr>
<tr>
<td>Feedback + Coaching</td>
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</tbody>
</table>

*Note. From Joyce and Showers, 1995.*

Additional researchers extended Joyce and Showers’s work and verified that peer coaching resulted in greater transfer, or use of targeted teaching behaviors (Finney, 1997; Landrum, 1990; Morton, 2004; Wynn, 1986). Some studies examined the transfer of teaching concepts for pre-service teachers (Schulze, 1984; Wynn, 1986), and others researched transfer of training for in-service teachers (Craven, 1989; De Alba-Johnson et al., 2004; Digranes, 1988; Landrum, 1990). Both bodies of research similarly concluded that greater transfer to classroom practice occurred when teachers participated in training followed by peer coaching relative to the teachers who only participated in traditional training workshops (theory, demonstration, and some opportunity to practice).
Models of Coaching

Ackland (1991) identified two categories of coaching: reciprocal coaching and expert coaching, in a review of literature on peer coaching. Most models of coaching fall under one of these two categories. Costa and Garmston (2002) identified an additional form of coaching, which they called Cognitive Coaching. These models are discussed in the following section.

Peer coaching as a form of reciprocal coaching. Reciprocal coaching was defined as teachers observing and coaching each other to jointly improve instruction (Ackland, 1991). Joyce and Showers’s (1995) work on peer coaching referred to a form of reciprocal coaching. Peer coaching is typically defined as two or more professional colleagues working together to improve their instructional skills (Joyce & Showers, 2002; Poglinco et al., 2003). All forms of peer coaching utilize observation and positive feedback procedures as a vehicle for improving or changing classroom practice (Joyce & Showers, 2002; Valencia & Killion, 1988).

Expert coaching. Expert coaching involves a specifically trained educator with an acknowledged expertise who observes other teachers to give them support, feedback, and suggestions (Ackland, 1991). Literacy coaching, as defined under Reading First literature, is a form of expert coaching (Dole, 2004; Learning Points Associates, 2004). There are different terms used in the literature to describe different forms of expert coaching. Sweeney (2004) used the term instructional coach to describe the process of teacher observation, feedback, provision of demonstration lessons, and co-teaching. The author stated, “Instructional coaches customize professional development to match each teacher’s needs and interests while they help the school establish a common understanding across all
teachers” (Sweeney, 2004, p. 50). Technical coaching has been identified as a coaching model that pairs consultants with teachers to help educators transfer training to classroom practice (Garmston, 1987; Poglinco et al., 2003).

**Cognitive Coaching.** Cognitive Coaching was developed by Costa and Garmston (2002) as a model for conversations which utilizes planning, reflecting, or problem solving to promote the learning of individuals both independently and within a community of learners. This model utilized a set of strategies, a way of thinking, and a way of working that invited an individual to shape and reshape his or her thinking and problem-solving capabilities (Costa & Garmston). A Cognitive Coach may be a fellow teacher or a consulting expert who figuratively stands between people and their thinking to help them become more aware of what is going on inside their heads; this process enables growth and change from within (Center for Cognitive Coaching, 2000). Cognitive Coaching is based on the following four assumptions: (a) thought and perception produce all behavior, (b) teaching is constant decision-making, (c) to learn something new requires engagement and alteration in thought, and (d) humans continue to grow cognitively (Costa & Garmston). The person being coached evaluates what is appropriate, effective, or ineffective about his or her work. This process is facilitated by what Costa and Garmston identified as the five States of Mind: consciousness, efficacy, flexibility, craftsmanship, and interdependence. These five resources are seen as the functions that enable one to grow and change from within (Center for Cognitive Coaching, 2000).

Regardless of which coaching model is implemented, coaching is seen as a way to provide support for teachers in their growth and use of new instructional strategies (Greene, 2004). The evaluation of teachers falls outside the scope of coaching regardless of the form
or model of coaching being implemented (Costsa & Garmston, 2002; IRA, 2004b; Joyce & Showers, 1995, 2002). The next section of this review will focus on the literacy coaching model and provide an overview of the purpose and role of the literacy coach.

**Literacy Coaching**

Literacy coaching incorporates many of the features of reciprocal coaching, expert coaching, and Cognitive Coaching described above. A literacy coach is known as a professional educator who is a knowledgeable expert in the area of reading research and teaching methodologies (Casey, 2006; Toll, 2005; Walpole & McKenna, 2004). This person scaffolds learning for teachers through job-embedded staff development. A variety of staff development training components are used to provide ongoing, sustained support and training to teachers (Learning Points Associates, 2004; Wren & Reed, 2005). Literacy coaches help districts provide instructional reform through training activities; they also serve as a framework for sustained change that lead to improved student learning (Fullan, Bennet, & Rolheiser-Bennet, 1990).

Much of the literature on this form of coaching consists of anecdotal case studies from districts that have employed coaching programs to meet the needs of current educational reform. Studies describe the roles coaches perform, as well as the professional development activities coaches use with teachers (Bean, 2004; Lyons & Pinnell, 2004; Neufeld & Roper, 2003; Poglinco et al., 2003; Sturtevant, 2003; Walpole & McKenna, 2004). The following section reviews the wealth of literature published about the purpose and roles of this emergent position.

**Purpose of Literacy Coaching.** The National Staff Development Council (NSDC, 2006) published a mission statement on the purpose and goal of coaching. The mission states
that the literacy coaches are to assist teachers in learning and applying new knowledge and skills necessary to improve the academic performance of all students. To achieve this objective, coaches must spend a significant amount of time in direct contact with teachers in their classrooms. The critical goal of these professionals is to improve teacher practice and ultimately, student achievement (NSDC, 2006). This mission statement embeds many of the context, process, and content staff development standards that were previously published by the National Staff Development Council (2001).

The intent is for coaches to improve the professional practice of teachers through job-embedded staff development. The roles and functions of instructional coaches help districts to provide coherent instructional reform. Coaches serve as a catalyst for sustained change that leads to improved student learning (Fullan et al., 1990). Learning Point Associates (2004) created a guide for Reading First coaches and defined coaches as personnel who help others to recognize their instructional knowledge and strengths, and support them in their learning and application of new knowledge and instructional practices. In this guide it was concluded that, “teachers who receive high-quality professional development opportunities – such as coaching from a knowledgeable peer – are better equipped to improve students’ reading achievement” (Learning Points Associates, 2004, p. 3). This guide concluded that a job-embedded coaching model positively influences student achievement because it aides teachers in the development of new strategies and substantially increases the amount of time teachers spend on their own professional development. Reading First identifies coaching as the most effective way to provide staff development because the coaching process adheres to staff development standards outlined by the National Staff Development Council (2001).
Roles of the literacy coach. At present, literacy coaching is defined as job-embedded staff development designed to provide context-specific, ongoing support to teachers with the intent of improving instructional practices (Joyce & Showers, 2002; Killion & Harrison, 2006; Neufeld & Roper, 2003; Richards, 2003; Russo, 2004). Literacy coaches (a) design and facilitate professional development sessions to present research-based theory, (b) provide teachers with ongoing opportunities to learn from each other as they practice newly learned skills, (c) consult and guide teachers as they practice new strategies, (d) evaluate teacher learning needs, (e) provide feedback or support to encourage instructional improvement, and (f) work alongside teachers in classrooms to demonstrate instructional strategies (Casey, 2006; Joyce & Showers, 2002; Killion & Harrison, 2006; Learning Points Associates, 2004).

Although various job descriptions and titles exist to describe the literacy coach, a common vision of this form of coaching has emerged in the literature. Killion and Harrison (2005) noted that even though literacy coaches have been referred to by various titles (literacy specialists, content-area coaches, instructional coaches, or peer coaches), most literacy coaches have a common mission. This mission is to assist teachers in learning and applying new knowledge and skills necessary to improve the academic performance of all children. Another key feature of literacy coaches is that they spend a significant amount of time in direct contact with teachers and their respective classrooms (Killion & Harrison, 2005).

The Reading First literature (Learning Points, 2004; U.S. Department of Education, 2002b) described the coach as an essential support for professional development efforts and a key leader in program implementation. Reading First coaches provide scientifically based professional development opportunities tailored to meet the individual needs of the school.
staff. They demonstrate effective strategies and explain why certain strategies or materials are effective in particular situations. Coaches must be experts in the full range of assessments required for Reading First schools (diagnostic assessments, screening assessments, progress monitoring assessments, and outcome assessments). They also serve as a resource for new ideas and materials and consult with teams of teachers as well as individuals. Coaches also act as a bridge between administrators and teachers in designing, implementing, and evaluating the school’s reading program.

In 2004, the National Council for Teachers of English (NCTE) began to publish a special section of *Voices from the Middle* every month that was focused on the roles, functions, and interactions of the literacy coach. NCTE (Buly, Coskie, Robinson & Egawa, 2004) described the literacy coach as a collegial position designed to support teachers to become more reflective, to refine their practice, to set goals, and to share with other teachers their successful instructional attempts. Buly et al. defined the coach as, “One who trains intensively by instruction, demonstration, and practice” (p. 61). The coach is considered a learner, a facilitator, and a supporter of classroom learning. The coach provides demonstrations of best practices of instruction, observes in teachers’ classrooms, and confers with teachers to support them as they become reflective practitioners.

The International Reading Association (IRA, 2004b) views coaching as a form of staff development that provides teachers with the support they need to successfully implement various programs or practices. The IRA describes the roles and the activities of the coach on a continuum of low-risk to high-risk practices. For example low-risk practices may include informal conversations with colleagues about setting goals, developing and/or providing resources, leading discussion groups, and assisting teachers in the assessment of
their students. Moderate level activities may include co-planning lessons, holding team or grade level meetings, analyzing student work, interpreting student assessment data, one-to-one conversations with colleagues about teaching and learning, and presentation of staff development workshops for teachers. Coaches may also participate in more high-risk practices, which result in higher levels of anxiety than the low-risk practices for either the teacher or the coach. These roles may involve modeling and discussing specific lessons, co-teaching lessons, visiting classrooms and providing feedback to teachers, analyzing video recorded lessons of teachers, and completing lesson studies with teachers.

The Aspen Institute Program on Education and the Annenberg Institute for School Reform (Neufeld & Roper, 2003) described two types of literacy coaches: the change coach and the content coach. The change coach focuses on whole-school leadership for school improvement. Roles of the change coach may involve (a) working with principals to recruit collaborative teachers, (b) assisting in shared decision making opportunities at the building level, (c) modeling leadership skills for principals and teachers, (d) assisting in scheduling, (e) helping principals organize classroom visitations, and (f) observing and providing reflective feedback to teachers. On the other hand, content coaches focus on instructional improvement in specific content areas or disciplines. Roles of the content coaches may include (a) helping teachers transfer new learning from a workshop to classroom implementation, (b) helping to establish a safe environment for teachers to improve their teaching practices without fear of negative criticism, (c) helping teachers develop leadership skills so they can support each other, and (d) providing staff development sessions for small groups of teachers.
The National Staff Development Council (Killion & Harrison, 2005, 2006) has published a comprehensive description that clearly articulates nine roles of the coach. The roles and descriptions of these roles are as follows:

1. Learning facilitator: the coach designs collaborative, job-embedded, standards-based professional learning, training, and staff development.
2. Data coach: the coach strives to ensure that student achievement data drive decisions in classroom and school.
3. Mentor: the coach performs to help increase the instructional skills of the novice teacher and support school-wide induction activities.
4. School leader: the coach works collaboratively with a school’s administrative team to plan, implement, and assess school change initiatives to ensure alignment and focus intended results.
5. Curriculum specialist: the coach works to implement the district’s adopted curriculum.
6. Catalyst for change: the coach creates disequilibrium with the current state, or status quo, as an impetus to explore alternatives to current practices.
7. Instructional specialist: the coach works to align instruction with curriculum to meet the needs of all students; this includes the differentiation of instruction for English language learners, special needs, struggling learners, and gifted students.
8. Classroom supporter: the coach works side by side with classroom teachers to refine classroom instruction, and
9. Resource provider: the coach works to be knowledgeable about appropriate resources that are available to support best practices of instruction in the classroom.
After synthesizing the available literature on literacy coaching, Killion and Harrison (2005, 2006) concluded that even though many titles were used to name the coach in various school districts, commonalities existed in the description of the roles. These researchers found that regardless of the title, the main goal of this position was to assist teachers in learning and applying new knowledge and skills necessary to improve the learning for all children. Although there is a growing amount of anecdotal and descriptive literature on this topic, there is limited empirical research on the impact these roles have on student achievement.

*Coaching and Student Achievement*

Most research linking staff coaching and student achievement is descriptive and hypothetical in nature (Russo, 2004; Wren & Reed, 2005). Russo stated that literacy coaching is effective because it provides professional development that is ongoing, deeply embedded in teachers’ classroom work with children, specific to grade levels or academic content, and focused on research-based practices. The National Staff Development Council’s mission statement for literacy coaches affirms that coaches are to assist teachers in learning and applying new knowledge and skills necessary to improve the academic performance of all students (NSDC, 2004). Coaches should spend a significant amount of time in direct contact with teachers in their classrooms with the intent of improving teacher practice and ultimately, student achievement. Existing research on coaching outlines a form of job-embedded training that has great potential for impacting student learning yet lacks the empirical data to support such claims.

The Aspen Institute Program on Education and the Annenberg Institute for School Reform (Neufeld & Roper, 2003) stated that although there is no widespread evidence that
coaching will improve student achievement, there is good reason to believe that coaching holds promise. In the last few years, researchers have begun to examine school settings in which coaches serve as job-embedded staff developers. The purpose of these studies has been to investigate the impact various coaching models have on student learning. The studies were conducted in a variety of individual school and district settings. Data from these studies reported mixed results in regard to the impact coaching programs have on student achievement. The first two studies discussed in the next section of this literature review found that literacy coaching did not have a significant impact on student achievement (Rasmussen, 2005; Slinger, 2004); one study yielded mixed results (Faulk, 2004), and two studies reported that different coaching programs had a positive impact on student learning (Rennick, 2002; Schuster, 2004). All studies incorporated secondary research questions not relevant to the purpose of this current study. The final section of this literature review will describe the results, implications, and recommendations from these five studies that are pertinent to this current study.

Slinger (2004) conducted a study to describe the effects of nine Cognitive Coaching sessions on first-grade student reading achievement. This research utilized a pre-test-post-test quasi-experimental design. Participation in the coaching sessions was the independent variable, and student reading achievement was the dependent variable. A repeated measure ANOVA was used to analyze the data. The literacy coach within each building was identified as the Cognitive Coach and received appropriate training. The study was conducted over the course of 3 months. The treatment group consisted of 62 first grade students and 5 teachers in the Denver, Colorado metropolitan area who volunteered to participate in the study. The control group was created by matching students and teachers not participating in the study.
with students and teachers in the treatment group. Treatment and control group students were matched for similarities in fall student reading achievement scores; teachers were matched for years of teaching experience and gender.

Instrumentation included informal reading assessments, the Marie Clay Observation Survey, and a word list based on the Instant Fry Word List. Although the treatment group outscored the control group, there was no significant difference between the groups; both made significant growth during the duration of the study. Slinger (2004) reported that possible limitations of the study included: (a) the small sample size, (b) the length of the study, (c) instrumentation, and (d) the statistical power. She recommended the study be replicated following similar design protocols as well as conducted utilizing a formal full coaching cycle rather than limiting the model to Cognitive Coaching conversations.

Rasmussen (2005) also sought to examine the relationship between students’ reading achievement and the use of a literacy coach for teacher’s instructional practices in reading. This study utilized correlational design and nonparametric contingency table statistics to determine the relationship between the predictor variable (literacy coaching) and the criterion variable (student reading achievement). The coaching treatment was defined as either use or nonuse of literacy coaching for reading instruction; general processes, such as modeling, sharing expertise, small group professional development, and book talks, were identified as components of the coaching model.

Teachers’ interactions with a coach were collected through a survey on a scale that included the following categories: nonuse, 1 to 5 times, 6 to 10 times, 11-16 times, 20 to 25 times, and greater than 25 times. Three schools were identified as using the coaching model (use), and three schools were identified as not using the model (nonuse). Student reading
achievement data from 403 students were collected using the Iowa Test of Basic Skills (ITBS) reading test; the researcher analyzed mean scores by school to correlate with use or nonuse of the coaching model. These scores were split into quartiles to determine if the coaching model had stronger associations with higher or lower reading scores. A strong negative association (-1.0) was reported for the use of a literacy coach and students who performed below the 50th percentile. A strong positive association (1.0) was found between use of a literacy coach and students who performed above the 75th percentile. However, no statistical difference was found between student achievement and the use of a literacy coach for a teacher’s instructional practices. The researcher recommended that larger, longitudinal studies be conducted to investigate the relationship between coaching and student achievement. Rasmussen (2004) also recommended that future studies account for student variability within each of the schools; lack of homogeneity between schools may have obscured results.

Other research on literacy coaching and student achievement reported mixed results. Faulk’s (2004) quasi-experimental research examined the relationship between teachers’ participation in job-embedded training (provided by an instructional reading consultant) and the reading achievement of third-grade students (36 in the treatment group; 63 in the control group) and fifth-grade students (86 in the treatment group; 151 in the control group) in Tennessee. The consultant who provided the coaching was not identified as a literacy coach from within the district, but as an outside trainer with expertise in reading instruction. The interactions between the consultant and teachers served as the independent variable. The dependent variable, student reading achievement, was measured using the TerraNova Test of
Comprehensive Skills. Independent sample t tests were used to determine whether or not there was a difference between the treatment and control groups.

Results from this study were mixed; there was no significant difference between reading achievement scores for the third-grade students in the treatment and control; however, there was a significant difference for the fifth-grade students. The researcher recommended that future studies be conducted utilizing larger sample sizes as well as different achievement measures. This study did not clearly identify or differentiate the types of coaching strategies or professional development components that were implemented as the treatment during the course of the study.

Other studies have suggested that different forms of coaching may have a positive effect on student learning (Rennick, 2002; Schuster, 2004). Rennick’s research investigated the relationship between a year-long staff development program focused on balanced literacy instruction. Similar to Slinger’s (2004) research, this coaching model emphasized the implementation of a Cognitive Coaching Model conducted by building-level Reading Recovery Teachers. A quasi-experimental, post-test only, design was used to determine how three different types of staff development impacted student reading achievement. Kindergarten teachers in one group received year-long, in-class, Cognitive Coaching sessions on balanced-literacy instruction (356 students), a second group of teachers participated in a 2-week lecture series on balanced literacy instruction (223 students), and teachers in a third group (562 students) did not participate in any staff development or coaching sessions relevant to balanced literacy instruction.

Archival student reading achievement data, from the Gates Macginitie Reading Test, were collected at the beginning of the students’ first-grade year. Student achievement scores
were matched with their teacher from the previous year and differences between the groups were compared using two independent samples t tests. A significant difference was determined to exist between each of the groups. The Cognitive Coaching groups significantly outscored both groups, and the no program group significantly outscored the group that received the two-week staff development workshop training. Rennick’s (2002) findings suggest that ongoing Cognitive Coaching support and training, in the area of reading instruction, is most effective and that no training at all is more effective than traditional, stand alone, workshop training.

Schuster (2004) conducted a program evaluation to determine whether or not literacy coaching, as a professional development model, impacted students’ reading and writing achievement. Participation or nonparticipation in the coaching program was the independent variable; participation was voluntary. Trained Reading Recovery teachers worked as literacy coaches. Coaches spent half of their time working in small groups with remedial students and the other half working with teachers to improve literacy instruction practices. All student subjects in the sample were identified as remedial learners and in need of additional Reading Recovery support. During the two-year program, 3 literacy coaches worked with 15 classroom teachers in schools in the experimental group (the total number of teachers in these schools was 83). There were 84 teachers in the schools which served as the control group. Pre- and post-program implementation data (Marie Clay’s Observation Survey and TerraNova Comprehensive Skills Assessment) served as the dependent variable and were collected from the year before, during and after program implementation. Teachers and students in the experimental group were matched with teachers and students in the control group. A t test was used to compare mean gains in reading text level and writing vocabulary.
Results from Schuster’s (2004) study indicated that students in the experimental group demonstrated significantly greater gains in reading text levels when compared to students in the control group. Significant gains in student writing vocabulary between the experimental and control group were also identified. Schuster made several recommendations for future research. The first was to conduct additional studies utilizing a combination of qualitative and quantitative data to provide more explanations for the results of the study. In addition, she recommended using achievement data from all students, not just those in need of reading support. Finally, inclusion of details on the professional development components and strategies implemented by the literacy coaches would have provided readers with a better understanding of the literacy coaching program.

Section Summary

The role of coaches has shifted from primarily supporting students to supporting teachers as they seek to become more effective educators. Coaches must use a variety of staff development strategies including, presentation of theory, demonstration, practice, feedback with reflection, and in-class coaching to help teachers implement knowledge gained during staff development workshops. Reading First’s concept of literacy coaching is built upon many components found in other models of coaching, including reciprocal coaching, expert coaching, and Cognitive Coaching. Preliminary studies have reported data that support different models of coaching as an effective strategy for improving student learning. However, these studies provided mixed results and failed to examine specific training procedures or processes that result in effective coaching models.
Chapter Summary

The theoretical literature and research reported in this chapter support the need for a sociocultural approach to staff development when the goal of training is to transfer newly learned practices into classroom application. Scaffolding and cognitive apprenticeship techniques have been shown to positively impact teacher change. The literature reviewed in this chapter also supports the notion that effective teachers and research-based instruction have a positive impact on student learning. Coaches, as job-embedded staff developers, implement many strategies and protocols embedded in sociocultural theory as they work with teachers to improve their teaching practices. Literacy coaching, as a form of effective staff development, may provide a link between effective teaching and student achievement.

The concept of literacy coaching outlined in Reading First (Learning Points Associates, 2004) is built on the foundation of other coaching models described in this chapter, including reciprocal coaching, expert coaching, and Cognitive Coaching. Preliminary studies have found that coaching may be an effective strategy for improving teacher and student learning. However, as school districts across the nation continue to comply with NCLB legislation and Reading First recommendations, it is evident that additional research is needed to (a) investigate the relationship between literacy coaching and the transfer of teaching practices, (b) explore how transfer of research-based instruction impacts student learning, and (c) determine which staff development training components implemented by coaches have greater impact on teacher practices and student learning.
CHAPTER THREE: METHODOLOGY

This study was designed to determine if there is a relationship between the type of literacy coaching (in-class coaching, consultant coaching, and no coaching) and teachers’ growth in regard to use of an instructional strategy, as well as to determine how literacy coaching impacts students’ reading comprehension. Chapter three delineates: (a) the research questions and hypothesis; (b) a description of the setting, subjects, and sampling procedures; (c) an explanation of the research design, (d) the instrumentation; (e) a description and justification of the data analyses; (f) data collection procedures and timeline; and (g) ethics statement.

Research Questions and Hypotheses

1. Is there a relationship between the type of coaching conditions (in-class coaching, consultant coaching, and no coaching) and the change over time in teachers’ levels of use, or implementation, of a research-based instructional strategy as measured by the Levels of Use (LoU) structured interview?

H1. Teachers who participate in one of the two coaching programs (in-class coaching or consultant coaching) will attain greater growth in regard to strategy implementation, as measured by the LoU, than teachers placed in the no-coaching program.

2. Are there reading comprehension differences exhibited among three student groups that receive instruction from teachers who have experienced the three levels of coaching (in-class coaching, consultant coaching, and no coaching) after accounting for initial differences in reading comprehension and achievement?
H₂. Third grade students taught by teachers who have participated in one of the two coaching programs (in-class coaching or consultant coaching) will receive higher mean scores on the reading comprehension assessment than students taught by teachers who are in the no-coaching program.

Setting and Sample

The setting for this study was a medium-sized urban city (pop. 83,000) in southern New England. At the time of the study, there were a total of 19 schools (12 elementary schools, 5 middle schools and 2 high schools) in the district, with a combined enrollment of approximately 11,000 students. Demographically, 42.4% of the students in the district were eligible for free or reduced priced meals, 56.8% were classified as minority, and 36% resided in non-English speaking homes. All 12 elementary schools in the district were identified as Title I schools.

Research Sample

A sample of convenience was selected to suit the purpose of the study. The research sample came from 7 of the 12 elementary schools in a district and consisted of 370 third-grade students divided among 20 classrooms and the 20 teachers who headed these classrooms. The seven schools were chosen to participate in the study by the district’s reading and language arts coordinator because they followed coaching models similar to those described in the literature reviewed in Chapter 2. Demographic data were collected on all research participants. These data were collated from various town documents and district personnel. School-level data included (a) 2007-2008 Adequate Yearly Progress (AYP) status as reported by the Connecticut State Department of Education, (b) the percent of students
qualified for free and reduced lunch, and (c) the percent of identified minority students. Refer to Table 2 for these data in reference to the total population for each school targeted for this study. Demographic data were collected and analyzed to minimize the impact that both teacher and student characteristics may have had on the results of the study. Consent to participate in the study was obtained by the assistant-superintendent of the school district, guardians or parents of all students, and the teachers.

Table 2

*School-level Demographic Data*

<table>
<thead>
<tr>
<th>School Status</th>
<th>NCLB 2006-2007</th>
<th>Percent of Students</th>
<th>Percent of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequate Yearly Progress (AYP)</td>
<td></td>
<td>Qualified for Free and Reduced Lunch*</td>
<td>Identified as Minority*</td>
</tr>
<tr>
<td>1 In Need of Improvement, Year 1</td>
<td></td>
<td>26.9</td>
<td>41.3</td>
</tr>
<tr>
<td>2 AYP not achieved</td>
<td></td>
<td>38.8</td>
<td>66.0</td>
</tr>
<tr>
<td>3 Safe Harbor</td>
<td></td>
<td>33.5</td>
<td>50.1</td>
</tr>
<tr>
<td>4 AYP achieved</td>
<td></td>
<td>23.3</td>
<td>49.2</td>
</tr>
<tr>
<td>5 AYP achieved</td>
<td></td>
<td>25.7</td>
<td>39.3</td>
</tr>
<tr>
<td>6 In need of Improvement, Year 1</td>
<td></td>
<td>42.3</td>
<td>68.5</td>
</tr>
<tr>
<td>7 AYP achieved</td>
<td></td>
<td>31.7</td>
<td>49.4</td>
</tr>
</tbody>
</table>

*Note:* *Information obtained from 2005-2006 Strategic School Profiles*
Student participants

A total of 370 students participated in this study. For research purposes, students were grouped into the three coaching conditions that represented the three levels of the independent variable (in-class coaching, consultant coaching, and no coaching). Student-level demographic data collected by coaching condition included (a) gender, (b) special education identification, and (c) English Language Learner Identification. Table 3 depicts the demographic data collected on students.

Table 3

<table>
<thead>
<tr>
<th>Student-level Demographic Data by Coaching Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Independent Variable</td>
</tr>
<tr>
<td>--------------------------------</td>
</tr>
<tr>
<td>No-coaching</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Consultant Coaching</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>In-class Coaching</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Coaches or teachers at each school provided parents and guardians with a verbal description of the study and a permission slip to sign for participation at the fall back-to-school night. Only students whose parents or guardians completed the permission slips participated in the study. All other students were given parallel assessments during the data collection process outlined in the Data Collection section of this chapter. Students who did not complete all of the assessments were deleted from the research sample.

*Teacher participants*

A total of 20 teachers participated in this study. Teachers, along with their students, were assigned to one of the three coaching conditions that represented the three levels of the independent variable (in-class coaching, consultant coaching, and no coaching). Teachers were assigned to an 8-week coaching cycle based on their initial score on the *Levels of Use* structured interview. Performance on the LoU provided the researcher with ordinal data (categories 1 through 8), which was utilized to control for teacher prior experience with the predetermined instructional strategy, summarization, selected for the focus of this study. The LoU data were instrumental because this information allowed the researcher to create initial coaching groups that were equivalent in regard to teachers’ level of use of summarization. Refer to Table 4 for an analysis of teachers’ pre LoU score for the strategy of summarization.
Table 4

*Teachers’ Average Pre Level of Use of Summarization by Coaching Condition*

<table>
<thead>
<tr>
<th>Coaching Condition</th>
<th>n</th>
<th>mean score</th>
<th>standard deviation</th>
<th>range</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Coaching</td>
<td>6</td>
<td>3.83</td>
<td>0.00</td>
<td>3-4</td>
</tr>
<tr>
<td>Consultant Coaching</td>
<td>7</td>
<td>3.86</td>
<td>0.06</td>
<td>3-5</td>
</tr>
<tr>
<td>In-class Coaching</td>
<td>7</td>
<td>3.71</td>
<td>0.08</td>
<td>3-5</td>
</tr>
</tbody>
</table>

*Note: LoU Scale= 1 to 8*

A Kruskal-Wallis test (p < .01) was conducted to evaluate differences among teachers’ pre LoU scores across the three levels of the independent variable (in-class coaching, consultant coaching, and no coaching). Results of this test are displayed in Table 5. The test, which was corrected for tied ranks, showed that there was no significant difference among teachers’ pre LoU scores within the three groups prior to the 8-week coaching treatment ($\chi^2 (2, N=20) = 1.14, p = .56$). Therefore, prior to treatment, there were no significant differences among the groups based on teachers’ initial level of use of summarization.

Table 5

*Kruskal-Wallis Ranks for Teachers’ Average Pre LoU scores by Coaching Condition*

<table>
<thead>
<tr>
<th>Coaching Condition</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>No coaching</td>
<td>6</td>
<td>11.50</td>
</tr>
<tr>
<td>Consultant Coaching</td>
<td>7</td>
<td>11.36</td>
</tr>
<tr>
<td>In-Class Coaching</td>
<td>7</td>
<td>8.79</td>
</tr>
</tbody>
</table>

*Note. From Green & Salkind, 2005*
Additional demographic data were collected from each teacher participant. These data included (a) gender, (b) total number of years teaching experience, and (c) level of education. All teacher (100%) participants had completed a Master’s degree or higher. There was one male participant in the Consultant Coaching condition and all of the other teachers were female. Table 6 details the average years of teaching experience teachers had within each group.

Table 6

<table>
<thead>
<tr>
<th>Level of Independent Variable</th>
<th>N</th>
<th>Average years of teaching experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>No-coaching</td>
<td>6</td>
<td>12.67</td>
</tr>
<tr>
<td>Consultant Coaching</td>
<td>7</td>
<td>13.00</td>
</tr>
<tr>
<td>In-class Coaching</td>
<td>7</td>
<td>15.43</td>
</tr>
</tbody>
</table>

Description of the Research Design

A quasi-experimental, nonrandomized control-group, pre-test-post-test design was employed to investigate the study’s research questions. Research question one examined how three types of literacy coaching (in-class coaching, consultant coaching, and no coaching) facilitated change in regard to teachers’ use of an instructional strategy (summarization) during an 8-week coaching cycle. Research question two investigated the relationship between the three types of literacy coaching and students’ reading comprehension. Table 7 delineates a figure of the quasi-experimental design (Isaac & Michael, 1995). This design was selected to address research questions in an educational setting where random assignment of students to a treatment group was not feasible.
Table 7

Nonrandomized Control Group Pre-test-Post-test Design

<table>
<thead>
<tr>
<th></th>
<th>Pre-test</th>
<th>Treatment</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group (no coaching)</td>
<td>O₁</td>
<td></td>
<td>O₂</td>
</tr>
<tr>
<td>Coaching condition A (consultant coaching)</td>
<td>O₁</td>
<td>Xₐ</td>
<td>O₂</td>
</tr>
<tr>
<td>Coaching condition B (in-class coaching)</td>
<td>O₁</td>
<td>Xₐ</td>
<td>O₂</td>
</tr>
</tbody>
</table>

*Note:* X=treatment

This following section reviews the coaching treatment as well as the research designs utilized to investigate both research questions.

Coaching Treatment

Three different types of partnerships between the coaches and teachers were the basis on which the three levels of the independent variable (in-class coaching, consultant coaching, and no coaching) were delineated. This type of partnership formed the foundation for the coaching treatments. The treatment had five factors: (a) the role of the literacy coach, (b) the function of the coaching cycle, (c) the instructional focus on a research-based strategy, summarization, (d) the number of contacts coaches had with teachers, and (e) the type of staff development training components and strategies employed by the coaches when working with teachers placed in the different coaching conditions (in-class coaching or consultant coaching). The researcher provided 12 hours of staff development for the seven coaches to create optimal understanding of the different factors involved with the coaching treatment (refer to Appendix J: Training Outline for the Coaches). In addition to the training, coaches were provided with written documentation of possible coaching contacts for each
coaching treatment (refer to Appendix K: Coaching Treatment) and asked to log all contacts with teachers.

_Literacy coaches._ Seven literacy coaches from seven schools participated in this study. Table 8 depicts a visual representation of how 7 literacy coaches and 20 classrooms were assigned to groups (in-class coaching, consultant coaching, and no coaching). With one exception, coaches implemented both forms of the treatment (in-class coaching and consultant coaching) in two different classrooms within their schools. One school had only two sections of third-grade students. Therefore, one coach implemented only the in-class coaching form of the treatment. This minimized the effect individual coaches may have had on implementation of the different levels of the independent variable. Coaches had no formal contact with teachers placed in the control group during the 8-week coaching cycle.
Table 8:

Literacy Coaches and Classrooms within the 3 Levels of the Independent Variable

<table>
<thead>
<tr>
<th>Literacy Coach</th>
<th>Treatment A</th>
<th>Treatment B</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In-class Coaching</td>
<td>Consultant Coaching</td>
<td>(no coaching)</td>
</tr>
<tr>
<td>Coach 1 (School A)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Coach 2 (School B)</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Coach 3 (School C)</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Coach 4 (School D)</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Coach 5 (School E)</td>
<td>13</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>Coach 6 (School F)</td>
<td>16</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>Coach 7 (School G)</td>
<td>19</td>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>

Demographic data collected from the coaches included (a) gender, (b) total number of years teaching experience, and (c) level of education. All literacy coaches were female, had between 10 to 25 years of classroom experience, and had the equivalence of a Sixth Year Professional Certificate or higher.

For the purposes of this study, the roles and functions of the literacy coaches were similar to those identified in the Reading First literature (Learning Points Associates, 2004). This literature described a literacy coach as a job-embedded staff developer, who is a knowledgeable expert in the area of reading research and teaching methodologies. Coaches scaffold learning for teachers by providing a variety of staff development training.
components and strategies. This process provides ongoing and sustained support as well as professional training to teachers (Learning Points Associates, 2004).

*Coaching cycle.* The 8-week coaching cycle took place during a predetermined period of time. The coaching cycle created a unit of time for coaches to scaffold learning for teachers as they gained and practiced a new instructional technique (Wood, Bruner, & Ross, 1976). Most often, the coaching cycles began with the coach modeling or demonstrating a selected instructional strategy or teaching practice. Then, multiple opportunities for the teacher to practice what had been modeled were provided. For optimal learning, the coach designed learning experiences which fell within the learner’s zone of proximal development and scaffolded instruction, accordingly (Vygotsky, 1978). Scaffolds were removed as the teacher became more adept with the teaching practice. Responsibility was shifted from the coach to the teacher as the learning was transferred from the coach to the teacher (Casey, 2006). The design of the coaching cycle was discussed in detail during the 12 hours of training that was provided by the researcher.

*Research-based instructional strategy.* Prior to the onset of this study, the researcher provided the district administrative team with a synopsis of research-based strategies. Based on the district’s needs, the administrative team chose summarization as the research-based strategy that would be the instructional focus for all coaching conditions during the study. Researchers have found that this strategy has a positive impact on student learning (Armbruster & Osborn, 2002; Marzano et al., 2001; National Institute for Literacy, 2002). The researcher provided a three hour in-service workshop on summarization to third grade teachers in all three coaching conditions before pre LoU structured interviews were administered and before the 8-week coaching treatments began.
Coach to teacher contacts. All three groups attended the initial 3-hour training on the research-based strategy, summarization. The classroom teachers placed in the two treatment groups (in-class coaching and consultant coaching) received additional staff development opportunities than the no coaching group received during the 8-week coaching cycle. The treatment required coaches to have between two to three outside of the classroom contacts (30 to 60 minutes in length) with teachers in the consultant condition, and between three to four outside or inside the classroom contacts (45 to 90 minutes in length) with teachers in the in-class coaching condition. The number of coach and teacher contacts was designated based on initial conversations with the coaches who participated in the study. Due to time constraints and coverage issues, it was decided that it was not feasible to have as many contacts with teachers outside of the classroom as it was to work with teachers inside the classroom.

Coaching staff development components and strategies. The staff development components and strategies utilized in this study mirrored the staff development training components identified by Joyce and Showers (1980, Showers, 1982, 1984). The coaching staff development training components and strategies were culled from the literature that described the staff development roles of coaches (Casey, 2006; Joyce & Showers, 1988, 1995, 2002; Killion & Harrison, 2007; Nuefeld & Roper, 2003; Toll, 2005). Teachers placed within the different coaching conditions (in-class coaching, consultant coaching, and no coaching) received different combinations of training. The no coaching group received the initial 3-hour training on summarization (presentation of theory) and no additional staff development from the coaches. The training for the consultant coaching group focused on staff development components that took place outside of teachers’ classrooms; these included
the presentation of theory, demonstration or modeling, and opportunities to practice new skills outside of the classroom. The training for the in-class coaching group included staff development components provided to the consultant coaching group as well as activities that took place within teachers’ classrooms; these included non-evaluative feedback sessions following classroom observations and in-class coaching. Coaching strategies were defined as collaborative activities and experiences that scaffold adult learning. Table 9, on the following page, details the different types of staff development training and the various coaching strategies implemented by the coach within each of the coaching conditions (Casey, 2006; Joyce & Showers, 2002; Killion & Harrison, 2005; Toll, 2006; Wren & Reed, 2005).
### Table 9

**Coaching Treatment: Types of Staff development Training Components and Coaching Strategies**

<table>
<thead>
<tr>
<th>Coaching Staff</th>
<th>Treatment A: Consultant Coaching</th>
<th>Treatment B: In-class Coaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Training</td>
<td>(a) presentation of theory, (b) demonstration or modeling, and (c) opportunities to practice new skills outside of the classroom</td>
<td>(a) presentation of theory, (b) demonstration or modeling, (c) opportunities to practice new skills outside of the classroom, (d) observations with feedback, and (e) in-class coaching</td>
</tr>
<tr>
<td>Components</td>
<td>classroom</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coaching Strategies</th>
<th>Treatment A: Consultant Coaching</th>
<th>Treatment B: In-class Coaching</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in-service training, facilitation of professional inquiry or book studies, demonstration of research-based instructional strategies, collaborative planning of instructional lessons or resources, development of instructional/curricular resources, individual or small group conferences, and organizing inter-classroom observations during which teachers observe other teachers implementing best practices of instruction or specific strategies</td>
<td>all consultant coaching strategies plus non-evaluative classroom observations with reflective post-conversations, collaborative videotaping and analysis of classroom instruction, lesson planning to meet individual student needs, demonstration of model lessons within the teachers’ classrooms, and co-teaching</td>
</tr>
</tbody>
</table>

**Note:** Staff development training components were based on Joyce and Showers’ (1988, 1995, 2002) training model. Teachers placed in the control group attended the initial 3-hour workshop on summarization, but did not receive formal follow-up coaching.
**Research Design: Research Question One**

The first research question examined how three different coaching conditions facilitated the transfer of a research-based instructional strategy into classroom teachers’ repertoire of skills. Teachers were the unit of analysis for this portion of the study. The dependent variable, mean gain scores for teachers’ *level of use* of a predetermined research-based instructional strategy (summarization), was identified by the LoU structured interview. This section of the study explored how the number of *coach and teacher* contacts and how the types of staff development components and strategies linked to higher levels of use, or increased implementation, of an instructional strategy. Summarization was identified by the districts’ Reading and Language Arts Coordinator as the research-based strategy focus for the study due to current research (Kamil, Mosenthal, Pearson & Barr, 2000; Marzano et al., 2001; NIFL, 2000; Pressley, 2006) as well as an analysis of the district’s 2006-2007 *Connecticut Mastery Test* results.

**Research Design: Research Question Two**

The second question investigated how three different coaching programs, or conditions (in-class coaching, consultant coaching, and no coaching) impacted students’ reading comprehension. Students were the unit of analysis for this section of the study. The dependent variable of this study was students’ reading comprehension. Students’ reading comprehension was collected pre- and post-treatment using forms A and B, respectively, of the *Assessment of Reading Comprehension* (ARC). See Appendix C and Appendix D. The ARC is an instrument developed by the researcher to measure text comprehension using genre and item stimuli that were similar to those being experienced by the students during
instruction at the time of the study. A detailed description of this instrument and its development is included in the instrumentation section. Prior to the implementation of the treatment, students’ overall reading achievement was measured using the Degrees of Reading Power (DRP). ARC-A and DRP data served as covariates to statistically produce adjusted means for equal groups prior to the experiment.

Instrumentation

Third grade teachers’ level of use of an instructional strategy (summarization) was measured pre- and post-treatment using the Levels of Use (LoU) structured interview. Third-grade students in all coaching conditions were administered two reading assessments prior to the start of the study. This included the Assessment of Reading Comprehension-A (ARC-A) and the Degrees of Reading Power (DRP). All students were administered the Assessment of Reading Comprehension-B (ARC-B), as the post-test. Coaches documented all staff development components and coaching strategies on the Structured Coaching Log (SCL).

Levels of Use

The Levels of Use (LoU) instrument is one of three diagnostic instruments of the Concerns-Based Adoption Model (CBAM) that evolved out of the educational change work of Fuller, Hall, Dirksen, and George during the 1970s (SEDL, 2006). The LoU is a structured interview, and its purpose is to identify teachers’ current behaviors in regard to a specific innovation. The instrument employs a branching technique that uses operationally defined phenomenon to differentiate eight Levels of Use and decision points between each level (refer to Appendix L). The district identified summarization, a research-based instructional strategy, as the innovation to be focused on for the duration of this study. The LoU breaks
use and nonuse of an innovation, or instructional strategy, into a continuum of eight levels: (a) Nonuse, (b) Orientation, (c) Preparation, (d) Mechanical Use, (e) Routine, (f) Refinement, (g) Integration, and (h) Renewal. These levels characterize each teacher’s development in acquiring new skills and use of the innovation. Each level describes a very different set of behavioral actions and related understandings of the innovation and its use. Operational definitions have been developed for each level of use. The LoU manual (SEDL, 2006) identifies a branching format for the structured interview protocol that must be utilized by the researcher to place teachers on one of the eight Levels of Use (refer to Appendix M: Levels of Use Structured Interview Protocol Branching Chart).

The LoU technical manual reported that evidence of content validity for the LoU was established using ethnographic methodology (SEDL, 2006). First, teachers were assigned LoU ratings based on interviews using the instrument. These ratings were compared to ratings assigned to the same teachers by (a) an observer who spent a full day observing the teacher, and (b) an independent rater who read the observer’s notes and assigned a rating based on the content of the notes. Correlations between LoU ratings obtained using the instrument and the methodology described above were .98 and .65, respectively. Inter-rater reliability for the LoU ratings were established by converting the ratings to a numeric value; this analysis yielded a coefficient of .98 (Cronbach’s alpha).

Assessment of Reading Comprehension

The ARC was developed by the researcher to assess students’ pre- and post-treatment reading comprehension. Reliability and validity data for the ARC (ARC-A and ARC-B) were collected during a pilot study. Both forms of the assessment are located in the appendixes (see Appendix C and Appendix D). This criterion-referenced reading comprehension
instrument was designed to reflect the comprehension strands measured on the *Connecticut Mastery Test, Fourth Generation* (CMT4). These strands include: (a) forming a general understanding, (b) developing an interpretation, (c) making reader/text connections, and (d) examining the content/structure of text (CSDE, 2006). The ARC assessment is composed of 14 multiple choice and 2 open-ended response questions. The open-ended questions were designed to be scored on a rubric (scale 0-2) similar to the one utilized on the Connecticut Mastery Test (CSDE, 2006).

The technical report for the CMT4 (Joldersma, 2007) presented overall internal consistency measures for the reading portion of the assessment. The Cronbach’s Alpha for the reading scale score component of the 2006-2007 CMT4 was .95 with a standard error of measurement of 11.50. The State Department of Education commissioned an outside consultant, Assessment and Evaluation Concepts, to conduct a comprehensive survey of the assessment to gather content validity. Item contents were matched to their respective strands. Categorical concurrence between the test items and the broader content standards was also reviewed in order to collect evidence of content validity for CMT4. Assessment and Evaluation Concepts’ evaluation summary reported that the state department had done a solid, quality job in matching the test items with relevant content strands and standards of the state’s Language Arts Curriculum Framework. This evidence enhanced the validity argument that CMT4 is relevant and representative of the constructs being measured.

The ARC also followed passage guidelines provided by the state department of education (CSDE, 2006). The criteria for third grade passages included: (a) passages must be between 200-400 words (both ARC-A and ARC-B are approximately 300 words); and (b) the readability level must fall between grade level 3.5 and 4.5. Based on the Flesch-Kincaid
Grade Level scoring scale, the readability level of ARC-A is 3.7 and the readability level of ARC-B is 3.8.

Reliability and validity data for the Assessment of Reading Comprehension. A pilot study was conducted to gather reliability and evidence for validity data on the Assessment of Reading Comprehension (ARC-A, ARC-B). The pilot study sample consisted of 232 students; 126 students were from an urban community and 106 students were from a suburban community. The reliability estimates for both forms of the ARC indicated strong total test internal consistency levels. Coefficient values for both ARC-A and ARC-B were .85 (Cronbach’s Alpha). The researcher collected alternate forms reliability data as recommended by Nunnally (1978); pilot study subjects were administered ARC-A and ARC-B 2 to 3 weeks apart. The alternate form reliability correlation for the ARC was .76, indicating a high positive correlation between ARC-A (pre-test) and ARC-B (post-test).

The researcher collected evidence for content validity by having a panel of reading experts review the ARC. The panel determined that the instrument had strong evidence for content validity. The researcher collected evidence for content validity (Gall et al., 2003) for both forms of the instrument. This was done by having seven literacy coaches, eight literacy teachers, and three reading specialists match each of the 17 questions with one of the four reading comprehension strands (i.e., forming a general understanding, developing an interpretation, making reader/text connections, and examining the content/structure of text) assessed on CMT4 (CMT; CSDE, 2006). As a result of this process, revisions were made to reword particular questions so that they accurately reflected question stems reflected on CMT4.
Structured Coaching Log

The purpose of the coaching logs was to document the number and type of contacts coaches had with teachers throughout the 8-week coaching treatment. The SCL documented all staff development training components and coaching strategies implemented by the coaches with each teacher. Log codes included (a) a teacher code, (b) a staff development component code, (c) the amount of time spent on each training component, and (d) the instructional strategy focus of each coaching session. Codes were predetermined by the researcher to create consistent and standard log entries (refer to Appendix B: Structured Coaching Log). For documentation purposes, the consultant coach treatment involved two to three, 30 to 60 minute coach-teacher contacts, and the in-class coaching treatment involved three to four, 45-90 minute coach-teacher contacts (see Appendix K: Coaching Treatment). Coaches were trained to use these codes and complete the log during an initial staff development session. Evidence for content validity (Gall et al., 2003) of the SCL was gathered during a pilot study (see below).

Reliability and validity data on the Structured Coaching Log. Evidence for content validity (Gall et al., 2003) of the Structured Coaching Log (SCL) was collected during a pilot study. The coaching structures and strategies in the coaching log were (a) culled from an extensive review of coaching literature and (b) reviewed by seven literacy coaches, four literacy teachers, and three reading specialists during a pilot study. Revisions were made to simplify the log and to accurately depict the collaborative interactions between coaches and teachers. Following revisions, the expert group identified the SCL as valid instrument based on the evidence for content-validity that was collected.
Degrees of Reading Power

Students were also administered the Degrees of Reading Power (DRP; Touchtone Applied Science Associates, 2002). Data from this instrument were utilized as a covariate to produce adjusted means for students’ pre reading achievement. The DRP was designed to provide performance measures of reading achievement. The DRP is a normed-referenced test. Norming tables provide corresponding DRP units and percentile scores. The Primary (grades 1 through 3) and Standard (grades 3 through 12) forms utilize the traditional cloze procedure of omitting a word from a text passage and providing four alternatives that the student must choose from. Each word syntactically and semantically fits the sentence, but only one will be appropriate given the context of the passage. The authors of the instrument argued that this approach measures how well students understand the surface meaning of what they read.

This assessment attempts to directly tie the reading performance on the part of the students to materials students read. This is done by linking the readability formula on the passages to readability estimates. This estimate identifies the student’s independent, instructional, and frustration level for passages at different degrees of text difficulty. Reliability estimates ranged between .91 and .97 for grades 2 through 12. Alternate forms reliability ranged between .87 and .91. Related evidence of construct validity was discussed in terms of the fit between DRP scores and texts students could read at different levels of success. Content validity was based on evaluations by experts with regard to the fit between test questions and the domains being assessed. Criterion validity was addressed by correlating DRP scores with an unspecified criterion measurement (.90).
Description and Justification of Data Analysis

Statistical Package for the Social Sciences 14.0 (SPSS, 2005) and Microsoft Excel (2003) were employed to compute the descriptive and inferential statistics generated to answer the research questions. The statistical techniques used for each research question are described below.

Analysis of the Coaching Treatment

Completed Structured Coaching Logs (SCL) were collected from each coach (refer to Appendix B). These data (the number of contacts and the type of contacts) were analyzed descriptively to verify and document implementation of the coaching treatment, in each condition, within the seven schools. A summary chart of these data is included in chapter four.

Analysis of Research Question One

The first research question was examined utilizing descriptive and statistical analyses. This question addressed how teachers changed over time in regard to their level of use of the research-based instructional strategy, summarization. To investigate this question, ordinal data were collected pre and post the 8-week coaching treatments utilizing the LoU instrument. The researcher followed all interview protocols identified in the instrument’s manual, Measuring Implementation in Schools: Levels of Use (Hall, Dirkensen, & George, 2006). This included adherence to the LoU basic interview protocol and implementation of the branching technique identified by the creators of the instrument. An overall LoU rating score was obtained and documented for each interviewee sheet on the LoU rating sheet.
The researcher obtained additional skills to increase the reliability of the resulting data through intense self-training using the resources within *Measuring Levels of Use of the Innovation: A Manual for Trainers, Interviewers, and Raters* (Loucks, Newlove, & Hall, 1975). In addition, the interviewer utilized the *Levels of Use of the Innovation with Decision Points* (Hall, Dirkensen, & George, 2006; refer to Appendix L) to distinguish each LoU level as independent of the others. All interviews were recorded to permit multiple ratings for reliability checks. A random sample of pre- and post-interviews was selected to be double scored to assure interrater reliability. These results did not deviate by more than one level on any occasion.

The LoU structured interview instrument provided ordinal data with scores ranging between 1 and 8 (level 1 stands for nonuse of the strategy and 8 stands for renewal of the strategy). Descriptive statistics (range, group means, and standard deviations) were collected to provide an overall picture of the data that were collected. Pre- and post-treatment means and standard deviations for teachers’ LoU scores were collected and analyzed to see whether or not mean gain scores were greater in one of the three conditions. A Kruskal-Wallis test was conducted to evaluate whether the ranked means for LoU mean gain scores (from pre LoU to post LoU) were the same across all levels of the coaching variable (in-class coaching, consultant coaching, and no coaching). This was the most appropriate statistic due to the ordinal nature of the data and due to the small sample size (Huck, Cormier, & Bounds, 1974). To balance the concern about the small sample size as well as the potential for Type I error or a Type II error (beta), the alpha level was set at $p \leq .01$ to test for significance (Huck, 2008). A pairwise comparison was conducted using the Mann-Whitney U test to identify a significant difference for mean rank LoU mean gain scores within the three coaching groups.
Analysis of Research Question Two

The second research question, determining the difference in reading comprehension for third grade students in classrooms where teachers participated in three different coaching programs (in-class coaching, consultant coaching, and no coaching), was analyzed using parametric statistics. The dependent variable was students’ reading comprehension as measured by the ARC-B. The independent variable was the coaching program with three levels: (a) no coaching, (b) consultant coaching, and (c) in-class coaching. Differences between the levels of the independent variable were analyzed using one-way analysis of covariance (ANCOVA).

This quasi-experimental study lacked random assignment of subjects; therefore, the ANCOVA statistic was chosen to determine whether there was a difference between the mean scores of ARC-B for the three levels of the independent variable (in-class coaching, consultant coaching, and no coaching) after controlling for initial differences in reading ability (Gall et al., 2003). The covariates were students’ pre reading achievement as measured by the DRP and students’ pre reading comprehension as measured by ARC-A. The covariates were chosen to control for initial differences in reading ability using a nationally standardized reading achievement test (DRP) and a pre-test form (ARC-A) of the dependent variable measure (ARC-B), because students’ overall reading achievement and pre-treatment comprehension are both variables that may impact students’ performance on ARC-B. The ANCOVA created adjusted group means and provided increased statistical power to determine individual student differences on the covariate measures. This statistic also highlighted the impact the three levels of the independent variable had on the dependent variable (Huck, 2008).
In order to balance a concern about the potential for Type I error with concern about Type II error (beta), the alpha level was set at \( p \leq .05 \) to test for significance (Huck, 2008). Appropriate post hoc tests (Bonferroni pairwise comparisons) were conducted to clarify the meaning of the significance found in the mean differences of the dependent variable (ARC-B) across the three levels of the independent variable (in-class coaching, consultant coaching, and no coaching).

Data Collection Procedures and Timeline

1. During the winter of 2006-2007, a pilot study was conducted to collect reliability and validity information on the researcher-created criterion-reference reading comprehension assessment and the structured coaching log.

2. The proposed research was approved by Western Connecticut’s Institutional Review Board in the winter of 2006-2007.

3. During the spring of 2007, the district reading and language arts coordinator was provided with a summary of three research-based strategies demonstrated to have a positive impact on student learning. Strategies included summarization, teaching of story structures and elements, and identifying similarities and differences (Armbruster & Osborn, 2002; Marzano et al., 2001; National Institute for Literacy, 2002). The coordinator chose the strategy of summarization to be the focus of coaching sessions during the study. The researcher worked with district administrators to plan and organize the staff development needed to support this study.

4. Throughout the fall of 2007, twelve hours of staff development training was provided for the literacy coaches. Training included: (a) details on each of the coaching treatments (in-class coaching and consultant coaching programs), (b) a description of
the roles and responsibilities of coaches, (c) an explanation of the staff development components and coaching strategies, and (d) guidance on how to accurately complete the coaching logs (refer to Appendix J).

5. Consent forms for research participants were also distributed and collected throughout August and September, 2007 (refer to Appendix N).

6. In October, 2007, students were administered the ARC-A and the DRP. These data were utilized as covariates to create equal groups prior to the administration of the coaching treatments. At the same time, teachers were administered the LoU structured interview to determine their initial level of use of the research-based strategy (summarization). The resulting ordinal data were used as a control to create equal coaching groups in regard to teachers’ use of summarization. After pre-tests were completed, staff development training on summarization was provided for all third-grade teachers and coaches within the district.

7. During October, November, and December (2007), coaches administered the coaching treatments to the classrooms within the two coaching groups (in-class coaching and consultant coaching) over an 8-week period of time.

8. In December, 2007, teachers participating in the study were re-interviewed with the LoU structured interview to identify teacher change in terms of his/her implementation level of the designated instructional strategy (summarization). After the formal LoU interview, teachers were asked three debriefing questions in regard to their overall feelings about the study (see Appendix O: Teacher Post-Research Debriefing). Upon completion of the study, coaches also participated in a debriefing session (see Appendix P: Coach Post-Research Debriefing). Mean gain scores
between teachers’ LoU pre- and post-test scores were analyzed through descriptive statistics and a Kruskal-Wallis test. Students were administered the ARC-B as a post-test after the 8-week coaching cycle. One-way ANCOVA was utilized to identify significant differences in the dependent variable (student reading achievement) for three levels of the independent variable (in-class coaching, consultant coaching, and no coaching).

Statement of Ethics and Confidentiality

Permission to participate in this research was obtained by the district’s superintendent, the third-grade teachers, the literacy coaches, and the parents or guardians of all student participants. To assure confidentiality, each participant was assigned a confidential identification number. All data were stored in a locked filing cabinet in the researcher’s home office and was maintained there until the findings were published. Data were accessible only to other researchers for whom the data proved useful in further comparative analyses and who were enrolled in Western Connecticut State University’s Doctor of Education in Instructional Leadership Program.

Conclusion

A quasi-experimental design was employed as the framework for this research study. This chapter outlined the methods the researcher employed to investigate the impact three different coaching conditions had on teacher strategy use and student reading comprehension. It began with an introduction and overview of the research questions, sample, and setting included within the study. This was followed by a detailed description of the treatment and
research design. Finally, the instrumentation, data collection techniques, and analysis procedures were discussed. The next chapter will report the results of the study.
CHAPTER FOUR: ANALYSIS OF THE DATA AND FINDINGS

This chapter includes a review of the research questions, the hypotheses, a description of the analyses, and the findings of the study. The purpose of this study was twofold. First, it examined the relationship between literacy coaching (in-class coaching, consultant coaching, and no coaching) and teachers’ growth in regard to use of an instructional strategy. Second, the study investigated the effect of type of literacy coaching on students’ reading comprehension.

This chapter is organized into three sections. First, the independent variable, the coaching treatment (in-class coaching, consultant coaching, and no coaching) was analyzed with descriptive statistics and data collected from the Structured Coaching Log (SCL; refer to Appendix B). This analysis was conducted to make certain that the coaches adhered to the parameters of the treatment as designed by the researcher. Next, nonparametric statistics were employed to explore the effect of coaching conditions (in-class coaching, consultant coaching, and no coaching) on teachers’ use of a research-based strategy (summarization). Then, parametric statistics were used to examine the impact that the coaching conditions (in-class coaching, consultant coaching, and no coaching) had on students’ reading comprehension.

Research Questions and Hypotheses

1. Is there a relationship between the type of coaching conditions (in-class coaching, consultant coaching, and no coaching) and the change over time in teachers’ levels of use, or implementation, of a research-based instructional strategy as measured by the Levels of Use (LoU) structured interview?
H1. Teachers who participate in one of the two coaching programs (in-class coaching or consultant coaching) will attain greater growth in regard to strategy implementation, as measured by the LoU, than teachers placed in the no-coaching program.

2. Are there reading comprehension differences exhibited among three student groups that receive instruction from teachers who have experienced the three levels of coaching (in-class coaching, consultant coaching, and no coaching) after accounting for initial differences in reading comprehension and achievement?

H2. Third grade students taught by teachers who have that participated in one of the two coaching programs (in-class coaching or consultant coaching) will receive higher mean scores on the reading comprehension assessment than students taught by teachers who are in the no-coaching program.

Results from Analysis of the Coaching Treatment Variable

Data from the coaching logs were analyzed to verify that the coaches adhered to the coaching protocols. These data included the number of contact coaches had with teachers and the type of staff development training components and strategies employed by the coaches when working with teachers in different coaching conditions.

Table 10 summarizes the number of coach - teacher contacts that were expected during the 8-week coaching cycle as set forth in the treatment protocol (see Appendix K: Coaching Treatment).
Table 10

**Expected Range for Coach-Teacher Contacts**

<table>
<thead>
<tr>
<th>Weekly</th>
<th>Consultant Coaching</th>
<th>In-class Coaching</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expected Number of Coach – Teacher Contacts</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>16</td>
<td>24</td>
</tr>
<tr>
<td>Maximum</td>
<td>24</td>
<td>32</td>
</tr>
<tr>
<td>Total (8-Weeks)</td>
<td>Minimum</td>
<td>112</td>
</tr>
<tr>
<td></td>
<td>Maximum</td>
<td>168</td>
</tr>
</tbody>
</table>

Descriptive statistics (Excel, 2003) were used to examine coach – teacher contacts by coaching condition and by school. These data are summarized in Table 11. Coaches logged a total of 92 (mean = 13.14, SD = 2.95) contacts with the consultant coaching teachers and 185 (mean = 26.43, SD = 4.89) contacts with the in-class coaching teachers.
Table 11

*Actual Number of Coach - Teacher Contacts by School and Condition*

<table>
<thead>
<tr>
<th>School</th>
<th>Consultant Coaching</th>
<th>In-class Coaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>14</td>
<td>29</td>
</tr>
<tr>
<td>B</td>
<td>16</td>
<td>29</td>
</tr>
<tr>
<td>C</td>
<td>11</td>
<td>32</td>
</tr>
<tr>
<td>D</td>
<td>11</td>
<td>19</td>
</tr>
<tr>
<td>E</td>
<td>8</td>
<td>19</td>
</tr>
<tr>
<td>F</td>
<td>16</td>
<td>30</td>
</tr>
<tr>
<td>G</td>
<td>16</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>92.00</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>13.14</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>26.43</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>185.00</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>26.43</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>4.89</td>
</tr>
</tbody>
</table>

*Note: N=7 schools; coaching data were collected over 8-weeks*

The mean for the actual number of contacts logged by the coaches for the consultant coaching condition (13.14) fell below the expected range of 16-24. The mean for the actual number of coach – teacher contacts logged by coaches for the in-class coaching condition (26.43) fell within the expected range of 24-32.

Descriptive statistics were also employed to investigate which types of staff development components (theory, demonstration, practice, reflection with feedback, and in-class coaching) coaches utilized with teachers in the different coaching conditions. Results of this investigation for the seven participating schools are presented in Table 12.
Table 12

*Type of Staff development Contacts by Coaching Condition*

<table>
<thead>
<tr>
<th>Type of Staff development</th>
<th>Consultant Coaching</th>
<th>In-class Coaching</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Mean</td>
</tr>
<tr>
<td>Presentation of Theory</td>
<td>22</td>
<td>3.14</td>
</tr>
<tr>
<td>Demonstration/Modeling</td>
<td>15</td>
<td>2.14</td>
</tr>
<tr>
<td>Practice</td>
<td>53</td>
<td>7.57</td>
</tr>
<tr>
<td>Feedback with Reflection</td>
<td>2</td>
<td>0.29</td>
</tr>
<tr>
<td>In-class coaching</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Total</td>
<td>92</td>
<td>185</td>
</tr>
</tbody>
</table>

*Note: N=7 Schools*

Analysis of the data validated implementation of the coaching treatment as outlined by the researcher. These data indicated that all coach – teacher contacts in the consultant coaching condition were based on the first three staff development components (presentation of theory, demonstration, and practice) with the exception of one coach who documented using *feedback with reflection* twice. As would be expected, the coach – teacher contacts for the in-class coaching represented all five types of staff development training components (presentation of theory, demonstration, practice, feedback with reflection, and in-class coaching). In summary, there were minimal deviations from the treatment as outlined by the researcher.
Results for Research Question One

Research question one asked how teachers changed over time in regard to their levels of use of the research-based instructional strategy (summarization). Teachers were the unit of analysis for this portion of the study. Teachers’ pre- and post-treatment levels of use for the research strategy summarization was measured utilizing the LoU structured interview instrument. Results from this instrument created ordinal data with scores ranging from 1 through 8 (see Appendix L). The dependent variable, LoU mean gain score, was calculated by subtracting the pre-LoU interview score from the post-LoU interview score for all teachers who participated in the study. To determine whether the LoU mean gain scores were normally distributed, skewness and kurtosis values for the sample (n=20) were examined. The skewness value of -0.39 and the kurtosis value of -0.47 indicated a relatively normal distribution for LoU mean gain scores (Huck, 2008).

Table 13

Descriptive Statistics for LoU Scores

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Variance</th>
<th>Kurtosis</th>
<th>Skewness</th>
<th>Range</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>LoU Pre</td>
<td>3.75</td>
<td>0.64</td>
<td>0.41</td>
<td>-0.44</td>
<td>0.44</td>
<td>2</td>
<td>3 to 5</td>
</tr>
<tr>
<td>LoU Post</td>
<td>5.05</td>
<td>1.19</td>
<td>1.42</td>
<td>-0.36</td>
<td>-0.31</td>
<td>4</td>
<td>3 to 7</td>
</tr>
<tr>
<td>LoU Mean</td>
<td>1.30</td>
<td>1.08</td>
<td>1.17</td>
<td>-0.47</td>
<td>-0.39</td>
<td>4</td>
<td>-1 to 3</td>
</tr>
</tbody>
</table>

Gain

Note: n=20 teachers

First, means and standard deviations for the pre-, post-, and gain scores for each condition are summarized in Table 14.
Table 14

<table>
<thead>
<tr>
<th>LoU Scores</th>
<th>No Coaching</th>
<th>Consultant Coaching</th>
<th>In-Class Coaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>LoU Pre Test</td>
<td>Mean</td>
<td>3.83</td>
<td>3.86</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>0.41</td>
<td>0.69</td>
</tr>
<tr>
<td>LoU Post Test</td>
<td>Mean</td>
<td>4.17</td>
<td>5.00</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>0.98</td>
<td>1.15</td>
</tr>
<tr>
<td>LoU Mean Gain Scores</td>
<td>Mean</td>
<td>0.33</td>
<td>1.14</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>0.82</td>
<td>0.90</td>
</tr>
</tbody>
</table>

Note: LoU scores range from 1 to 8

Next, a Kruskal-Wallis test (p≤.05) was conducted to evaluate whether there was a significant difference among teachers’ pre LoU scores across the three levels of the independent variable (in-class coaching, consultant coaching, and no coaching). Results of the test, which was corrected for tied ranks, showed there was no significant difference among teachers’ pre LoU scores prior to the 8-week coaching treatment ($x^2 (2, N=20) = 1.14$, $p = .56$). These results are displayed in Table 15.

Table 15

<table>
<thead>
<tr>
<th>Coaching Condition</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>No coaching</td>
<td>6</td>
<td>11.50</td>
</tr>
<tr>
<td>Consultant Coaching</td>
<td>7</td>
<td>11.36</td>
</tr>
<tr>
<td>In-Class Coaching</td>
<td>7</td>
<td>8.79</td>
</tr>
</tbody>
</table>
A second Kruskal-Wallis test (SPSS 14.0) was conducted at the $p \leq .01$ level to evaluate whether there was a significant difference for the ranked LoU mean gain scores across the three levels of the independent variable (no coaching, consultant coaching, and in-class coaching; refer to Table 16). This test was also adjusted for tied ranks. Results of the analysis identified a significant difference in teachers’ use of summarization pre- and post-treatment for teachers in the different coaching conditions ($\chi^2 (2, N=20) = 11.68, p = .003$). Therefore, the null hypothesis was rejected.

Table 16

<table>
<thead>
<tr>
<th>Coaching Condition</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>No coaching</td>
<td>6</td>
<td>5.33</td>
</tr>
<tr>
<td>Consultant Coaching</td>
<td>7</td>
<td>9.50</td>
</tr>
<tr>
<td>In-Class Coaching</td>
<td>7</td>
<td>15.93</td>
</tr>
</tbody>
</table>

Figure 1 depicts a box plot which shows the distribution of LoU mean gain scores for the three groups.
Finally, a series of Mann-Whitney U tests (p ≤ .01) was conducted to evaluate pairwise differences among the ranked LoU mean gain scores in the three coaching conditions. The alpha level was set at p ≤ .01 level because of the small sample size. These results are summarized in Tables 17, 18, and 19.
Table 17

_Rank Scores for LoU Mean Gain Scores: No Coaching and In-class Coaching Groups_

<table>
<thead>
<tr>
<th>Coaching Condition</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Coaching</td>
<td>6</td>
<td>5.33</td>
<td>32.00</td>
</tr>
<tr>
<td>Consultant Coaching</td>
<td>7</td>
<td>8.43</td>
<td>59.00</td>
</tr>
</tbody>
</table>

Table 18

_Rank Scores for LoU Mean Gain Scores: No Coaching and In-class Coaching Groups_

<table>
<thead>
<tr>
<th>Coaching Condition</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Coaching</td>
<td>6</td>
<td>3.50</td>
<td>21.00</td>
</tr>
<tr>
<td>In-class Coaching</td>
<td>7</td>
<td>10.00</td>
<td>70.00</td>
</tr>
</tbody>
</table>

Table 19

_Rank Scores for LoU Mean Gain Scores: In-class coaching and consultant coaching Groups_

<table>
<thead>
<tr>
<th>Coaching Condition</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultant Coaching</td>
<td>7</td>
<td>5.07</td>
<td>35.50</td>
</tr>
<tr>
<td>In-class Coaching</td>
<td>7</td>
<td>9.93</td>
<td>69.50</td>
</tr>
</tbody>
</table>

Results indicated a significant difference when the ranked LoU scores for the in-class coaching group were compared to the ranked scores for the no coaching (\(z = -3.11, p = .00\)). No significant difference at the \(p \leq .01\) level, was found when the rank LoU scores for the consultant coaching groups were compared to the no coaching group (\(z = -1.5, p = .13\)) or the in-class coaching group (\(z = -2.42, p = .02\)). Results from this test indicate a strong relationship between the in-class coaching condition and teachers’ growth in regard to their use of the research-based strategy (summarization). Teachers in the in-class coaching
treatment condition showed significantly higher levels of use than teachers placed in the no coaching group. No other comparisons were significant.

Results from Research Question Two

Parametric statistics were used to investigate the second research question, whether or not there was a difference in reading comprehension for students whose teachers participated in the different coaching conditions. Students were the unit of analysis for this portion of the study. The dependent variable was students’ reading comprehension and the independent variable was the type of coaching program (in-class coaching, consultant coaching, and no coaching).

Students’ reading comprehension scores were collected pre- and post-treatment using the Assessment of Reading Comprehension (ARC-A and ARC-B). ARC-B data served as the dependent variable. ARC-A and Degrees of Reading Power (DRP) scores served as covariates. There was a moderate correlation between ARC-B and both covariates (ARC-B and ARC-A: \( p = .57 \); ARC-B and DRP: \( p = .51 \)).

The first step in this analysis, as suggested by Tabachnik and Fidell (2006), was to analyze the data for the dependent variable (students’ post reading comprehension, ARC-B) for outliers. A boxplot (SPSS 14.0) was generated to identify outliers, defined as values >1.5 times the interquartile range away from the median. As a result of this analysis, five extreme scores were eliminated from the original dependent variable data set (n= 370; one from the no coaching group, three from the consultant coaching group, and one from the in-class coaching group). In order to maximize group homogeneity additional subjects from the original sample were randomly selected out of the groups to create an equal number of subjects (n=110) per groups (Tabachnik & Fidell, 2006). Subjects were randomly selected
out of the in-class coaching group and the consultant coaching group utilizing a table of random numbers (Fraenkel & Wallen, 1996). The resultant total sample size utilized in the analyses was n=330 and n=110 per group (in-class coaching, consultant coaching, and no coaching).

*Analysis of ARC-A Scores.* Students pre-treatment reading comprehension scores (ARC-A) were analyzed before the analysis of students post-treatment reading comprehension scores (ARC-B) was conducted. Descriptive statistics for the ARC-A are presented in Table 20.

Table 20

<table>
<thead>
<tr>
<th>Coaching Condition</th>
<th>N</th>
<th>Mean</th>
<th>sd</th>
<th>s²</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Coaching</td>
<td>110</td>
<td>13.89</td>
<td>5.52</td>
<td>30.47</td>
</tr>
<tr>
<td>Consultant Coaching</td>
<td>110</td>
<td>12.79</td>
<td>5.18</td>
<td>26.83</td>
</tr>
<tr>
<td>In-class Coaching</td>
<td>110</td>
<td>11.72</td>
<td>5.11</td>
<td>26.11</td>
</tr>
<tr>
<td>Total</td>
<td>330</td>
<td>12.80</td>
<td>5.33</td>
<td>28.41</td>
</tr>
</tbody>
</table>

An Analysis of Covariance (ANOVA) was conducted on ARC-A scores to identify whether or not initial differences among the levels of the independent variable (in-class coaching, consultant coaching, and no coaching). Prior to conducting the ANOVA, a Levene’s Homogeneity of Variance test was performed to investigate homogeneity among groups. Results were not significant \( F (2) = .40, p = .67 \). Therefore, the ANOVA was conducted.

The ANOVA level of significance was set at \( p < .01 \) to minimize the potential for rejecting the null hypothesis (there is no significant difference in students’ mean ARC-A
scores among the three levels of the independent variable [no coaching, consultant coaching, and in-class coaching]) when actual significance existed. Results indicated that the test was significant ($F (2, 327) = 4.67, p = .01$). Coaching condition accounted for 3% of the variance of the dependent variable. Table 21 summarizes these results.

Table 21

<table>
<thead>
<tr>
<th>ANOVA results for ARC-A</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contrast</td>
<td>259.66</td>
<td>2</td>
<td>129.83</td>
<td>4.67</td>
<td>.01</td>
<td>.03</td>
</tr>
<tr>
<td>Error</td>
<td>9093.15</td>
<td>327</td>
<td>27.81</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A Tukey HSD post hoc ($p \leq .05$) was conducted to determine which group(s) had significantly different ARC-A means. This test was appropriate because the Levene’s Test indicated there was little variance among the sample for the three groups. Results from this comparison indicated a significant mean difference (2.17) between students’ pre-treatment comprehension scores (ARC-A) in the no coaching and in-class coaching groups ($p = .01$). No significant differences were found between any other groups (see Table 22).
<table>
<thead>
<tr>
<th>Coaching Conditions Comparison</th>
<th>Mean Difference</th>
<th>Standard Error</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Coaching and Consultant Coaching</td>
<td>1.10</td>
<td>.71</td>
<td>.27</td>
</tr>
<tr>
<td>No Coaching and In-class Coaching</td>
<td>2.17*</td>
<td>.71</td>
<td>.01</td>
</tr>
<tr>
<td>Consultant Coaching and In-class Coaching</td>
<td>1.07</td>
<td>.71</td>
<td>.38</td>
</tr>
</tbody>
</table>

* indicates significant mean difference

Because there was a significant difference in students’ pre reading comprehension level, a One-Way Analysis of Covariance (ANCOVA, p ≤ .05) was conducted to evaluate the relationship between type of literacy coaching (in-class coaching, consultant coaching, and no coaching) and students’ reading comprehension (ARC-B) while adjusting for pre differences in students’ pre reading comprehension (ARC-A) and students’ pre overall reading achievement (DRP).

The first step in this analysis was to calculate the descriptive statistics (mean scores, distribution statistics, ranges of scores, and variances) for ARC-B (see table 23).
Table 23

Descriptive Statistics for ARC-B Scores by Coaching Condition

<table>
<thead>
<tr>
<th></th>
<th>No Coaching</th>
<th>Consultant Coaching</th>
<th>In-class Coaching</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>110</td>
<td>110</td>
<td>110</td>
<td>330</td>
</tr>
<tr>
<td>Mean</td>
<td>15.25</td>
<td>15.33</td>
<td>16.94</td>
<td>15.84</td>
</tr>
<tr>
<td>SD</td>
<td>3.84</td>
<td>4.70</td>
<td>3.47</td>
<td>4.10</td>
</tr>
<tr>
<td>Variance</td>
<td>14.76</td>
<td>22.04</td>
<td>12.06</td>
<td>16.79</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>-.26</td>
<td>-.40</td>
<td>-.27</td>
<td>-.09</td>
</tr>
<tr>
<td>Skewness</td>
<td>-.53</td>
<td>-.65</td>
<td>-.62</td>
<td>-.67</td>
</tr>
<tr>
<td>Range</td>
<td>16</td>
<td>17</td>
<td>14</td>
<td>17</td>
</tr>
</tbody>
</table>

Minimum to Maximum

6 to 22          5 to 22          8 to 22          5 to 22

To determine whether ARC-B scores were normally distributed, skewness and kurtosis values for the sample (n=330) were examined. An overall skewness value of -0.67 and a kurtosis value of -0.09 indicated a relatively normal distribution of ARC-B scores. Skewness and kurtosis values within each level of the independent variable also fell well within the range of -1.0 and +1.0 (Huck, 2008). Figure 2 shows the distribution of ARC-B mean scores for each coaching condition (in-class coaching, consultant coaching, and no coaching).
For the second step, a homogeneity-of-slopes test was conducted because even after deleting extreme scores within each group and creating equal number of subjects per group, results from Levene’s Homogeneity of Variance test, indicated that the error variance of the dependent variable (ARC-B scores) was not equal across groups ($F = (2,361) = 12.77, p = .00$). It was noted that the variance found for ARC-B scores within the consultant coaching condition group (22.04) was somewhat different from the other two groups (no coaching [14.76] and in-class coaching [12.06]). Therefore, the relationship between each covariate and the independent variable was examined using the homogeneity-of-slopes test (Green & Salkind, 2005). Results from the homogeneity-of-slopes test indicated no significant

![Figure 2. Distribution of ARC-B Scores for the Three Coaching Conditions](image-url)
interaction between the independent variable and either covariate (ARC-A, $F(2, 361) = .14$, $p = .87$; DRP, $F(2, 361) = .86, p = .42$). Table 24 summarizes the results of the homogeneity of slopes analysis.

Table 24

<table>
<thead>
<tr>
<th>Interactions Between Coaching Condition and Covariates for ARC-B</th>
<th>Type III Sum</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coaching Condition * ARC-A</td>
<td>10.04</td>
<td>2</td>
<td>5.02</td>
<td>.49</td>
<td>.61</td>
</tr>
<tr>
<td>Coaching Condition * DRP</td>
<td>7.64</td>
<td>2</td>
<td>3.82</td>
<td>.38</td>
<td>.69</td>
</tr>
</tbody>
</table>

Once the homogeneity-of-slopes was established, ANCOVA was used to assess differences among the adjusted means for the three coaching conditions. In this analysis, ARC-A and DRP were the covariates. The dependent variable was ARC-B scores and the independent variable was the type of coaching (no coaching, consultant coaching, in-class coaching). Results of this analysis are shown in Table 25.


Table 25

*ANCOVA Test Results*

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>2,238.80</td>
<td>4</td>
<td>559.70</td>
<td>55.35</td>
<td>.00</td>
<td>.41</td>
</tr>
<tr>
<td>Intercept</td>
<td>3,516.88</td>
<td>1</td>
<td>3,516.88</td>
<td>347.80</td>
<td>.00</td>
<td>.52</td>
</tr>
<tr>
<td>DRP</td>
<td>111.31</td>
<td>1</td>
<td>111.01</td>
<td>11.01</td>
<td>.00</td>
<td>.03</td>
</tr>
<tr>
<td>ARC-A</td>
<td>660.96</td>
<td>1</td>
<td>660.96</td>
<td>65.36</td>
<td>.00</td>
<td>.17</td>
</tr>
<tr>
<td>Coaching Condition</td>
<td>398.48</td>
<td>2</td>
<td>199.24</td>
<td>19.70</td>
<td>.00</td>
<td>.11</td>
</tr>
<tr>
<td>Error</td>
<td>3,286.37</td>
<td>325</td>
<td>10.11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>88,286.00</td>
<td>330</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>5,525.16</td>
<td>329</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results of the ANCOVA indicated that the null hypothesis should be rejected, $F (2, 365) = 16.68, \ p = .00$. Significant differences among the adjusted means for the three groups (in-class = 17.03\textsuperscript{a}, consultant coaching = 15.31\textsuperscript{a}, and no coaching = 14.67\textsuperscript{a}) were found.

Students’ pre overall reading achievement (DRP) accounted for 3\% of the variance found for post reading comprehension; students’ pre reading comprehension (ARC-A) accounted for 17\% of the variance found on post reading comprehension (ARC-B). The coaching treatment accounted for over 11\% of the variance found in students’ post-reading comprehension (ARC-B) across the levels of the independent variable.

Follow-up tests were conducted to evaluate pairwise differences among the adjusted means. Holm’s sequential Bonferroni procedure was used to control for Type I error across the three pairwise comparisons. Table 26 summarizes these results.
Table 26

*Coaching Condition Pairwise Comparisons for ARC-B*

<table>
<thead>
<tr>
<th></th>
<th>Mean Difference</th>
<th>Std. Error</th>
<th>Sig.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Coaching</td>
<td>Consultant Coaching</td>
<td>-.74</td>
<td>.43</td>
</tr>
<tr>
<td></td>
<td>In-Class Coaching</td>
<td>-2.65*</td>
<td>.44</td>
</tr>
<tr>
<td>Consultant Coaching</td>
<td>No Coaching</td>
<td>.74</td>
<td>.43</td>
</tr>
<tr>
<td></td>
<td>In-class Coaching</td>
<td>-1.91*</td>
<td>.43</td>
</tr>
<tr>
<td>In-class Coaching</td>
<td>No Coaching</td>
<td>2.65*</td>
<td>.44</td>
</tr>
<tr>
<td></td>
<td>Consultant Coaching</td>
<td>1.91*</td>
<td>.43</td>
</tr>
</tbody>
</table>

*Note:* * indicates significant difference between adjusted means

Results indicated there were significant differences in the adjusted means between the in-class coaching group (17.36^a) and both the no coaching group (14.71^a) and the consultant coaching group (15.45^a). *ARC-B* reading comprehension scores were significantly higher in the in-class coaching group than in both the no coaching and the consultant coaching groups. However, no significant difference was found for *ARC-B* reading comprehension scores between the consultant coaching group (15.45^a) and the no coaching group (14.71^a).
CHAPTER FIVE: SUMMARY AND CONCLUSIONS

The purpose of the research study was to examine the effects of literacy coaching (in-class coaching, consultant coaching, and no coaching) on (a) teachers’ strategy use and (b) third-grade students’ reading comprehension. The theoretical literature and research reviewed in chapter two supports the use of a sociocultural and comprehensive approach to staff development when the goal of training is to transfer newly learned practices into classroom application.

Therefore, the researcher hypothesized that teachers placed in one of the two coaching conditions (consultant or in-class) would demonstrate more growth in regard to use of summarization, the instructional strategy focus of the treatment, than teachers who received no coaching. In addition, previous literature supported effective teaching and research-based instruction as factors that contribute to student learning. Therefore, it was hypothesized that students being taught by teachers placed in one of the two coaching conditions (consultant or in-class) would have higher reading comprehension scores than students in the no coaching condition after controlling for pre reading comprehension and overall reading achievement. This chapter provides a review of the findings as they relate to the research questions and hypotheses. Next, the current study is reviewed in relation to the studies described in the review of the literature. Finally, the chapter concludes with limitations, implications, and suggestions for future research.
Review of the Findings

Analysis of the Coaching Variable

The independent variable, coaching condition (in-class coaching, consultant coaching, and no coaching), for this study consisted of five factors: (a) the role of the coach (b) the function of the coaching cycle, (c) the instructional focus of the coach – teacher contacts, (d) the number of coach – teacher contacts, and (e) the type of staff development employed during the coach – teacher contacts. Coaches participated in 12 hours of training to develop a deep understanding of all factors involved within the coaching treatment. The last two factors (number and type of staff development contacts) were analyzed descriptively to verify adherence to the treatment. Results of this analysis indicated that coaches met most of treatment requirements outlined by the researcher. The mean number of coach – teacher contacts (26.43) for the in-class coaching condition fell within the expected range (24-32), whereas the mean number of coach - teacher contacts (13.14) in the consultant condition fell slightly below the expected range (16-24).

The analysis also demonstrated that, as planned, most coach – teacher contacts in the consultant coaching condition were based on the first three staff development components (presentation of theory, demonstration, and practice) whereas the coach – teacher contacts for the in-class coaching represented all five types of staff development components (presentation of theory, demonstration, practice, feedback with reflection, and in-class coaching). The researcher was confident that the coaching treatment had been implemented appropriately and was therefore able to move forward with the statistical analyses needed to answer the two research questions.
Research Question One

Teachers were the unit of analysis for the first research question, which analyzed whether the type of coaching (consultant or in-class) impacted teacher strategy use. Teachers’ Levels of Use (LoU) mean gain scores, in regard to the implementation of summarization, were identified as the dependent variable. The independent variable was the type of coaching. A Kruskal-Wallis test was used to analyze whether or not there were significant differences between the experimental groups (in-class coaching and consultant coaching) and the control group (no coaching). As expected, the in-class coaching group’s LoU mean gain scores indicated the greatest growth (mean = 2.92). The consultant coaching group made moderate growth (mean = 1.14), and the no coaching group made the least amount of growth (mean = 0.33). The null hypothesis for question one was rejected because results from the Kruskal-Wallis indicated that there was a significant difference in teachers’ use of summarization pre- and post-treatment for teachers in the different coaching conditions ($\chi^2(2, N=20) = 11.68, p=.00$). Results from the Mann-Whitney U tests ($p \leq .01$) indicated a significant difference when ranked LoU mean gain scores for the in-class coaching group were compared to the ranked LoU mean gain scores for the no coaching ($z = -3.11, p = .00$). However, no significant difference was found between the consultant coaching groups and the in-class coaching group ($z = -2.42, p = .02$) or between the consultant coaching group and the no coaching group ($z = -1.5, p = .13$).

Research Question Two

Students were the unit of analysis for the second research question, which examined how literacy coaching affected students’ reading comprehension. The dependent variable was students’ reading comprehension, and the independent variable was the type of coaching
program (in-class coaching, consultant coaching, and no coaching). One-way analysis of covariance (ANCOVA) was conducted to analyze this relationship. Students’ pre reading comprehension and reading achievement served as covariates to statistically produce adjusted means to equate groups. ANCOVA results indicated that the null hypothesis should be rejected, $F(2, 365) = 16.68, p = .00$. The Bonferroni procedure was used to evaluate pairwise differences among the groups. As expected, the in-class coaching group’s Assessment for Reading Comprehension, form B (ARC-B) adjusted mean score (17.03a) was significantly higher than the mean score of the no coaching group (14.62a). However, although the consultant coaching group (15.31a) outscored the no coaching group (14.62a), this difference did not reach statistical significance. Unexpectedly, the adjusted mean score for the in-class coaching group (17.03a) was significantly higher than adjusted mean score for the consultant coaching group (15.31a).

Conclusions from Post-Research Debriefing

Upon completion of the study, teachers and literacy coaches were asked to provide general feedback in regard to the research. Specifically, they were asked about how they felt coach-to-teacher contacts impacted (a) the teachers’ use of summarization in the classroom and (b) how these contacts improved students’ reading comprehension. In addition, coaches were asked specific questions about implementation of the coaching treatment and difficulties they may have encountered with implementation (refer to Appendix O: Teachers’ Post-Research Debrief and refer to Appendix P: Literacy Coaches’ Post-Research Debrief). This perceptual information may help to further explain the quantitative findings of this study. Extended results from the debriefings can be found in Appendix Q: Results from Post-Research Debriefings.
Several themes emerged from the debriefings that supported the quantitative findings of this study. In general, teachers in both coaching conditions stated that they gained a better understanding about how to teach students the strategy of summarization. Teachers in the in-class coaching condition mentioned that the collaborative experience helped them to become reflective practitioners. Overall, teachers placed in the consultant coaching condition seemed to gain a deeper understanding of how to teach summarization, but they encountered more difficulties in regard to finding time to plan with the coach outside of the classroom. Interestingly, teacher in both coaching conditions indicated that they saw an increase in their students’ ability to summarize the main ideas from a story even though the data from the consultant coaching condition did not support this perception.

Results from the coaches’ debriefing indicated that coaches felt they were able to provide more consistent support to teachers in the in-class coaching condition than in the consultant coaching condition. As a result, they expected more growth in regard to use of summarization from teachers in the in-class coaching condition. Findings from research question one support these perceptions. Interestingly, the coaches expected students in both coaching groups (in-class and consultant) to demonstrate greater differences in reading comprehension as compared to students placed in the no coaching group. However, results from research question two indicated that this was not the case. Instead, the students placed in the in-class coaching conditions were the only students that significantly outscored the no coaching group.

Relationship to Review of the Literature

Recently, due to increased levels of accountability in schools, many districts have begun to implement literacy coaching programs with the hopes of improving the instructional
practices of teachers. Literacy coaching has been funded by the federal government and No Child Left Behind legislation as one of the school reform strategies that supports teacher effectiveness (IRA, 2004a; Learning Points Associates, 2004; Paige, 2001). Research has suggested that teacher’s knowledge and employment of research-based instruction as among the greatest contributors to student achievement (Brophy, 1986; Marzano et al., 2001; Rowan et al., 2002; Sanders & Horn, 1994, 1998). Therefore, it becomes crucial for school systems to provide the appropriate training and support that teachers need to become more effective educators.

Coaches provide job-embedded staff development designed to scaffold adult learning (IRA, 2000; 2004b). Coaching is grounded in research which has demonstrated that a sociocultural (Brown et al., 1989; Owen, 2004; Putnam & Borko, 2000; Truscott & Truscott, 2004) and comprehensive (Joyce & Showers, 2002; Lyons & Pinnell, 2002) approach to staff development increases the transfer of newly learned instructional techniques into a teachers’ repertoire of classroom practice. Although there is a wealth of research that describes the wide range of roles and responsibilities coaches perform (Buly et al., 2004; IRA, 2004b; Killion & Harrison, 2005; Learning First, 2004; Nuefeld & Roper, 2003), there is limited research on how this type of coaching impacts teachers’ strategy implementation in the classroom and even less research on how literacy coaching affects student learning (Bean, 2004; Egawa et al., 2005; IRA, 2004a; Lyons & Pinnell, 2001; Neufeld & Roper, 2003; Poglinco et al., 2003; Sturtevant, 2003; Walpole & McKenna, 2004; Wren & Reed, 2005).

The current study addressed these gaps by comparing three literacy coaching conditions (in-class coaching, consultant coaching, and no coaching) in order to determine the effect of different combinations of staff development activities on teacher strategy use
and student reading comprehension. For the current study, the number and type of contact coaches had with teachers depended on the coaching condition. In other words, coaches provided different levels of scaffolded instruction and staff development training to teachers in the three coaching conditions. The goal of the coaching treatment was to facilitate the transfer of a research-based strategy (summarization) to classroom application. Presumably, the teachers’ increased use of the research-based strategy would then have a positive impact on students’ reading comprehension.

Staff Development Transfer of Training Research

A review of the literacy coaching literature yielded numerous anecdotal case studies that depict the roles and functions of literacy coaches in schools (Bean, 2004; Lyons & Pinnell, 2001; Neufeld & Roper, 2003). This literature acknowledges that literacy coaching, as a form of job-embedded staff development, has the potential to increase the overall quality of teachers’ instructional practices, yet the literature is descriptive and hypothetical in nature (Nuefeld & Roper; Wren & Reed, 2005; Russo, 2004). Research question one, which examined how literacy coaching impacted teacher strategy use, emerged from a review of the literature on staff development and the transfer of training. Results of the present study support Joyce and Showers’ (Showers, 1982, 1984; Joyce & Showers, 1980, 1984, 1995) research which established that effective staff development incorporates a combination of training components (presentation of theory, demonstration, practice, feedback, and in-class coaching). The current study provided empirical evidence to support the notion that teachers who receive in-class, follow-up training on a research-based strategy from a literacy coach demonstrated more growth in regard to teacher strategy use.
The current study expanded upon the training protocols described in Joyce and Showers’ research which consisted of two groups who received different levels of training. Teachers placed in the control group received a traditional, in-service workshop presentation on a teaching strategy (with demonstrations and opportunities to practice the strategy during the training) and teachers placed in the treatment group received the initial training plus peer coaching in the classroom as a form of follow-up training. The current study extended Joyce and Showers’s training model with two specific changes in protocol: (a) the treatment for the current study was divided into three distinct levels of training (in-class coaching, consultant coaching, and no coaching) and (b) coaches in the current research were identified as literacy specialists rather than classroom teachers, or peer coaches.

The current research utilized a 3-level training process (in-class coaching, consultant coaching, and no coaching). These groups received different combinations of Joyce and Showers’s five-tiered training model (presentation of theory, demonstration, practice, feedback with reflection, and in-class coaching). Therefore, the current research was able to determine which combination of training components was more effective. Levels of Use (LoU) mean gain scores indicated that teachers in the in-class coaching condition, who received all five training components, demonstrated higher transfer levels for summarization than teachers in the other two groups. These results provided empirical evidence to support the notion that teachers who receive in-class, follow-up training on a research-based strategy from a literacy coach will demonstrate growth in regard to teacher strategy use. Teachers in the in-class coaching condition received significantly higher LoU scores than teachers in the no coaching condition.
These findings support Joyce and Showers’s (Showers, 1982, 1984; Joyce & Showers, 1980, 1984, 1995) findings that in-class training from a coach facilitated the transfer of training from a workshop to classroom application. However, given Joyce and Showers’ findings, it was surprising that teachers’ LoU mean growth scores in the consultant coaching condition (in which teachers received out of class presentation of theory, demonstration, and practice) were not significantly higher than those of teachers in the no coaching condition. Moreover, during the post-study debriefing, teachers in the consultant coaching group expressed the feeling that they had made growth. However, although the LoU mean gain scores showed the expected pattern of growth (no coaching = .33, consultant coaching = 1.14, and in-class coaching = 2.29), the addition of demonstration and practice to an initial presentation of theory did not have a significant impact on teacher strategy use.

As mentioned above, the current study also adds to the staff development transfer of training literature by broadening the scope of coaching from a peer coaching model (i.e., teachers helping teachers; Showers, 1982) to a training model based on the collaboration between teachers and a job-embedded staff developer identified as an expert in the area of reading research and teaching methodologies (Learning Points Associates, 2004). Coaches in Joyce and Showers’ research were peer coaches. In other words, teachers received in-class observations and technical feedback from other classroom teachers, not from literacy specialists, who were responsible for the coaching in this study. In the current study, literacy coaches functioned in a more formal role than peer coaches. Literary coaches scaffolded learning for teachers with the intent of improving teachers’ instructional practices and ultimately, teacher effectiveness.
Literacy Coaching and Student Achievement

Review of both the staff development, transfer of training literature (Craven, 1989; Debruhl, 1993; Joyce & Showers, 1996; Wynn, 1986) and the literacy coaching literature (Buly et al., 2004; Russo, 2004; Wren & Reed, 2005) revealed little research that investigated the impact of literacy coaching, as a form of job-embedded staff development, on student achievement. Recently, researchers have begun to examine whether or not a relationship between job-embedded staff development and student achievement exists. Preliminary studies have reported mixed results and much of this research investigated the impact of coaching on student achievement without examining how this type of training impacted both impacted teachers and students (Falk, 2004; Rasmussen, 2005; Rennick, 2002; Shuster, 2004). The currently study addressed this gap by investigated the impact of literacy coaching on both teacher strategy use and student reading comprehension.

One exception to the above was Slinger’s (2004) research which utilized a pre-post test design to investigate the impact of nine Cognitive Coaching sessions on both teachers and students. The Cognitive Coaching sessions consisted of conversations focused on planning, reflection, and problem-solving between coaches and teachers. Teacher data were qualitative and student achievement data were quantitative. Results indicated that although students in the treatment group outscored students in the control group, there was no significant difference between the groups. This current study is similar to Slinger’s research because it investigated the effect of coaching on teachers and students. However, the current study extended and improved upon Slinger’s research by addressing her recommendations as well as those made by other researchers. This includes (a) enhancement of the overall research design, analyses, and instrumentation (b) implementation of a more formal coaching
program using Reading First’s definition of literacy coach and Joyce and Showers’s research-based staff development training model, and (c) creation of a research-based strategy focus for the training component.

The design of the current study was based on Slinger’s (2004) nonrandomized, control group, pre-post test design. However, the present study employed inferential statistics, rather than qualitative data, to investigate teachers’ strategy use in order to increase the likelihood of finding an empirical link between literacy coaching and both teachers’ strategy use (Kruskal-Wallis) and students’ reading comprehension (ANCOVA). Previous research noted sampling and treatment effect limitations (Rasmussen, 2005; Rennick, 2002; Schuster, 2004; Slinger, 2004). The current research addressed these limitations by obtaining a fairly large sample of 330 students (n=110 per group) and by controlling for the effect of school by having students from all participating schools represented in each of the coaching conditions.

Slinger (2004) and Rennick (2002) both pointed out the need to examine how a formal coaching program, rather than Cognitive Coaching conversations, impacted student achievement. The current study did this by formalizing the coaching treatment to reflect the literacy coaching model outlined by Reading First and No Child Left Behind (NCLB) legislation (Learning Points Associates, 2004) and by basing the structure of the staff development on Joyce and Showers’ research-based training model (Joyce & Showers, 1980, 1984, 1995; Showers, 1982, 1984). Faulk (2004) identified this training model in her research, yet there was limited description of the actual treatment (i.e. number of contacts, length of contacts, type of staff development training, or instructional focus of each contact). The current research advanced the staff development training model originated by Joyce and
Showers by dividing the coaching treatment into three levels: (a) no coaching, (b) the consultant coaching condition (out-of-classroom contacts only) and (b) the in-class coaching condition (in-class and out-of-classroom contacts) to determine how different combinations of training impacted student reading achievement.

Finally, the current study identified a research-based strategy as the focus for the staff development training and included a way (the *Levels of Use* structured interview) to measure teacher use of this strategy. Summarization was taught because research has identified this strategy as having a direct impact on students’ reading achievement (Kamil et al., 2000; Marzano et al., 2001; NIFL, 2000; Pressley, 2006). In prior studies, a clear training focus had not been identified for the coaching treatment. Rather in some research there had been a focus on global areas of reading such as balanced literacy instruction (Rennick, 2002; Shuster, 2004) or generic *best practices in literacy* (Faulk, 2004); in other studies, the researcher did not identify the training focus for their studies (Rasmussen, 2005; Slinger, 2004). In addition, in this study, the instruments used to measure reading comprehension (*Assessment of Reading Comprehension, ARC-A* and *ARC-B*) were designed to mirror the Connecticut Mastery Test and to directly assess students’ ability to utilize summarization as a comprehension strategy. The use of this classroom assessment (*ARC-A* and *ARC-B*), rather than the use of a more general measure of reading achievement, like those used in previous research (Faulk, 2004; Rasmussen, 2005; Rennick, 2002), allowed the researcher to measure whether or not the research-based strategy had an impact on student learning.

Results of this study suggest that literacy coaching may be a factor that improves students’ reading comprehension. The adjusted *ARC-B* means for students in the in-class coaching group (17.36) were significantly higher than students in the consultant coaching
(15.45) and no coaching groups (14.71). The researcher expected students in the consultant coaching group to outscore the students in the no coaching group. However, although the gains were in the expected direction, differences between the consultant coaching group and the no coaching group were not statistically significant. These results indicated that students placed in classrooms where teachers received a combination of in-class training, following an initial presentation of theory workshop, attained higher levels of comprehension than students whose teachers received out-of-the classroom follow-up training or no follow-up training at all. These results have many implications as researchers continue to investigate the links between staff development, effective teaching, and student learning. This study was significant because it provided insight into the connection between teachers, staff development, and student achievement.

Limitations of the Study

For the purposes of this study, a plausible link between literacy coaching (job-embedded staff development), teacher strategy use, and student reading comprehension was explored. However, due to the small teacher sample size (n= 7 or 6 per group), and the lack of a nested research design, this link is exploratory in nature. A number of extraneous variables may have impacted the internal validity of this study. One factor may be the difference in the number of teacher contacts coaches had with teachers placed in the two coaching conditions. Additionally, although evidence of validity and reliability data were collected during a pilot study, the instrument utilized to measure students’ reading comprehension was researcher-created. This may also have impacted the validity of the study. There was also a possibility that the pre-tests did not accurately identify initial differences between the groups (Isaacs & Michaels, 1995) or that the similarities between
ARC-A and ARC-B may have caused students to be “test-wise” (Gall et al., 2003). However these threats were minimized by using students’ pre-treatment reading achievement and comprehension scores as covariates.

It is also possible that the 8-week coaching cycle was too short to identify significance between the consultant and no-coaching groups. An extended treatment cycle or a longitudinal study may have provided the time needed for both teachers and students in the consultant coaching condition to demonstrate significant growth. Location threats were minimized because data for each condition were collected from each school. The researcher administered all training for the coaching treatments and provided an outline to ensure consistency.

This study’s findings may be generalizable to other Title I schools with similar demographics to the sample included in this research. Ideally, subjects would have been randomly assigned to groups. However, this was not feasible in an educational setting where it was necessary to work with classroom groups that were already intact and fixed before the study began (Isaac & Michael, 1997). The research attempted to minimize external validity threats by having a relatively large sample size (n=330), 110 students per group.

**Implications of the Study**

Although the researcher expected significant differences pre and post-treatment in regard to strategy use for teachers in both the consultant and in-class coaching conditions, data analyses revealed that only teachers placed in the in-class coaching condition demonstrated significant growth in regard to use of summarization during the 8-week coaching cycle. The information gained from the coaches’ and teachers’ debriefing may help to explain this finding (refer to Appendix Q: Results from Post-research Debriefings).
Teachers reported a number of factors that may have lessened the impact of the consultant coaching condition. These factors included: inconsistent contact between coaches and teachers, the lack of connection between the training and the teachers’ own classrooms, and the need for more time to meet. These factors may help to explain why teachers in the consultant group did not demonstrate significant growth over teachers in the no coaching group.

Results from this study have program implications for staff development programs when the goal is to increase the transfer of new learning to the classroom. Staff development is one of focus areas in current school reform initiatives. There is a need for high quality staff development for every teacher. Findings from this study suggest that in-class coaching is superior to both consultant coaching and no coaching as a form of staff development when the goal is to transfer learning from a workshop to classroom use. This has important implications for school administrators and educational policy makers as they seek to design effective training programs. Although the in-class coaching model requires more time to implement than a consultant model, the benefits may outweigh this constraint. Students and teachers spend most of their time together inside the classroom. Results from the teacher and coach debriefings identified scheduling issues and monetary constraints as major barriers that limited the amount of time coaches and teachers were able to collaborate outside of the classroom. Therefore, results of this research indicate that classroom-connected training may be a wiser investment than traditional one-day workshops or follow-up training, which occurs outside the classroom.

Additionally, results from this study suggest that school districts that are currently implementing a form of coaching as staff development would benefit from a program
evaluation to examine: (a) whether or not the school or district supports the structures needed to implement coaching cycles, (b) the percent of time coaches work inside teachers’ classrooms, (c) whether teacher – to – coach contacts are based on research-based instruction, (d) the types of staff development coaches use when collaborating with teachers, (e) whether coaches have a deep understanding of adult learning theory and/or processes for building professional learning communities, and finally, (e) whether or not training has been provided to administrators and teachers to support effective coaching structures.

The results of this study may help members of the educational community make better decisions about staff development programming when the goal is to increase student learning. The ultimate goal of staff development is to create more effective teachers who then, presumably, have a significant impact on student learning. Results of this research found that students who were in classrooms in which teachers received in-class training on a research-based strategy scored significantly better on a reading comprehension assessment (17.36) than students placed in classrooms where teachers received either follow-up training outside of the classroom (15.45) or no follow-up training (14.71). This finding has implications as school systems continue to search for the most effective forms of staff development. This study indicates that in-class coaching is the preferred type of staff development when the goal is to increase student learning.

Suggestions for Future Research

In general, more research is needed to explore the relationship between staff development and student achievement. The following are recommendations based upon the consideration of the data from this study:
1. Replication of this study is highly recommended to provide more insight and support for the findings of this study. Suggestions for replication include the need for: (a) increased sample size, (b) a mixed design (quantitative with qualitative follow-up) to better understand and explain the findings of the study, (c) in-class observations to gain an understanding about what is happening in the classroom to help students achieve, (d) larger-scale research utilizing a hierarchical linear model to explore the nested nature of the relationship between effective staff development and student achievement, and (e) random assignment to group to minimize any variation among coaching groups.

2. Additional recommendations for enhancement of the coaching treatment include: (a) extension of the coaching cycle for all groups; a year-long analysis would provide powerful results, (b) analysis of how coaching impacts teacher strategy use and student achievement in other curricular areas (i.e. math or science), (c) additional analysis of how the type of training (presentation of theory, demonstration, practice, feedback with reflection, and in-class coaching) impact teacher strategy use and student learning, and (d) equalization of the time factor in regard to teacher – coach contacts among the coaching conditions.
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and Bacon.


Appendix A: Research Framework
RESEARCH FRAMEWORK

<table>
<thead>
<tr>
<th>Literacy coaches are:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• experts in Literacy Instruction (Reading First Literature)</td>
</tr>
<tr>
<td>• job-embedded Staff Developers (National Staff Development Council)</td>
</tr>
<tr>
<td>Effective literacy coaches:</td>
</tr>
<tr>
<td>• implement 5 types of staff development: presentation of theory, demonstration, practice, feedback with reflection, and in-class coaching (Joyce &amp; Showers, 1980, 1996)</td>
</tr>
</tbody>
</table>

### 3 COACHING CONDITIONS
(In-class Coaching, Consultant Coaching, No Coaching)

<table>
<thead>
<tr>
<th>PRE-TEST</th>
<th>IN-CLASS COACHING (teachers, n=7; students, n=110)</th>
<th>POST-TEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers: (n=20)</td>
<td>• Combination of Staff Development Components: presentation of theory, demonstration, practice, feedback with reflection, in-class coaching</td>
<td>Teachers:</td>
</tr>
<tr>
<td>LoU Interview: Levels of Use: Summarization</td>
<td>• In-class and out-of-class training</td>
<td>Levels of Use:</td>
</tr>
<tr>
<td>Students: (n=330)</td>
<td>• approximately three coach-to-teacher contacts (45 to 90 minutes in length)/per week</td>
<td>Summarization</td>
</tr>
<tr>
<td>Initial 3-Hour Workshop: Summarization (presentation of theory)</td>
<td>CONSULTANT COACHING (teachers, n=7; students, n=110)</td>
<td>Students:</td>
</tr>
<tr>
<td></td>
<td>• Combination of Staff Development Components: presentation of theory, demonstration, and practice</td>
<td>ARC-B (post reading comprehension)</td>
</tr>
<tr>
<td></td>
<td>• Out-of-class training</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• approximately two coach-to-teacher contacts (30 to 45 minutes in length)/week</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NO COACHING (teachers, n=6; students, n=110)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Presentation of theory (initial 3-hour workshop)</td>
<td></td>
</tr>
</tbody>
</table>

| 4. Research-based Strategy: Summarization | Increased Student Achievement |
| 3. Effective Teaching | Increased Student Learning |
| 2. Effective Staff Development | Effective Teaching |
| 1. Sociocultural Theory: ZPD, Scaffolding, & Cognitive Apprenticeships | Effective Staff Development |
Appendix B: Structured Coaching Log
Structured Coaching Log

Code each *coaching event* with (1) a *teacher/coaching condition code*, (2) coaching PD component (A-F), (3) check the coaching condition box, (4) fill in the amount of time, and (5) the research-based instructional strategy focus of the coaching event. Each “consultant” coach – teacher interaction must be between 30 – 45 minutes and each “in-class” coach – teacher interaction must be between 30 – 60 minutes each.

**CODE 1: Teacher**

Complete the chart below to assign each of the third-grade teachers with a code to identify which coaching condition they are placed in during the 8-week coaching cycle.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>(no coaching) = __________________</td>
</tr>
<tr>
<td>#2</td>
<td>(consultant coaching)______________</td>
</tr>
<tr>
<td>#3</td>
<td>(in-class coaching)_______________</td>
</tr>
<tr>
<td>“OT”</td>
<td>“OT”= Other Teachers/Staff/Administrators</td>
</tr>
</tbody>
</table>

**CODE 2: COACHING STAFF DEVELOPMENT COMPONENTS:**

A. **THEORY PRESENTATION/STAFF DEVELOPMENT (no coaching, consultant, in class):** discussions, readings, and lectures where teachers learn the rationale or underlying reasons behind particular teaching strategies or techniques.
   - Staff development In-Service Session (large group), Staff development In-Service (small group), Study Groups/ Professional Inquiry Groups

B. **DEMONSTRATION/MODELING (consultant or in-class):** opportunities for teachers to directly observe the activities taught to students through modeling of lessons or videotaping.
   - Demonstration Lessons, Intra/Inter Classroom-Visitations/Observations, Developing/Providing Curriculum or Instructional Resources, Staff development Session

C. **PRACTICE (consultant or in-class):** opportunities within staff development sessions and within the workplace to practice newly learned skills in front of other teachers or small groups of students.
   - Co-planning, Individual Conference or Informal Professional Dialogue, Small Group Conference (grade-level planning, data discussion, etc…), Lesson Study

D. **FEEDBACK with REFLECTION (consultant or in-class):** assistance and support about teachers’ practice from peers or more knowledgeable others.
   - Videotaping and Analyzing Lessons, Nonjudgmental classroom observation or visitation, Individual Conference or Informal Professional Dialogue (following a nonjudgmental classroom observation or visitation)
E. **IN-CLASS COACHING (in-class ONLY):** collaboration with more knowledgeable others and peers on newly learned activities and strategies taught and practiced in classrooms to solve problems and seek solutions to problems that arise during implementation.

- Lesson Planning, Co-teaching (Side-by-Side Teaching)

F. **OTHER:**

- Your own professional development, Administrative tasks (scheduling, coverage, administrative meetings, record keeping, assessment coordination), Other tasks

**CODE 3: Time:**
Code each coaching event with a corresponding unit of time in 15 minute increments (rounded to the nearest 15 minute interval).

- .25=15 minutes
- .50=30 minutes
- .75=45 minutes
- 1.00=1 hour
- 1.25=1 hour and 15 minutes
- etc…

**Code 4: Strategy Focus of Coaching Event:**
The coaches’ goal is to increase the transfer of research-based instructional strategies to teachers’ classroom practice. Please identify the instructional focus of each coaching event. The focus may vary due to teacher needs and student learning needs. Possible strategies are listed below:

1. summarization
2. other (ie. compare/contrast, reading workshop, academic vocabulary)
Coaching LOG: Week of:_______________  Coach’s Name:_________________

**Monday, Date:_______________**

<table>
<thead>
<tr>
<th>Coaching Experience 1:</th>
<th>Coaching Experience 2:</th>
<th>Coaching Experience 3:</th>
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<td>Teacher Code(s):_______</td>
<td>Teacher Code(s):_______</td>
</tr>
<tr>
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<td>SD Component (A-F):___</td>
<td>SD Component (A-F):___</td>
</tr>
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<td>Theory/SD ☐</td>
<td>Theory/SD ☐</td>
</tr>
<tr>
<td>Consultant ☐</td>
<td>Consultant ☐</td>
<td>Consultant ☐</td>
</tr>
<tr>
<td>In-Class ☐</td>
<td>In-Class ☐</td>
<td>In-Class ☐</td>
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<tr>
<td>Time:_______</td>
<td>Time:_______</td>
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<tr>
<td>Strategy:______________</td>
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<td>Consultant ☐</td>
<td>Consultant ☐</td>
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<tr>
<td>In-Class ☐</td>
<td>In-Class ☐</td>
<td>In-Class ☐</td>
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<tr>
<td>Time:_______</td>
<td>Time:_______</td>
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</tr>
<tr>
<td>Strategy:______________</td>
<td>Strategy:______________</td>
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</table>

**Tuesday, Date:_______________**

<table>
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<tr>
<th>Coaching Experience 1:</th>
<th>Coaching Experience 2:</th>
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Appendix C: Assessment of Reading Comprehension, Form-B (ARC-B)
The Fox and the Cat
Aesop fable retold by Oban

1. A fox and a cat were out walking together when the fox began boasting how clever he was. “I’m prepared for any situation,” said the Fox. “I have a whole bag of tricks to choose from if my enemies try to capture me.”

2. “I’m afraid I’ve only got one trick, but it has always worked for me,” the cat said timidly. The fox looked at the cat and shook his head. “One trick, how dumb is that? I’ve got hundreds of ways of escaping,” said the fox.

3. “I still think it’s better to have one trick that works than waste time trying to choose from a dozen that might,” said the cat softly. “Rubbish!” shouted the fox. “You’re just not as smart as me.”

4. Just then they heard a pack of dogs barking as they were coming towards them. The cat immediately ran up the nearest tree and hid on one of the highest branches. “That’s my trick,” the cat called from high up in the tree. “You had better reach into that bag of tricks of yours and choose one right now or you’re history.”

5. “OK, OK, stay calm,” said the fox to himself. “Should I run and hide behind the nearest hedge, or should I jump down a burrow?” The dogs were getting closer and closer.

6. “Down a burrow, that’s the way to go,” said the fox, and started running around the field looking for a burrow. “No, that one’s too small. I can’t get down far enough. This one’s too big. They could get down too. Maybe that one over there?”

7. Too late. While the fox wasted time, confused by so many choices, the dogs caught him and killed him. The cat looked down sadly and said, “It’s better to have one safe way than a hundred you can’t choose from.”

The End.


(A1)
1. The main idea of paragraph 6 is that
   a. the cat was safe.
   b. the fox was choosing a trick.
   c. the fox was prepared.
   d. the cat was choosing a trick.

(B1)
Use the story map to help you answer the question below

2. Based on section 4, which of the following events belong in box 2?

   The pack of dogs were coming. ➔ 2 ➔ The cat called down to the fox.

   1 2 3

   a. The cat hid high in the trees.
   b. The fox found safety.
   c. The fox scrambled into a burrow.
   d. The cat hid behind a tree.
Narrative Text Structure.CMT4.pre-test
Grade 3: Assessment of Reading Comprehension (ARC-A)

Student I.D. Code: _______

(A2)
3. According to paragraph 1,
   a. the fox had one trick.
   b. the cat had many tricks.
   c. the fox had a whole bag of tricks.
   d. the cat wanted more tricks.

(A4)
4. Based on the information in this story, which of these is MOST LIKELY to happen next?
   a. The cat will climb down from the tree.
   b. The fox will come out of the burrow.
   c. The cat will go in the burrow.
   d. The cat will stay up in the tree.

(B3)
5. From the information in the story, you can tell that the theme of the story is
   a. friends stick by each other.
   b. too many choices can be bad.
   c. foxes are always clever.
   d. more is better.

(A5)
6. In paragraph 5, the word burrow means
   a. a hole in the ground.
   b. a tall tree.
   c. a bush.
   d. a pool of water.

(D2)
7. If the author had added another paragraph to the end of the story it MOST LIKELY would have told
   a. what happened to the fox.
   b. where the dogs were before they got the fox.
   c. what the cat did next.
   d. where the dogs lived.

(D3)
8. In this story, what was the MOST important thing to cat?
   a. He went down in a burrow.
   b. The fox went up a tree.
   c. The fox had a lot of tricks.
   d. He had one trick that worked.

(A2)
9. Which word best describes cat?
   a. smart
   b. silly
   c. stupid
   d. mean

(D1)
10. In paragraph 5, the author probably used the words closer and closer to show
    a. that the dogs were far away.
    b. that the dogs were getting very close.
    c. that the fox had a lot of time.
    d. that it was time for the cat to run.

(B3)
11. Which sentence can best be supported with information in the story?
    a. The cat was very wise.
    b. The fox was very clever.
    c. The fox and cat were both safe.
    d. The fox was friendly.

GO ON ➔
12. Which question does section 4 answer?
   a. How did the cat help save the fox?
   b. How did the fox outsmart the dogs?
   c. How did the fox save himself?
   d. How did the cat save himself?

13. Paragraph 7 contains
   a. a conclusion.
   b. a definition.
   c. a comparison.
   d. a conversation.

14. What is the main problem of the story?
   a. The fox was full of himself.
   b. The cat needed a friend.
   c. The cat was shy.
   d. The fox was very smart.
(A3)
15. Using information from the story, briefly summarize the main events in the story.

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B2)
16. Using information from the story, explain how the fox and the cat are similar or different.

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Appendix D: Assessment for Reading Comprehension, Form-B (ARC-B)
The Fox and the Goat
Aesop fable retold by Oban

1. One hot sunny day, a thirsty fox was looking down into a deep well and fell in. "I wanted some water but not this much," said the fox to himself, as he splashed around in the water.

2. "Now, how am I going to get out of here?" he said, looking up at the top of the well. Just then a thirsty goat came to the well. He looked down and was surprised to see the fox in the water.

3. "What are you doing down there?" asked the goat.
"I came down to get some of this wonderful cool water," said the fox, pretending everything was alright.
"Come on down and try some. It's the best water you'll ever taste," he shouted up at the goat, "and there isn't any more water for miles."

4. "I'm thirsty, and that water does look so good," thought the goat. "OK. Look out! I'm coming down!" the goat shouted to the fox as he jumped down into the well.

5. Just as the goat started drinking, the fox said, "There's one small problem. The top of the well is so high it's going to be hard getting out of here. But don't worry. I have a plan."
"If," he said to the goat, "you put your front feet on the wall of the well, I'll run up your back and jump up to the top. Once I'm out I'll help you to get out too."

6. The goat did as he was told. The fox leapt onto his back, jumped up on to his horns, and then scrambled up out of the well.
"That was a really good plan," said the fox. "See you later," he said, looking down at the goat.

7. "But, what about me?" cried the goat from the bottom of the well. "If you had any brains you would never have gone down there until you had worked out how to get out," said the fox. "Have you ever heard the expression, look before you leap?" laughed the fox as he ran away.

The End.

Retrieved from:

(A1)
1. The main idea of section 1 is that
a. the fox was talking to himself.
b. the fox fell into a well.
c. the fox was all alone.
d. the fox enjoyed swimming.

(B1)
Use the story map to help you answer the question below

2. Based on section 6, which of the following events belong in box 2?

- The fox jumped on the goat’s back.
- The fox looked down at the goat in the well.

a. The goat fell into the well.
b. The fox was thirsty.
c. The fox scrambled out of the well.
d. The fox fell into the well.
3. According to paragraph 4, the goat jumped into the well,
   a. because fox was scared.
   b. because he enjoyed swimming.
   c. because he wanted to help fox.
   d. because he was thirsty.

4. Based on the information in this story, which of these is **MOST LIKELY** to happen next?
   a. The fox will run to get goat help.
   b. The goat will plan on how to get out.
   c. The fox will look for a new well.
   d. The goat will take a nap.

5. From the information in the story, you can tell that the theme of the story is
   a. trust your friends.
   b. think before you act.
   c. always carry water.
   d. don’t talk to strangers.

6. In section 7, the word **leap** means
   a. run.
   b. look.
   c. jump.
   d. sit.

7. If the author had added another paragraph to the end of the story it **MOST LIKELY** would have told
   a. what happened to the goat.
   b. what the fox ate for dinner.
   c. what the fox did the next day.
   d. how the fox and the goat met.

8. In this story, what was the **MOST** important thing to the fox?
   a. He got out of the well.
   b. The goat got out of the well.
   c. The goat drank some water.
   d. The goat kept him company.

9. Which word best describes the fox?
   a. smart
   b. shy
   c. stupid
   d. kind

10. In section 3, the author probably used the word **wonderful** to describe the water, because the fox
    a. wanted to keep the water to himself.
    b. wanted to show the goat the water was tasty.
    c. wanted to show the goat the water was bad.
    d. he liked to swim.

11. Which sentence can best be supported with information in the story?
    a. The fox always looked out for others.
    b. The goat did not think before he acted.
    c. The fox and goat were good friends.
    d. The goat got out of the well quickly.
12. Which question does section 6 answer?
   a. How did the goat get out of the well?
   b. How did the fox fall into the well?
   c. How did the fox get out of the well?
   d. How did the goat fall into the well?

13. Section 3 contains
   e. a question and answer.
   f. a definition.
   g. a comparison.
   h. a cause and effect.

14. The main problem of this story was that
   a. the fox was lonely.
   b. the goat needed a friend.
   c. the fox fell into a well.
   d. the goat was thirsty.
15. Using information from the story, briefly summarize the main events in the story.

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16. Using information from the story, explain how the fox and the goat are similar or different.

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Appendix E: Cognitive Apprenticeship Phases
**Cognitive Apprenticeship Phases** (LeGrand Brandt, Farmer, & Buckmaster, 1993)

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<th>Phase</th>
<th>Role of expert model</th>
<th>Role of learner</th>
<th>Key concepts</th>
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<td>1. Modeling</td>
<td>Model real-life activity that learner wants to perform; model states aloud essence of the activity</td>
<td>Observe performance of total activity; develop a mental model of what the real thing looks like</td>
<td>Articulation, domain-specific heristics, metacognition</td>
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<td>2. Approximating</td>
<td>Provide coaching to the learner; provide support when needed</td>
<td>Approximate doing the real thing and articulate its essence; reflect on the model’s performance; use self-monitoring and self-correction</td>
<td>Scaffolding, coaching</td>
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<tr>
<td>3. Fading</td>
<td>Decrease coaching and scaffolding</td>
<td>Continue to approximate; operate in increasingly complex situations; work individually or within a group</td>
<td>Fading, cooperative learning</td>
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<tr>
<td>4. Self-directed learning</td>
<td>Provide assistance only when needed</td>
<td>Practice doing the real thing alone within the acceptable limits of the domain</td>
<td>Self-directed learning</td>
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<tr>
<td>5. Generalizing</td>
<td>Discuss the generalizability of what has been learned</td>
<td>Discuss the generalizability of what has been learned</td>
<td>Generalizability</td>
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Appendix F: Six Cognitive Apprenticeship Teaching Methods
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<th>Teaching method</th>
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<td>Modeling</td>
<td>The expert carries out a task so that the learner can observe and build a conceptual model of the processes that are required to accomplish the task. This often involves the externalization, or metacognition (verbalization of thought processes), of how the expert makes use of conceptual or procedural knowledge.</td>
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<tr>
<td>Coaching</td>
<td>The expert observes the learner as they carry out a task. They provide hints, scaffolding, feedback, modeling, reminders, and new tasks aimed at bringing their performance closer to expert performance. This process directs the learner’s attention to previously unnoticed aspects of the task. Highly interactive and situated feedback is provided as the learner attempts the task.</td>
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<td>Scaffolding</td>
<td>The expert provides supports to help the learner carry out the task. This may include suggestions or cues to help the learner accomplish a part of the task that is not yet mastered. This involves a cooperative problem-solving effort between the learner and the expert where the learner takes on as much responsibility for the task as possible. Fading consist of the gradual removal of supports until the learner is independent.</td>
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<td>Articulation</td>
<td>The learner articulates, or verbally expresses their knowledge, reasoning, or problem-solving processes in a domain.</td>
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<td>Reflection</td>
<td>The learner compares their own processes with those of an expert.</td>
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Situations are replayed to allow a comparison of both expert and novice performances. This may involve audio or video recording of the performance.

**Exploration**

The learner is pushed into a mode of problem-solving on their own. This teaching method is a natural culmination of the fading process. This involves the learner and expert setting goals for the learner to investigate on his own.
Appendix G: National Staff Development Council Standards (2001)
National Staff Development Council Standards (2001)

Context standards:

1. Adults should be organized into learning communities whose goals are aligned with those of the school and district (learning communities).
2. Schools require skillful school and district leaders who guide continuous instructional improvement. (leadership)
3. Resources are required to support adult learning and collaboration (resources).

Process standards:

4. Disaggregated student data are to be used to determine adult learning priorities, monitor progress, and help sustain continuous improvement (data-driven).
5. Multiple sources of information guide student improvement initiatives and to demonstrate its impact. (evaluation)
6. Educators are prepared to apply research to decision making (research-based)
7. Learning strategies are used appropriate to the intended goal (design)
8. Knowledge is applied about human learning and change (learning)
9. Educators are provided with the knowledge and skills to collaborate (collaboration).

Content standards:

10. Prepare educators to understand and appreciate all students, create safe, orderly and supportive learning environments, and hold high expectations for their academic achievement. (equity)
11. Deepen educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards and
prepare them to use various types of classroom assessments appropriately (quality teaching)

12. Provide educators with knowledge and skills to involve families and other stakeholders appropriately (family involvement).
Appendix H: Levels of Use of the Innovation
Levels of Use of the Innovation (Hall, Dirksen & George, 2006, p 5)

<table>
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<tr>
<th>LoU Level</th>
<th>Description</th>
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<tr>
<td>0: Nonuse</td>
<td>State in which the user has little or no knowledge of the innovation, has no involvement with the innovation, and is doing nothing toward becoming involved.</td>
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<tr>
<td>I: Orientation</td>
<td>State in which the user has acquired or is acquiring information about the innovation and/or has explored or is exploring its value orientation and its demands on the user and the user system.</td>
</tr>
<tr>
<td>II: Preparation</td>
<td>State in which the user is preparing for first use of the innovation.</td>
</tr>
<tr>
<td>III: Mechanical Use</td>
<td>State in which the user focuses most effort on the short-term, day-to-day use of the innovation with little time for reflection. Changes in use are made more to meet the user needs than client needs. The user is primarily engaged in a stepwise attempt to master the tasks required to use the innovation, often resulting in disjointed and superficial use.</td>
</tr>
<tr>
<td>IVA: Routine</td>
<td>Use of the innovation is stabilized. Few if any changes are being made in ongoing use. Little preparation or thought is being given to improving innovation use or its consequences.</td>
</tr>
<tr>
<td>IVB: Refinement</td>
<td>State in which the user varies the use of the innovation to increase the impact on clients within immediate sphere of influence. Variations are based on knowledge of both short and long-term consequences for the clients.</td>
</tr>
<tr>
<td>V: Integration</td>
<td>State in which the user is combining own efforts to sue the</td>
</tr>
</tbody>
</table>
innovation with the related activities of colleagues to achieve a collective effect on clients within their common sphere of influence.

VI: Renewal

State in which the user reevaluates the quality of use of the innovation, seeks major modifications or alternatives to the present innovation to achieve increased impact on clients, examines new developments in the field, and explores new goals for self and the system.
Appendix I: Effect Sizes for Instructional Strategies that Affect Student Achievement
Effect Sizes for Instructional Strategies that Affect Student Achievement

(Marzano, Pickering & Pollock, 2001)

<table>
<thead>
<tr>
<th>Category of Instructional Strategy</th>
<th>Average Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying similarities and differences</td>
<td>1.61</td>
</tr>
<tr>
<td>Summarization and note taking</td>
<td>1.00</td>
</tr>
<tr>
<td>Reinforcing effort and providing recognition</td>
<td>0.80</td>
</tr>
<tr>
<td>Homework and practice</td>
<td>0.77</td>
</tr>
<tr>
<td>Nonlinguistic representations</td>
<td>0.75</td>
</tr>
<tr>
<td>Cooperative learning</td>
<td>0.73</td>
</tr>
<tr>
<td>Setting objectives and providing feedback</td>
<td>0.61</td>
</tr>
<tr>
<td>Generating and testing hypotheses</td>
<td>0.61</td>
</tr>
<tr>
<td>Questions, cues, and advance organizers</td>
<td>0.59</td>
</tr>
</tbody>
</table>
Appendix J: Training Outline for Coaches
Outline of Staff Development Training Provided to Coaches

September:
I. Introduction, Background and Rationale for the study: Part I (3 hours)
   a. What is a Coach?
   b. Needs Assessment
   c. Summary of Staff Development Transfer of Training Research
   d. 10 Roles of the Coach
II. Introduction, Background and Rational for the study: Part II (3 hours)
   a. Overview of my Research Design
   b. Distinctions between Treatment Conditions (Joyce and Showers; 5 Components of Staff Development, models, discussions, etc…)
   c. Directions and Purpose of the Coaching Logs
   d. Review of Assessment of Reading Comprehension and Degrees of Reading Power Assessment, Data Collection, and Obtaining Consent Procedures
III. The Data Team Process (Supplemental Training)
   a. Training to support the scoring of the open-ended response questions similar on the Assessment of Reading Comprehension; this was a full-day training session designed to support the collaborative analysis and calibration of student work.
IV. What is a Coach (3 hours)
   a. Professional Book Study of Essential Literacy Coaching Documents (Reading First Guide, NSDC Resources, etc…)
   b. Coaching Cycles (The Gradual Release of Responsibility and Coaching Strategies to Scaffold Adult Learning)
V. Working with Teachers (3 hours)
   a. Finding an Instructional Focus Point
   b. Instructional Dialogue
   c. Time Management
   d. Goal Setting and Action Planning

October:
I. Presentation of Theory: Summarization (Supplemental Training)
   a. This 3-hour workshop on the strategy of summarization was attended by all third-grade teachers and coaches; this workshop served as the commencement of the coaching treatment.
II. Q & A/Check-In (Two, 1-hour sessions to answer questions and monitor the treatment)

November:
I. Q & A/Check-In (Two, 1-hour sessions to answer questions and monitor the treatment)

December:
I. Final Data Collection Procedures
II. Final Debriefings (coaches and teachers)
Appendix K: Coaching Treatment
COACHING TREATMENT:

**Teacher #1 (no coaching):** try not to have any additional interactions with this one teacher during the course of this 8-week coaching cycle; obviously, this person will be included in whole-school initiatives and you may have these interactions with this teacher.

For the additional 2 teachers (**Teacher #2, consultant coaching & Teacher #3, in-class coaching**), try to follow the following guidelines as closely as possible.

In addition to your “other work”, (based on school/teacher goals) you will be working on increasing teachers’ use of the strategy of summarization.

Summarization: remember to use the resources provided during the initial workshop on summarization. They are located in the folders that were distributed during the teachers training on October 16 2007; your role is to help teachers transfer “use/implemention” of this strategy into the classroom. You also will be given the Marzano resource book.

<table>
<thead>
<tr>
<th>CONSULTANT COACHING</th>
<th>IN-CLASS COACHING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2-3 consultant coaching interactions per 6-day rotation (A-F days; 30 minutes – 60 minutes)</strong></td>
<td><strong>3-4+ in-class coaching interactions per 6-day rotation (A-F days, 30 minutes – 90 minutes)</strong></td>
</tr>
<tr>
<td>- 2 must be on summarization</td>
<td>- 3 must be on summarization</td>
</tr>
<tr>
<td><strong>Consultant Coaching Examples on Summarization</strong></td>
<td><strong>In-Class Coaching Examples on Summarization</strong></td>
</tr>
<tr>
<td>- small group follow-up on the 1 hour training (outside the classroom) during a grade-level meeting</td>
<td>- ALL of the examples on the LEFT PLUS:</td>
</tr>
<tr>
<td>- demonstration (outside the classroom) of one of the summarization strategies provided in the resource packet</td>
<td>- in-class obs. w/ feedback (teacher either observes you, or you her/him) while conducting a summarization strategy</td>
</tr>
<tr>
<td>- set up a inter-classroom observation where the consultant coaching teacher observes either you OR the in-class coaching teacher using a summarization strategy in a classroom</td>
<td>- post-conference on the lesson</td>
</tr>
<tr>
<td>- provide a model lesson of how to use a summarization strategy with a text they are currently using in the classroom</td>
<td>- co-planning for your co-taught class</td>
</tr>
<tr>
<td>- lesson study: plan ways to incorporate summarization strategies in the classroom</td>
<td>- co-teaching using summarization strategies</td>
</tr>
<tr>
<td>- individual/small group conference to discuss how the teacher is doing with using summarization in the classroom; have them reflect, ask how you can help...</td>
<td></td>
</tr>
</tbody>
</table>
Appendix L: *Levels of Use* of the Innovation with Decision Points
**Levels of Use of the Innovation with Decision Points** (Hall, Dirksen, George, 2006, p.7)

<table>
<thead>
<tr>
<th>Levels and Decision Points</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LoU 0 Nonuse</strong></td>
<td>State in which the user has little or no knowledge of the innovation, has no involvement with the innovation, and is doing nothing toward becoming involved.</td>
</tr>
<tr>
<td><strong>Decision Point A</strong></td>
<td>Takes action to learn more detailed information about the innovation.</td>
</tr>
<tr>
<td><strong>LoU I Orientation</strong></td>
<td>State in which the user has acquired or is acquiring information about the innovation and/or has explored or is exploring its value orientation and its demands upon the user and the user system.</td>
</tr>
<tr>
<td><strong>Decision Point B</strong></td>
<td>Makes a decision to use the innovation by establishing a time to begin.</td>
</tr>
<tr>
<td><strong>LoU II Preparation</strong></td>
<td>State in which the user is preparing for first use of the innovation.</td>
</tr>
<tr>
<td><strong>Decision Point C</strong></td>
<td>Makes user-oriented changes.</td>
</tr>
<tr>
<td><strong>LoU III Mechanical Use</strong></td>
<td>State in which the user focuses most effort on the short-term, day-to-day use of the innovation with little time for reflection. Changes in use are made more to meet user need than client needs. The user is primarily engaged in a stepwise attempt to master the tasks required to use the innovation, often resulting in disjointed and superficial use.</td>
</tr>
<tr>
<td><strong>Decision Point D-1</strong></td>
<td>Establishes a routine pattern of use.</td>
</tr>
<tr>
<td>Phase Description</td>
<td>Details</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------</td>
</tr>
<tr>
<td>LoU IVA Routine</td>
<td>Use of the innovation is stabilized. Few if any changes are being made in ongoing use. Little preparation or thought is being given to improving innovation use or its consequences.</td>
</tr>
<tr>
<td>Decision Point D-2</td>
<td>Changes in use of the innovation in order to increase client outcomes, based on formal or informal evaluation.</td>
</tr>
<tr>
<td>LoU IVB Refinement</td>
<td>State in which the user varies the use of the innovation to increase the impact on clients within immediate spheres of influence. Variations are based on knowledge of both short- and long-term consequences.</td>
</tr>
<tr>
<td>Decision Point E</td>
<td>Initiates changes in use of the innovation for the benefit of clients, based on input from and in coordination with colleagues.</td>
</tr>
<tr>
<td>LoU V Integration</td>
<td>State in which the user is combining own efforts to use the innovation with the related activities of colleagues to achieve a collective effort on clients within their common sphere of influence.</td>
</tr>
<tr>
<td>Decision Point F</td>
<td>Begins exploring alternatives or major modifications to the innovation presently in use.</td>
</tr>
<tr>
<td>LoU VI Renewal</td>
<td>State in which the user reevaluates the quality of use of the innovation, seeks major modifications or alternatives to present innovation to achieve increased impact on clients, examines new developments in the field, and explores new goals for self and the system.</td>
</tr>
</tbody>
</table>
Appendix M: *Levels of Use* Structured Interview Protocol Branching Chart
Levels of Use Structured Interview Protocol Branching Chart (SEDL, 2006)

Are you using the innovation?
- No: LoU 0, I, II
- Yes: LoU III, IVA, IVB, V, VI

Have you decided to use it and set a date to begin use?
- No: LoU 0, I
- Yes: LoU II

User-oriented:
- LoU III

Nothing unusual:
- LoU IV A

What kinds of changes are you making in your use of the innovation?
- Impact-oriented: LoU IVB, V, VI

Are you currently looking for information about the innovation?
- No: LoU 0
- Yes: LoU I

Are you planning to modify /replace the innovation?
- No: LoU IVB, VI
- Yes: LoU V, VI

Are you coordinating use of the innovation with users, including another not in your original group?
- No: LoU IVB, VI
- Yes: LoU V, VI

No: LoU V

Yes: LoU V
Appendix N: Parent, Teacher and Coach Consent Forms
WESTERN CONNECTICUT STATE UNIVERSITY

Student Consent Form to Participate in a Research Study

Dear Parent or Guardian,

I am currently enrolled in the doctoral program for Instructional Leadership at Western Connecticut State University. This program requires that I design and implement a dissertation research study. This study will occur over the course of a 8-week period during the fall of 2007.

The purpose of this study is to compare three different literacy coaching programs (in-class coaching, consultant coaching, and no coaching) and their connection to teachers’ use of an instructional strategy and students’ reading achievement. A growing body of research describes a wide range of roles and responsibilities that literacy coaches perform. However, there is limited research on the impact coaches may have on teachers’ strategy use in the classroom or student learning. More research is needed to explore these issues.

Form A (pre-test) and Form B (post-test) of the Assessment of Reading Comprehension (ARC) will be administered to your child to measure his/her reading achievement growth during the 10-week study. The ARC is modeled after the Connecticut Mastery Test (CMT4) and will assess your child’s reading comprehension based on his/her responses to 17 questions following the reading of a folktale. At the start of the study, your child will also be administered the Degrees of Reading Power (DRP). These assessments will provide valuable information about your child’s reading comprehension. Results will be made available to your child’s classroom teacher but will not be reported to the district or impact your child’s reading grade. Student names will be coded and remain confidential throughout the study.

This research study has been reviewed and approved by Western Connecticut State University’s Institutional Review Board. It is hoped that the results of this study will help teachers, school administrators, and educational policy makers understand how different literacy coaching programs affect teachers’ use of research-based reading strategies and how they impact students’ reading achievement.

Participation in this study is completely voluntary. You are free to withdraw your child from the study at any time. All information is completely confidential.

If you have any questions, please contact me via email at jen.mitchell@brookfield.k12.ct.us or phone at (203) 775-7619.

If you agree to have your child participate in this study, please sign the attached statement and return it to your child’s classroom teacher no later than October 3, 2007.

Sincerely,
Jennifer Mitchell

I, ________________________, the parent/legal guardian of the student minor (printed name of parent or guardian) below, acknowledge that the researcher has explained to me the purpose this research study, identified any risks involved, and offered to answer any questions I may have about the nature of my child’s participation. I voluntarily consent to my child’s participation. I understand all information gathered during this project will be completely confidential.

Student/Minors’s Name: ________________________________________________
Signature of Parent or Guardian: ________________________________________
Dear Teacher,

I am currently enrolled in the doctoral program for Instructional Leadership at Western Connecticut State University. This program requires that I design and implement a dissertation research study. This study will occur over the course of a 10-week period during the fall of 2007.

The purpose of this study is to compare three different literacy coaching programs (in-class coaching, consultant coaching, and no coaching) and their connection to teachers’ implementation of an instructional strategy and student reading achievement. A growing body of research describes a wide range of roles and responsibilities that coaches perform. However, there is limited research on impact coaches may have on strategy implementation in the classroom or student learning. More research is needed to explore these issues.

At the beginning of the study, structured interviews (Levels of Use; LoU) will be conducted to determine each teacher’s level of use of a research-based strategy. Interviews should take less than 30 minutes and will be conducted at your convenience before, during, or after school. Students will be administered reading comprehension assessments to determine reading achievement levels at the start of the study. You and your students will be randomly assigned to 1 of the 3 coaching conditions (in-class coaching, consultant coaching, and no coaching). Individuals assigned to all three coaching conditions will attend an initial 3-hour in-service workshop on a research-based strategy. This training will be conducted by the researcher. The literacy coach within your building will provide additional staff development opportunities for the in-class coaching and consultant coaching conditions. The consultant coaching condition will receive (a) instructional demonstrations and (b) opportunities to practice new strategies outside of the classroom. The in-class coaching program will receive all consultant coaching activities plus (a) participate in non-evaluative, reflective conversations to provide feedback after practicing the strategy in the classroom, (b) co-plan, and (c) co-teach.

After the 10-week study, the LoU structured interview will be re-administered at your convenience and students will be administered a post reading comprehension assessment.

This research study has been reviewed and approved by Western Connecticut State University’s Institutional Review Board. It is hoped that the results of this study will help teachers, school administrators, and educational policy makers understand how different literacy coaching programs affect teachers’ use of research-based reading strategies. In addition, this study will provide insight on whether or not student reading achievement is impacted by a type of coaching program.

Participation in this study is completely voluntary. Confidentiality is guaranteed; interviews and assessments will be coded to be sure that all data are held in the strictest confidence. You are free to withdraw from the study at any time. If you have any questions, please contact me via email at jen.mitchell@att.net, or by phone at (203) 775-5517.

If you agree to participate in this research study, please sign this form and return it to your principal’s secretary.

Sincerely,
Jennifer Mitchell

Participant Signature __________________________ Date:___________________
Dear Literacy Coach,

I am currently enrolled in the doctoral program for Instructional Leadership at Western Connecticut State University. This program requires that I design and implement a dissertation research study. This study will occur over the course of a 10-week period during the fall of 2007.

The purpose of this study is to compare three different literacy coaching programs (in-class coaching, consultant coaching, and no coaching) and their connection to teachers’ implementation of an instructional strategy and student reading achievement. A growing body of research describes a wide range of roles and responsibilities that literacy coaches perform. However, there is limited research on the impact literacy coaches may have on strategy implementation in the classroom or student learning. More research is needed to explore these issues.

Teachers and their students will be randomly assigned to 1 of the 3 coaching conditions (in-class coaching, consultant coaching, and no coaching). Individuals assigned to all three coaching conditions will attend an initial 3-hour in-service workshop on a research-based strategy. This training will be conducted by the researcher. You will provide additional staff development opportunities for the in-class coaching and consultant coaching conditions. The consultant coaching condition will receive (a) instructional demonstrations and (b) opportunities to practice new strategies outside of the classroom. The in-class coaching program will receive all consultant coaching activities plus (a) participate in non-evaluative, reflective conversations to provide feedback after practicing the strategy in the classroom, (b) co-plan, and (c) co-teach.

Student reading achievement will be assessed before and after the coaching treatments are implemented. Teachers will be administered a structured interview (Levels of Use; LoU) to determine implementation levels of a research-based strategy before and after the 10-week study. Interviews should take less than 30 minutes and will be conducted at teacher’s convenience (before, during, or after school). Literacy coaches will attend staff development to explain all staff development components and coaching strategies employed during each of the coaching conditions. You will work with a teacher who has been assigned to each of the coaching conditions and log the type of staff development and coaching strategies you utilize with each teacher.

This research study has been reviewed and approved by Western Connecticut State University’s Institutional Review Board. It is hoped that the results of this study will help teachers, school administrators, and educational policy makers understand how different literacy coaching programs affect teachers’ use of research-based reading strategies and provide insight on whether or not student reading achievement is impacted by a type of coaching program.

Participation in this study is completely voluntary. Confidentiality is guaranteed; interviews and assessments will be coded to be sure that all data are held in the strictest confidence. You are free to withdraw from the study at any time. If you have any questions, please contact me via email at jen.mitchell@att.net or phone at (203) 775-7619.

If you agree to participate in this research study, please sign this form and return it to your principal’s secretary.

Sincerely,

Jennifer Mitchell
Participant Signature ___________________________ Date: __________________
Appendix O: Teacher Post-Research Debriefing
Teacher Post-Research Debriefing

Teacher Name:

School:

Research Code: ____ (do not complete)

Please respond briefly to the following questions:

1. How do you feel your contact with the coach facilitated your growth in regard to your use summarization as an instructional strategy?

2. How do you feel your contact with the coach helped your students increase their reading comprehension skills?

3. Discuss any overall reflection from your work with the literacy coach
Appendix P: Coach Post-Research Debriefing
Coach Post-Research Debriefing

Please respond briefly to the following questions:

1. What were your overall, general feelings about this research study?

2. How do you feel the two coaching conditions affected teacher learning through different combinations of staff development (number of coach-teacher contacts and/or the type of staff development (presentation of theory, demonstration, practice, feedback w/ reflection, and in-class coaching))?
   - Consultant coaching condition:
   - In-class coaching condition:

3. How do you feel the two coaching conditions affected students’ reading comprehension?
   - Consultant coaching condition
   - In-class coaching condition

4. What were some obstacles you encountered in each treatment condition?
   - Consultant coaching condition:
   - In-class coaching condition:

5. What suggestions do you have for future research that investigates the impact of coaching on teacher strategy use and/or student reading achievement?
Appendix Q: Results from Post-research Debriefings
Results from Post-research Debriefings

Teachers’ feelings about literacy coaching and teacher strategy use. Overall, the seven teachers placed in the in-class coaching condition recounted positive experiences that facilitated the implementation of summarization in their classrooms. In general, teachers stated that they gained a better understanding about how to teach students the difference between a retell and a summary. Five teachers stated that they felt more confident in their ability to teach this strategy to students. Two teachers noted that they felt more effective in their instruction of this strategy, and 5 of the 7 teachers indicated they wanted to continue with another coaching cycle. All teachers mentioned that the collaborative experience had helped them to reflect on their own teaching and said that they enjoyed the camaraderie and/or support of the literacy coach.

The seven teachers placed in the consultant coaching condition felt the demonstration lessons and the planning conferences were very helpful; however, almost half (3 of 7) of the teachers stated it was difficult to apply the strategies with their own students because the lesson planning felt slightly disconnected from actual classroom experiences. All teachers in this condition indicated that they had gained some meaningful strategies for teaching summarization to their students and felt better prepared use this strategy in the classroom. However, they noted some roadblocks that may have hindered their growth. For example, one teacher stated that summarization felt like just one more concept that she had to “fit in” during her instructional time, and four teachers indicated that some of the materials that the coaches shared did not meet the needs of their students. All seven teachers indicated that finding time to meet with the coach became very difficult as the coaching cycle progressed. Two of the teachers noted that it took away from planning-time, one teacher felt that she
needed more time with the coach, and about half of the group (three teachers) felt that contact with the coach was inconsistent.

*Teachers’ feelings about literacy coaching and student reading comprehension.*

During the debriefing, all seven teachers in the in-class coaching condition indicated that they saw an increase in their students’ ability to effectively summarize and comprehend the main ideas of a story. Every teacher felt that by applying summarization strategies, students now were able to differentiate between unimportant and important details and/or distinguish between a retell and a summary. Almost all of the teachers (6 of 7) stated that the coach-teacher collaboration had a significant positive impact on their ability to meet the learning needs of their students. Four teachers noted that summarization was an important cognitive process that helped students better understand and/or make meaning from the text. Another teacher stated that she now believed summarization was the foundation for all comprehension. Three of the teachers stated that although they were going to need to continue with instruction on summarization, they clearly saw their students move from guided practice to independent practice in regard to strategy use during reading.

Interestingly, even though the results of the study did not support this perception, teachers in the consultant coaching condition also felt their students grew in their ability to summarize and comprehend text. In fact, all seven teachers indicated that they saw significant growth in their students’ learning over the 8-week coaching cycle, although many stated that they would need to continue with this work throughout the year. Five of the teachers indicated that the planning and/or conferencing with the coach had a direct impact on student learning. Only one teacher indicated that the contacts with the coach took away
valuable instructional time from her students. This teacher indicated that she did not think coaching had a positive impact on her students’ comprehension.

*Literacy coach conclusions on coaching and teacher strategy use and student reading comprehension.* During the final meeting with the coaches, the researcher asked coaches to describe how they thought the coach-to-teacher contacts impacted the teachers’ implementation of summarization in the classroom and how these contacts affected student reading comprehension. In general, coaches felt they were able to provide more consistent support to teachers in the in-class coaching condition than in the consultant coaching condition. As a result, although they expected teachers in both groups to demonstrate growth in regard to strategy use, they expected more growth from teachers in the in-class coaching condition. However, because there was an emphasis on summarization in both coaching conditions, the coaches had expected students in both coaching groups (in-class and consultant) to demonstrate more growth in reading comprehension than students placed in the no coaching group.

The coaches provided several additional insights during the research debriefing. All of the coaches thought that it had been difficult to meet with teachers placed in the consultant condition for a variety of reasons. These included: (a) limited substitute coverage to release teachers, (b) teachers who were unwilling to give up contractual prep time, and (c) difficulty establishing and maintaining consistent meeting times. This feedback was supported by analysis of the coaching logs, which indicated that the actual number of coach-to-teacher contacts for the consultant condition fell below the expected range. Even though scheduling appeared to be an issue, four of the coaches indicated that their work with teachers in the consultant condition was actually easier. These coaches indicated that they were able to take
the ideas and strategies from their work with the in-class coaching teacher and adapt these to their work with the consultant coaching teacher. Three coaches scripted lessons conducted within the in-class coaching classes and shared these lesson plans with teachers in the consultant coaching group as a way to provide support for these teachers.