PEER COACHING:
A COLLEGIAL SUPPORT
FOR BRIDGING THE RESEARCH TO PRACTICE GAP

A Dissertation
presented to
the Faculty of the Graduate School
University of Missouri-Columbia

In Partial Fulfillment
Of the Requirements for the Degree
Doctor of Philosophy
May 2007

by
NANCI W. JOHNSON

Dr. Timothy J. Lewis, Dissertation Supervisor

The undersigned, appointed by the Dean of the Graduate School, have examined the dissertation entitled

PEER COACHING:
A COLLEGIAL SUPPORT
FOR BRIDGING THE RESEARCH TO PRACTICE GAP

Presented by Nanci W. Johnson

A candidate for the degree of Doctor of Philosophy

And hereby certify that in their opinion it is worthy of acceptance.

_____
Professor Timothy J. Lewis

_____
Professor Michael Pullis

_____
Professor Janine Stichter

_____
Professor Melissa Stormont

_____
Professor James Laffey

DEDICATION

This dissertation is dedicated to my husband Randy for his friendship, love, and confidence in me. This dissertation is also dedicated to my children Michelle and Greg, my gang of “girlfriends” including Becky, Connie, Erin, Julie, Kelley, Linda, and Mary as well as my three older and wiser sisters Jan, Lynn and Chris who collectively gave me the courage and strength to finish the marathon.

ACKNOWLEDGEMENTS

From my earliest memory my parents would remind my sisters and I that we had a responsibility to give of our time, talent and treasure to make the world, or at least our small corner of the world a better place. I would like to thank and acknowledge all whom have given of their time, talent and treasure to support my program of study. First, I am indebted to my advisor, mentor, positive nudge and friend, Dr. Tim Lewis. Throughout my course of study he challenged me to be a critical thinker, a precise writer and meticulous researcher.I have been incredibly fortunate to get to work and learn from him. I would also like to express my gratitude to my committee members Dr. Mike Pullis, Dr. Melissa Stormont, Dr. Janine Stichter, and Dr. James Laffey for sharing their expertise, knowledge and support.

I am forever indebted to my husband Randy for being my roots and my wings. He has given unending time so that I could continue to pursue higher education, as well as unending patience as I said, “just one more time” to a higher degree. He picked up the slack with home and family, listened to my passionate rants about education, and provided his patience and good humor throughout the many years of study. My children, Michelle and Greg are the treasures in my life. They have been part of the team that made it possible for me to pursue this degree, predicting that I would one day earn a doctorate well before I began the program. I can’t thank them enough for tolerating a mom who was frequently reading, writing, and otherwise unavailable.

Finally, I wish to acknowledge my mom and dad Nancy and James Weaver who have kindled the passion for the pursuit of knowledge since my earliest memories.

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

Table Page

LIST OF FIGURES

Figure Page

PEER COACHING:
A COLLEGIAL SUPPORT FOR BRIDGING THE RESEARCH TO PRACTICE GAP

Nanci W. Johnson

Dr. Timothy J. Lewis, Dissertation Supervisor

ABSTRACT

The purposes of this study were to 1) determine if teacher knowledge of the instructional components of opportunity to respond (OTR) including academic prompting, wait time and positive feedback increase as a result of a reciprocal peer coaching (PC) intervention, 2) observe whether teacher delivery of the OTR components increase as a result of the PC intervention, 3) observe whether a change in teacher delivery of OTR components results in a change in at-risk student performance during academic instruction, and 4) examine teacher perceptions of PC as a beneficial process for improving their knowledge and use of effective practices. As the prior work on the efficacy of PC has been largely descriptive and non-experimental nature, a central purpose of this study was to examine the impact of the PC intervention on teacher instructional practice and at-risk student academic and social behavioral outcomes through a single-subject study that employed multiple measures. The study was conducted in a mid-western school district, in three elementary classrooms, across four months. Findings indicated teachers were able to implement with fidelity a proscribed form of reciprocal peer coaching, and they perceived the process as beneficial for improving their knowledge and delivery of OTR components. However, there were not

clear and strong functional relationships between the intervention and changes in teacher and student behavior. These results call into question the promotion of peer coaching for improving teacher knowledge and delivery of research based instructional practices.

CHAPTER I

INTRODUCTION AND REVIEW OF LITERATURE

Statement of the Problem

In recent years the field of special education in general, and the field of emotional or behavioral disorders (E/BD) in particular, has been embroiled in a debate regarding where instruction should take place (Kauffman & Hallahan, 1997; Landrum & Tankersley, 1999). But many contend that the arguments regarding where the instruction of special needs students' takes place convolutes the real issue: "Are teachers prepared for teaching students with E/BD?" (Landrum & Tankersley, 1999, p. 322).

Students with E/BD present by far and away one of the greatest challenges confronting our educational system (Landrum & Tankersley, 1999). Academic underachievement, one of the key conditions of E/BD according to the federal definition, is described as "an inability to learn that cannot be explained by intellectual, sensory or health factors" (U.S. Department of Education, 1998, p. II-46). Unfortunately, although academic underachievement is one of the key conditions of E/BD, much of the past emphasis within the research, as well as practice, has been primarily on controlling behaviors rather than on improving academic achievement (Knitzer, Steinberg & Fleisch, 1990; Wehby, Lane, & Falk, 2003). This lack of focus on academic instruction for students at risk for or with E/BD is coupled with a research-to-practice gap (Carnine, 1995; Kauffman, 1999; Walker et al, 1998; Warby, Greene, Higgins, & Lovitt, 1999). These conditions frequently lead to poor outcomes for students identified with E/BD who, when compared to students from other disability categories' experience lower

graduation rates, lower reading and arithmetic scores, and a decreased likelihood of attending post secondary school (Kauffman, 2001; Lichtenstien, 1988; National Mental Health Association [NMHA] 1993; Sitlington, Frank & Carson, 1990).

Researchers in the field of special education must immediately address these pressing issues. Specifically the field must clearly articulate which instructional techniques are demonstrated by scientifically based research (SBR) to be effective for students at risk for or with E/BD. Then the field must validate a method for dissemination, adoption and consistent implementation of these practices in general education classrooms, the settings in which students at risk for or with E/BD receive much of their academic and behavioral instruction.

Review of Related Literature

Considering the current state of the field, the purpose of this literature review is discussion of two major themes. First, the research pertaining to effective instructional interventions for students at risk for or with E/BD will be reviewed with particular attention to practices that lead to improved academic as well as behavioral outcomes (Kamps & Tankersley, 1996; Trout, Nordness, Pierce, & Epstein 2003). Second, a review of research on the barriers and drivers to dissemination, adoption and implementation of SBR practices will be reviewed, with particular attention towards how to facilitate the identified SBR practice(s) into consistent classroom use (Carnine, 1995; Kauffman, 1996). Following the review of literature, the purpose of the proposed study and research questions will be presented. Additionally, the significance of the study, need for the study, and definitions of key terms will be outlined.

A Call for the Identification of Scientifically Based Research Practices

Education for children and youth with E/BD is a relatively young field; consider that the Council for Children with Behavioral Disorders (CCBD) was established just 35 years ago. During this brief time many strides have been made within the E/BD field including: Delivery of educational and rehabilitative services to children with E/BD (Landrum & Tankersley, 1999), development of identification and assessment procedures and tools (Lane, Gresham, & O'Shaughnessy, 2002), observational and functional behavioral assessment (FBA) techniques, a conceptual model for behavioral escalation, reciprocal teacher-student interaction teaching recommendations, and positive behavior support (PBS) approaches (Walker, Sprague, Close, & Starlin, 2000).

Recently there has been a call in the professional literature for the systematic exploration of academic underachievement and externalizing behaviors in an effort to identify evidence-based interventions for use with students with E/BD (Kauffman, 1993; Lane et al., 2002). This call was echoed in the President's Commission on Excellence in Special Education's report, *A New Era* (U.S. Department of Education, 2002a), which among its nine major findings, stated in finding #8, "Research on special education needs enhanced rigor….The current system does not always embrace or implement evidence-based practices once established" (p. 4).

These issues regarding the identification and implementation of evidence-based practices (EBP) or SBR practices do not belong to special educators alone, as the education of children with challenging behavior has been mandated to be a joint effort by general and special education teachers as a result of actions by congress and the president. On December 3, 2004 President George W. Bush signed H.R. 1350 into law.

This law, which amended the Individuals with Disabilities Education Act (IDEA) to increase alignment between this piece of legislation and the No Child Left Behind (NCLB) Act of 2001 (Apling & Jones, 2005). The reauthorized IDEA includes the requirements to compel regular educators and special educators to work together to: document a response to intervention (RTI) treatment for identification of children with disabilities, to jointly meet the academic needs and behavioral challenges of E/BD students, to be jointly involved in the development of individualized education programs (IEPs), to develop and implement the strategies and support systems needed to address problem behaviors that utilize SBR, and to develop and implement the accommodations/ modifications to support increased academic success that utilize SBR. Additionally, the newly amended IDEA established new guidelines for highly qualified teachers of students with special needs, the guideline of encouraging ongoing technology based assistance guided by SBR, and added provisions for behavioral assessments of children with behavioral challenges (Council for Exceptional Children [CEC], 2004).

NCLB was originally called the Elementary and Secondary Education Act (ESEA) and was enacted in 1965 to provide guidance and funds to K-12 schools (National Information Center for Children and Youth with Disabilities [NICHCY], 1997). The most recent revision of NCLB addresses issues regarding highly qualified teachers, students achieving adequate yearly progress (AYP), the use of SBR for identification of effective practices and parental notification and choice if the school of attendance does not meet AYP goals (U.S. Department of Education, 2002b, 2002c). Collectively IDEA and NCLB guide the provision of services to individuals with special needs.

The Foundations of Instructional Practice within the Field of E/BD

As several studies have outlined (Clarke, Dunlap, & Stichter, 2002; Dunlap & Childs, 1996; Mooney, Epstein, Reed & Nelson, 2003) the entire body of experimental studies pertaining to academic interventions for students with E/BD indicates that the number of studies has been declining. Also of concern is the fact that the body of research that spans from 1961 to 2000 shows a predominant focus on behavior control (reactive in nature) rather than behavior management (proactive) or instructional interventions (Kamps & Tankersley, 1996; Trout et al, 2003). The problem is that "interventions focused solely on social behavior that ignore student's academic deficits may have lasting detrimental effects on students' academic achievement and contribute to the lifelong pattern of social deviancy often representative of children with E/BD" (Trout et al., 2003, p. 208).

IDEA, NCLB and current research based outcome data for students with E/BD make the case for an immediate need to identify SBR for effective instructional and behavioral management of students at risk for or with E/BD. A significant body of research on patterns of teacher instructional behaviors in general education classrooms that correlated to improved student academic and behavioral outcomes indicated that a direct instructional approach was promising (Rosenshine & Stevens, 1986). There were similar findings when a direct instructional approach was replicated in classrooms with students with special needs (Englert, 1983) and students with E/BD (Gunter, Shores et al., 1993). Taking a detailed look at the foundations and components of a direct instructional approach may provide a guideline for the effective instructional and

behavioral management of students at risk for or with E/BD and serve as a first step toward remediation of the research to practice gap.

Historical Foundations of a Direct Instructional Approach

In *The Great Didactic,* Comenius laid the foundation for much of what is now seen as the modern educational system (Hughes, 1965). This new universal method, that moved away from a predominance of memorization and recitation included: teaching of ideas or objects directly, teaching in a straightforward manner, teaching general principles first with details to follow after general cases are learned, teaching so that all parts of objects were to be taught with reference to their order, their position and connection to one another, teaching all things in due succession, teaching no more than one thing at a time, teaching until the concept was thoroughly understood, and teaching that differences between things should be clearly understood (Comenius, 1657/1907).

Almost 200 years later Herbart introduced his *Principle,* which strongly resembled the work of Comenius. Herbart's Principle included four steps: *preparation* for recall of what had been formerly learned, *presentation* of new information, *comparison* to establish connections between past learning and new learning, and *conclusion* which often included generalization or definition (Herbart, 1835/1901). Herbart's followers added the step of *application,* in which a sufficient number of applications would lead to durable memory of concepts taught (Hughes, 1965).

Modern Foundations of a Direct Instructional Approach within the Field of E/BD

Over 150 years later Rosenshine outlined a *direct instructional approach* (DIA) which echoed of the writings of Comenius and Herbart (1976; Rosenshine & Stevens, 1986). Rosenshine provided examples of how these DIA concepts were applied within

general education settings through citation of either research literature and/or research synthesis literature of the time. This body of research was characterized as "successful experimental studies which have taken place in regular classrooms," (Rosenshine & Stevens, 1986; p. 376) and as research that "focused on: normal settings with normal populations, teachers as the vehicle of instruction, process-product relationships between teacher behavior and student achievement, and measurement of achievement gains" (Brophy & Good, 1986; 328-329). Although grounded in general education settings, as this research literature has been a source of recurring referencing for current research into academic instructional intervention for E/BD students (e.g., Gunter, Hummel, & Venn, 1998; Mooney, et al, 2003; Shores, Gunter & Jack, 1993; Sutherland, Wehby, & Copeland, 2000; Symons, Clark, Roberts, & Bailey, 2001), it was deemed a logical starting point for a review of academic interventions for students at risk for or with E/BD.

The Direct Instructional Approach. The *DIA* begins with previewing the lesson, telling the students what would be learned, and relating the new learning to previous learning (Good & Grouws, 1979). Next, instruction proceeds with small explicit steps, coupled with clear instructions (Brophy, 1980). The teacher then engages students in a sufficient amount of guided practice, providing the necessary scaffolding such that students are working above an independent level, but still within a level where success is attained above an 80% criterion (Anderson, Evertson, & Brophy, 1979; Evertson, Emmer, & Brophy, 1980).

Once a certain level of automaticity and fluency with content has been achieved the teacher provides clear instructions and guidance for student independent seatwork that can be completed at a high level of accuracy (e.g., above a 90% criterion level)

(Anderson et al, 1979; Brophy, 1980; Fisher et al., 1979). Throughout both presentation and guided practice, as well as during independent practice the teacher engages in high levels of questioning to check for student understanding, and provides systematic, performance feedback and correction (Evertson, Anderson, Anderson, & Brophy, 1980).

Empirical Support for DIA. From the first conceptualizations of DIA, the research literature has borne out that this type of teacher directed instruction holds promise for children at-risk for special needs (Abt Associates, 1976; 1977; Becker, 1977; 1978; Becker & Carnine, 1978; Bereiter & Engelmann, 1966; Rosenshine, 1976) and for children with special needs (CEC, 1987). Moreover, federally initiated commissions and/or funded studies have pointed toward a more directive, structured approach to instruction as a key to winning a "war on poverty" and "leaving no child behind" (Abt Associates, 1976; 1977; Fisher et al., 1979; National Commission of Excellence in Education [NCEE], 1983; National Institute of Child Health & Human Development [NICHHD], 2000)

The Current View of DIA for Students At Risk for or With E/BD

Greenwood, Arrerga-Mayer and Carta (1994) characterize some of the many resources cited by Rosenshine as a "small but now well-established knowledge base in general education composed of several field experiments that refute the myth that teachers do not make a difference in student learning" (p. 140). Sugai, Horner, and Gresham (2002) also consider that this early foundation of effective teaching behaviors research was "well defined."

DIA and Students At Risk for or with E/BD

Further research has indicated that the early research evidence supporting the use of DIA was replicable. Large-scale studies implementing Direct Instruction (DI), a formalized curriculum that encompasses DIA concepts that was developed by Engelmann and Carnine (1991), have shown improved academic and behavioral outcomes for students who were identified as at risk (e.g., low income or minority) (Ligas, 2002; O'Brien & Ware, 2002). Additionally, investigations of individual DIA components (e.g., prompting, wait time and positive performance feedback or praise) have indicated improved academic and behavioral outcomes for students identified as at risk for and students with special needs, including students with E/BD.

The variables of prompting, wait time and positive performance feedback or praise constitute the theoretical construct known as opportunities-to-respond (OTR) (Sutherland, Alder, & Gunter, 2003; Stichter, Lewis, Johnson, & Trussell, 2004). Overall, OTR can be viewed as an *opportunity to learn,* whereby the teacher maximizes the time allocated for instruction, or academic learning time (ALT) (Fisher et al., 1979). When teachers alter instructional methods or materials to increase the likelihood of correct academic responding, or require high levels of academic responding there is an increase in task engagement (DePaepe, Shores, Jack, & Denny, 1996; Ferguson & Houghton 1992; Gunter & Denny, 1998; Gunter, Hummel & Conroy, 1998; Gunter & Reed, 1997; Skinner, Ford & Yunker, 1991; Skinner, Smith & McClean, 1994; Sutherland & Wehby 2000; Wehby, Symons, Canale, & Go, 1998) and improved academic responding (DePaepe et al., 1996; Gunter & Denny, 1998; Gunter et al.1998; Gunter & Reed, 1997; Skinner Ford & Yunker,1991; Skinner, Smith & McClean, 1994; Sutherland & Wehby

2001). Additionally the increased OTRs also lead to a decrease in inappropriate or disruptive behaviors (DePaepe et al.,1996; Gunter & Denny, 1998; Gunter et al., 1998; Gunter & Reed, 1997; Skinner et al., 1991; Skinner et al., 1994; Sutherland & Wehby, 2001; Wehby, Symons, Canale & Go,1998).

The antecedent components of OTR involve many environmental factors that have a strong relationship to student academic responding and these antecedents include the instructional talk (e.g., preview, review and lesson content) that sets the stage for accurate student responding. OTR has been found to be of significant importance at the primary grade and secondary levels (Brophy & Good, 1986). Conversely, Greenwood, Delquardi, and Hall (1984) found in a 10-year study that when there is a systemic lack of OTR, as was found in the inner-city, low socio-economic status (SES) classrooms participating in their research project, "developmental retardation" results. The three primary variables within OTR: Prompts wait time, and feedback will now each be defined and metrics for implementation will be given based upon SBR.

Academic Prompts

Academic prompts are defined as a specific directed request for action or response. Englert (1983) observed the teaching behaviors of seventeen teacher trainees in practicum placements in elementary buildings, with 12 placed in resource rooms for children with learning disabilities and five in resource rooms for children with mental retardation. She found that effective teacher trainees gave on average 1.5 times more trials per session than the less effective trainees, covered more content, maintained student accuracy at 85%, and had fewer instances of student inappropriate behaviors, but

the lessons were shorter. On average the more effective trainees provided 3.63 trials per minute compared to 2.21 trials per minute for the less effective trainees (Englert, 1983).

Sutherland, Alder, and Gunter (2003) examined the impact of increased OTR on the behavior of students with EBD. In the study of 1 girl and 8 boys, when the teacher increased the mean rate of OTR from a baseline of 1.24 prompts per minute to 3.52 prompts per minute the student response accuracy increased from 71.8% to 75.5%, and on task behavior increased from 55.2% to 82.6%. From the research on effective instruction that provides a metric (Englert, 1983; Sutherland, Adler, & Gunter, 2003), it appears that 3.5 prompts per minute during active instruction with students is the tipping point at which increased student engagement and achievement is supported.

Wait Time

Rowe (1974 a, b) identifies two distinct wait times within classrooms: Wait Time 1 (WT 1) when the teacher pauses after prompting for a response, and Wait Time 2 (WT 2) when the teacher waits if a student pauses during his/her answer (average student pause during answering is 3 seconds). In her summary of six years of study on wait time Rowe (1974 b) discovered that without intervention, science instructors wait time from kindergarten through college level for WT 1 was on average 1 second. For WT 2 teachers waited slightly less than 1 second (0.9) before commenting on the lack of response from the student (e.g., teacher typically would repeat the question).

Additionally when these same teachers were asked to rate the five highest and five lowest achieving students it was found that the teachers gave the perceived higher achieving students up to 2 seconds of wait time, while the bottom five got less than 1 second. When an intervention to increase both WT 1 and WT 2 was implemented student

responses increased in length, failure to respond decreased, “slow” student responding increased, student inferences increased, student to student questions increased and the need for disciplinary “moves” decreased.

Tobin (1983) conducted a study among 10-13 year old students in Australian science classes and found that there was no correlation between the pre intervention wait time of .5 seconds and achievement, but a positive correlation between the average post intervention Wait Time 1 of 3.1 seconds and achievement. It is important to note that this finding held even though only 8 of the 13 experimental teachers were able to meet the 3-second wait time criterion. Tobin did not collect data on WT 2.

Rowe, Rowe, and Pollard (2004) conducted a study to asses the impact on literacy achievement and attentive behaviors, when teachers implemented appropriate classroom management strategies for children with auditory processing (AP) difficulties (this does not mean the children were special education recipients, merely children identified as with/or at-risk for AP difficulties). The intervention included getting the child’s attention, speaking slowly in short sentences, pausing (i.e., wait time), monitoring for understanding and establishing hearing, listening and compliance routines. The study followed 9,028 students (both males and females) across eight grade levels, over several years and found overall that students in treatment schools showed significant improvements in literacy levels and attentive behaviors when compared to students at control schools. Additionally, variation in literacy achievement decreased over time at intervention schools but not at control schools and after adjusting for children’s intake factors (e.g., age, gender, English as Second Language, initial achievement) the effect on literacy achievement for intervention school students was significant.

It appears that WT 1 and WT 2 are of significance to student attentiveness, student responding and student academic achievement, with a wait time of 3 seconds or more being optimal (Rowe, 1974a; Tobin 1983). It is important to note that research indicates that WT 2 is of more import in terms of academic achievement than WT 1, but few teacher preparation programs ever address this facet of wait time (Rowe, 1974a).

Positive Performance Feedback / Praise

In studies of the naturalistic use of approval and disapproval, White (1975) characterized these teacher behaviors respectively as verbal praise or encouragement and criticism, reproach or statement that would indicate that the student's behavior should change. The article discussed the results of 16 systematic studies, across 104 classrooms, from first through twelfth grade that implemented identical research protocols. Eleven of the studies were conducted in a suburban school setting with general education students, while the remaining 4 studies took place in urban school classrooms that had "fast" and "slow" students, one study took place in a parochial school with average students. Twelve studies had a median income above the national average, with 85% Caucasian and 15% African American populations. Demographics for the remaining four studies were not described.

White (1975) found that instructional approvals far outweighed managerial approvals across all grade levels, with highest rates for each type of approval occurring in first grade and tapering off dramatically after. In all grade levels instructional total approvals (20.36 per hour average) occurred more frequently than disapprovals (7.56 per hour average). In the managerial category disapprovals (19.20 per hour) were always more frequent than approvals (1.52 per hour). The ratio of approvals to disapprovals

collapsed over all grades was 2.6:1 for instructional and 1:18 for managerial. When all approvals and disapprovals are combined the story changes, for while total approvals are greater than disapprovals in grades 1 and 2, in every subsequent grade, disapproval is higher than approval.

In his literature review of teacher praise, Brophy (1981) defined praise as a commending "…worth or to express approval or admiration" (p. 5) and criticism as an, "...expression of disapproval, disgust or rejection," (p. 6). He went on to explain that praise goes beyond feedback, and that although praise is intended to be reinforcing, this is not always the case. In a review of six studies reflecting the frequency of the use of praise, the ratio for praise to criticism for good answers/work ranged from 3:1 to 4:1 in four of the six cases. In the two remaining studies the ratio of positive to negative praise was counted for two differing groups of teachers, in the first study the ineffective math teachers had a ratio of 16:1, while the effective teachers ratio was 4:1 (Good & Grouws, 1977), and in the second study which was conducted with first grade teachers the control group had a naturalistic rate of 13:1, while the treatment group had a rate of 8:1 (Anderson et al., 1976).

Brophy's review shows that the relative frequency of instructional praise was quite low, with an average of only 5 per hour and praise for good conduct occurring once every 2-10 hours in early grades, and tapering to non-existent after that. Brophy encouraged an emphasis on praising well rather than on how often. Praise that is used infrequently, contingently, with specificity, and credibility, and that remains in the range of a 3:1 or 4:1 range appears to be the most encouraging. Cameron and Pierce (1994) reviewed 96 experimental manipulations of praise that were published from 1971-1991

and concluded like Brophy (1981) that in order to be effective, praise had to be behavior contingent, but they proffered no metric regarding frequency or ratio.

Brophy's review (1981) supports the earlier naturalistic studies summarized by White (1975) that teachers are more likely to praise good answers and to criticize poor/inappropriate behaviors. Pfeffner, Rosen and O'Leary (1985) determined that in a self-contained classroom of students with EBD, a mixture of positives to negatives in a 3:1 or 4:1 ratio was as effective as an enhanced all positive environment. The enhanced all positive environment depended upon additional highly individualized program of reinforcers for each student in addition to no negative comments, a situation that teachers found very difficult to consistently implement. From this review of the literature on the efficacy and quality of teacher praise it would appear that a ratio ranging from 3:1 to 4:1 of contingent, specific, and credible praise would improve student behavior and increase academic responding.

The Barriers to Implementation of Effective Practice

While effective strategies to increase achievement have been documented in the literature, the challenge becomes one of consistent implementation in every classroom. As stated by Sanders and Horn (1998), "the single biggest factor affecting the academic growth of any population of youngsters is the effectiveness of the individual classroom," (p. 2). An international investigation of education, regarding school and teacher effects on student achievement, found that while schools in the United States accounted for only 9% of variance among students, effective teachers accounted for more than 45% of student achievement (Scheerens, 1993). As such, schools must ensure that effective practices are implemented by teachers. Yet research shows that teachers do not

consistently implement effective practices in general education classrooms (Cole & Knowles, 1993; Huberman, 1990; Pajares, 1992), in classrooms serving students with special needs (Greenwood et al., 1994; Kauffman, 1996), and particularly in classrooms serving students with E/BD (Shores et al., 1993; Walker et al. 1998; Wehby et al., 1998). According to Walker et al. (1998), "substantial numbers of educators seem to ignore the concept of best practice and rely on a hodgepodge of activities, unplanned curricula, and conceptually incompatible interventions to accomplish teaching, learning and management goals" (p. 8).

The Research to Practice Gap in Classrooms Serving Students At Risk for or With E/BD.

When looking at settings that support students with E/BD, it becomes obvious that the low level of implementation of effective practices is pronounced (Gunter & Denny, 1996, 1998; Gunter et al., 1998; Gunter et al., 2002; Shores et al., 1993; Wehby et al., 1998). Although research consistently demonstrates that desired behaviors are less likely to occur in settings where reinforcement is either nonexistent or too infrequent to be effective (Alber, Heward, & Hippler, 1999; Van Acker, Grant, & Henry, 1996), most research in general education classrooms serving E/BD students highlights that the rate of praise is extremely low (Alber et al.,1999; Gunter & Cutinho, 1997; Gunter, Hummel & Conroy, 1998; Shores et.,1993; Sutherland, 2000; Sutherland, Wehby, & Copeland, 2000). In reality, E/BD student compliance to teacher commands does not predict teacher praise above the level of chance (Gunter & Cutinho, 1997; Shores et al., 1993; Van Acker et al., 1996). In a descriptive study by Shores et al. (1993) it was found that although EBD students were observed to comply with teacher requests 80% of the time, teachers provided praise for student compliance only 2% of the time.

Why is there a Research to Practice Gap?

Researchers have posited numerous reasons why this research to practice gap exists in special education. Some researchers have primarily looked at this problem from the research side of the gap. Carnine (1995) proposes that "useability," "trustworthiness," and "accessibility" of the research are part of the reason for the gap. Others added the lack of an articulate description and dissemination of the steps necessary for translating research into practice (Lovitt & Higgins, 1996) and the limited occasions for researchers and teachers to collaborate on research and professional development issues (Greenwood & Abbott, 2001). These conditions can often lead to the inability to apply research to practical settings (Billups & Rauth, 1987) or result in theory that fails to take into account the day-to-day realities of classroom teaching (Hockenbury, Kauffman, & Hallahan, 2000).

When looking more at the practitioner side of the gap, some researchers have suggested that educators fail to adopt best practices due to factors such as "a lack of commitment… and scarcity of resources" (The Peacock Hill Working Group, 1991, p. 301), the tendency to select and use practices based on popular beliefs or fads (Kauffman, 1999), or insufficient preservice teacher training (George, George, Gersten, & Grosenick, 1995; Gunter & Denny, 1998). Kauffman (1996) expanded upon these ideas and added the need for assurances of minimal risk of harm, procedures that are practical and sustainable, increased believability and socially valid, suggestions of methods that can be implemented with a high degree of fidelity, and finally the need for sustained training and support. When looking at low implementation of effective practice in classrooms specifically serving students at risk for or with E/BD a negative reinforcement paradigm

(Gunter, Hummel, & Venn, 1998; Shores, Gunter & Jack, 1993; Wehby, Symons, Canale, & Go, 1998) and teachers who are alternatively certified providing service to students with E/BD (Gunter, Coutinho, & Cade 2002) have been posited as reasons for low implementation of effective practices.

The major themes that emerge from the collective special education literature on the research to practice gap include: The separateness of the research and practice communities, the perception of teachers and administrators about the relevance of research literature to daily practice, the failure of research to produce innovations that are useable within the real contexts of classrooms, and the lack of ongoing opportunities for practitioners to exchange information and for ongoing professional development that includes performance feedback (Greenwood & Abbott, 2001). It is from these implementation barriers that potential drivers for durable and sustained implementation of effective practice emerge.

Bridging the Research to Practice Gap

In a synthesis of the research across numerous fields of scientific investigation from medicine to education, Fixsen, Naoom, Blase, Friedman, and Wallace (2005) found factors common in effective implementation of innovations and interventions were centered around increasing collegial practices within the organizations observed. These synthesis findings regarding collegial practices are echoed repeatedly in literature within the special education realm and include such factors as: development of communities of practice (Boudah, Logan & Greenwood, 2001; Gersten & Domino, 2001; Greenwood & Abbott, 2001; Klinger, Ahwee, Pilonieta, & Manadez, 2003), clearly described intervention components (Gersten & Domino, 2001; Greenwood & Abbott, 2001;

Klinger, Ahwee, Pilonieta, & Manadez, 2003; Lewis, Hudson, Richter, & Johnson, 2004; Malouf & Schiller, 1995), a systematic, team based approach to implementation, information dissemination (Klinger et al, 2003), and performance support in the form of coaching (Boudah, Logan & Greenwood, 2001; Gersten & Domino, 2001; Klinger et al. 2001; Klinger et al, 2003). These factors of collegial practice provide a clear direction for future steps within the field to increase the implementation of components of OTR for students at risk for or with E/BD.

The Call for Increased Collegial Practice

Team Based Approach to Implementation. Fuchs and Fuchs (1998) define "scaling up as an activity meant to increase the use of an educational innovation that has been proven effective and practical by careful consideration" (p. 132). The literature recommends scaling up occur from a "bottom up" rather than a "top down" or linear model, which has been the traditional mode of diffusion of innovations (Malouf & Schiller, 1995). The purpose is to shift control from the researchers or staff developers to the practitioners, with the intention that the content of the program will be based in part on teachers' beliefs, practices or concerns (Hamilton & Richardson, 1995). The development of communities of practice, that have common concerns and goals, and that promote networking among staff facilitate the scaling up process (Boudah et al., 2001; Gersten & Domino, 2001; Greenwood & Abbott, 2001; Guskey, 2000; Klinger et al, 2003).

Description of Intervention Components. The components of the intervention must be translated into manageable and comprehensible teaching strategies and procedures. The interventions must be made concrete, specific and must stipulate

intensity of application (Gersten & Domino, 2001; Greenwood & Abbott, 2001; Klinger et al, 2003; Lewis et al, 2004; Malouf & Schiller, 1995). Additionally the interventions must meet the tests of fit and feasibility in order to be implemented (Schumm & Vaughn, 1991), thereby meeting what Gersten, Woodward and Morvant (1992) called the *reality principle*.

In a synthesis of staff development for educators, Showers, Joyce and Bennett (1987) found that what teachers thought about teaching determined what teachers do when teaching. As a result, on social validity measures at the end of intervention programs teachers frequently self report that they changed their practice because they perceived that the innovation might improve student outcomes (e.g., Boduah et al., 2001; Klinger, Arguelles, Hughes & Vaughn, 2003). Rarely if ever do teachers indicate that they change practice because they perceived the intervention to be better than their current practice. Guskey (2000) hypothesizes that changes in teachers' beliefs and motivations are often followed by changes in teacher practice rather than preceded by them.

In essence, a powerful stimulant to teacher change would be to first address the teachers' understandings of why they need to alter or enhance their current practice, before attempting to change beliefs about personal practice (Gersten, Chard, & Baker, 2000). Well planned interventions must simultaneously provide support for observed changes in practice while also supplying information that builds teachers' understanding of the principles underlying the intervention (Gersten & Domino, 2001; Klinger et al, 2001; Klinger et al, 2003).

Systematic Implementation. McLaughlin (1990) was one of the first researchers to hone in on the notion of the scope and sequence of the change efforts. These efforts "need to be sufficient in scope to challenge teachers and kindle interest, but not so ambitious that they require too much too soon" (p. 12). The scope of the systematic change must also include a separation of evaluation processes from the intervention program (Glatthorn, 1987). The intervention should be substantive, structured, and non-judgmental in order to break the cycle of professional isolation experienced by many educators (Ponticell, 1995). Additionally the needed structures for systematic implementation such as administrative support (Boduah, Logan, & Greenwood, 2001; Glatthorn, 1987; Klinger et al., 2001; Klinger et al., 2003) and time for collaboration and or coaching (Boduah, Logan, & Greenwood, 2001; Glatthorn, 1987) must be addressed if the process is to be durable in the long run.

Peer Coaching. In 1989 Smylie analyzed data collected three years earlier by the National Education Association on teachers' perceptions about the effectiveness of the sources of learning for educators. Teachers rated the top four sources as: Direct experience as a teacher, consultation with other teachers, study and research pursued on one's own and observation of other teachers. Teachers were indicating that the professional development typically offered, the one-shot "sit and get-it" approach to inservice, was not valuable as a method for teacher change in practice. What teachers were indicating they found most beneficial was collegial support to reflect on practice of their choosing.

Changing Teacher Practice

Providing teachers with data driven feedback on their performance has been used in numerous studies to increase teacher use of targeted practices such as pre-correction (Covington, 2004), OTR (Christle & Schuster, 2003, DePaepe et al., 1996; Ferguson & Houghton, 1992; Gunter & Denny, 1998; Gunter et al.,1998; Gunter & Reed, 1997; Sutherland & Wehby 2000; Wehby et al.,1998), and positive feedback (Covington, 2004; Mesa, Lewis-Palmer, & Reinke, 2005). The designs used in many of these studies depended upon a significant amount of expert technical assistance (e.g., 10-15 hours per week, Covington, 2004) or a significant number of data collection hours (e.g., 12, 60 minute sessions to assess the use of a response card intervention to increase OTRs, Christle & Schuster, 2003; 20 hours of video taping, Morgan, Menlove, Salzburg & Hudson, 1994) in order to amass the performance data or provide the technical or collegial support needed to elicit teacher implementation of and/or change in use of the desired instructional variables. This level of technical expertise is not readily available to most teachers, nor is the amount of time needed to provide the technical support or data collection given in the research studies sustainable on a day to day basis in most schools or classrooms. Yet in many cases without sustained intervention or support the implementation or change does not maintain (Mesa et al., 2005; Noell et al., 2000). For example wait time returned to a pre-intervention duration of less than 1 second after the technical support was removed (Rowe, 1974a, b).

Repeated calls for Peer Coaching for Bridging the Research to Practice Gap

As a result of the need for ongoing data driven feedback and support to be provided in order for to teachers to change and/or sustain a change in their instructional

practice, many researchers in special education have cited peer coaching (Gunter & Cutinho, 1997; Sutherland, 2000; Sutherland & Wehby 2001; Sutherland, Wehby & Copeland 2000; Van Acker, Grant & Henry, 1996) as a possible remedy to the research to practice gap. Additionally, an environment that fosters support and reflection must be present in order for the professional reflection necessary to elicit or maintain change in instructional practice (Gunter & Cutinho, 1997).

A Review of the Peer Coaching Literature.

A Definition of Peer Coaching

The collegial, reflective process teachers noted as being the most effective source of learning for teachers has been embodied in the concept of *peer coaching* (National Education Association, 2005). Peer coaching is a form of staff development that has been espoused by, and most clearly identified with, Bruce Joyce and Beverly Showers. In 1980 Joyce and Showers identified coaching for application as one of the five major components of staff development programs. There are three characteristics that have become synonymous with peer coaching a) it is non-evaluative, b) based on classroom observations followed by constructive, data-based feedback, and c) aimed to improve instructional techniques (Ackland, 1991). There are several purposes for why peer coaching is undertaken and as a result there are three basic models identified in the peer coaching literature: technical coaching, challenge coaching and collegial coaching (Ackland, 1991).

Joyce and Showers (1980, 1983) indicate that coaching facilitates the transfer of training in two forms; the learning new skills or the fine tuning of existing skills. Technical coaching helps teachers transfer training in new skills or knowledge into

classroom practice (Garmston, 1987). Coaching by experts or technical coaching is built on the premise that certain teachers or individuals have expertise or experience from which others can learn from. The most common examples of expert coaching would include literacy coaches, mentor teachers, or demonstration teachers (Ackland, 1991). Challenge coaching is used by teams of teachers to solve persistent problems in instructional design or delivery (e.g., implementing a new math curriculum) with the *challenge* referring to resolution of a current problematic state (Garmston, 1987). Collegial or reciprocal coaching is used primarily to refine teaching practice, by deepening collegiality, increasing the professional dialog, and helping teachers to be more reflective in regards to their teaching practice (Garmston, 1987). Reciprocal coaching implies a reciprocal relationship between two practitioners and is most often associated with collegial or challenge coaching. Most forms of reciprocal coaching involve teachers volunteering to learn or refine application of skills and knowledge simultaneously, to watch each other try the strategies out in the classroom, and then to give each other constructive feedback (Ackland, 1987). Showers (1984) recommended that when teachers were learning content side by side that they would benefit from simultaneous training in peer coaching to increase the benefits of the content training.

Reviewing the Peer Coaching Literature Base

In reviewing the literature base for peer coaching using key words: *peer coaching, reciprocal coaching, collegiality, education, and special education,* within databases including, PSYCH INFO, ERIC, Google Scholar, and Academic Première, the paucity of research based literature in the this area becomes apparent. The majority of the literature found stems from a surge in interest in this process in the late 1970s and early 1980s,

with very little work being published since the late 1990s. Twenty-eight articles were found that had one of the key words from the search in the title or as an author identified keyword.

Almost one third of the literature found was a description of, or a synthesis of research on peer coaching or staff development processes (Ackland, 1991; Garmston, 1987; Glatthorn, 1987; Joyce & Showers, 1983, Showers & Joyce, 1996; Showers, Joyce & Bennett, 1987; Swafford, 1998), or literature that discussed the research to practice gap (Greenwood & Abbott, 2001) that included a discussion of the potential benefits of peer coaching. The remaining nineteen articles are based on peer coaching *studies* and are summarized in two tables, the first which indicates study characteristics (Table 1) and the second which indicates study outcomes (Table 2). A description by type of the eighteen articles follows.

Eleven of the *studies* were reports (i.e., no experimental design was described) or were descriptive in nature (i.e., non experimental design). The ten articles in this category (Anastos & Ancowitz, 1987; Kwiat, 1998; LeBlanc & Zide, 1987; Munson, 1998; Phelps & Wright, 1986; Slater & Simmons, 2001; Sparks & Brueder, 1987; Stichter, Lewis, Richter, Johnson & Bradley, 2006; Swan, Carnes, & Gilman, 1988; Zide & LeBlanc, 1984) were published in professional journals, practitioner journals or were governmental reports available through ERIC. Four indicated reciprocal peer coaching was utilized, 1 indicated a mediated form of reciprocal peer coaching was used, and 6 had no designation of the type of peer coaching used. Information regarding grade level setting indicated: two secondary setting, two in an elementary setting, three secondary and elementary based settings and four had no grade level designation. Special education

setting information indicated: 1 special education, 4 general education, 1 in English Language Learner classrooms and the remaining 5 either NA or unclear.

The number of study participants varied significantly per study ranging from 4 to 44, while five gave no indication of number of participants. Teacher training level indicated eight studies with inservice teachers and 2 with no designation. Outcomes data for teachers was indicated in 7 studies, with all being teacher report (e.g., questionnaire, survey or interview) with no studies indicating that student outcomes data (e.g., direct observation) having been taken. No information on implementation integrity was given for eight of the studies, while 2 of the studies indicated once per month coaching visits conducted.

Two of the studies were qualitative (Arnau, Kraus & Kruskamp, 2004; Lam, Yim & Lam, 2002) with one indicating technical coaching and the second not designating the type of coaching used. Information regarding grade level setting indicated that one was conducted in a secondary setting, and one was conducted in a secondary and elementary based setting. Special education setting information indicated 1 special education and 1 general education setting. The number of study participants per study indicated one study with 14, with the second study not including an indication of participants, but both indicated that participants were inservice level teachers. Outcomes data for teachers was indicated as teacher report in both studies, with neither study indicating that student outcomes data (e.g., direct observation) was taken. No information on implementation integrity was given.

Table 1

Study Characteristics from Peer Coaching Literature Review

Study	Design	Grade Level	Type of Coaching	Voluntary	# of Participants	Teacher Level	Teacher Choice of focus	Special Education	Assess Teacher Attitudes/Beliefs	Teacher Behaviors	Student Outcomes	Imp. ingrity	# of Observations
Anastos & Ancowitz, 1987	Report	NA	NA	Yes	4	I	NA	No	D/I	No	No	NA	NA
Arnau, Kahrs, & Kruskamp, 2004	Qual	S	NA	Yes	14	I	Yes	No	I	No	No	NA	NA
Bowman & McCormick, 2000	R- Corr	P	T/R	NA	32	P	No	No	S	YES	No	U	2 – W
Chrisco, 1989	Report	S	R	No	NA	I	Yes	No	D	No	No	NA	NA
Hasbrouck, 1997	Desc. & Case	E/S	MR	No	22	P	No	Yes	I /Q	Yes	No	YES	1- W
Hasbrouck & Christen, 1997	Case	S	T	Yes	3	I	No	No	Q	Yes	No	NA	NA
Kohler, Crilley, Shearer & Good, 1997	SS	E	T	NA	4	I	No	No	Q	Yes	No	No	NA
Kwait, 1988	Desc.	E/S	R	Yes	10	I	No	ELL	S/I	No	No	No	1- M
Lam, Yim & Lam, 2002 (Hong-Kong)	Qual	E/S	T	U	U	I	No	No	Q	No	No	No	U
LeBlanc & Zide, 1987	Report	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Morgan, Menlov, Salzberg, & Hudson, 1994	SS	E	T	NO	3	P	No	YES	S	YES	NO	YES	2- W
Munson, 1998	Report	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phelps, & Wright, 1986	Desc	E/S	MR	U	35	I	U	U	U	U	NO	NO	1- M
Showers, 1984	Corr	S	T	U	24	I	NO	U	I	YES	YES	YES	1- W
Slater, & Simmons, 2001	Report	S	R	U	U	I	U	U	Q	NO	NO	NO	1- M
Sparks & Brueder, 1987	Report	E	R	U	41	I	U	NO	Q/I	NO	NO	NO	U
Sticheter, Lewis, Richter, Johnson & Bradley	Desc	E	R	Yes	16	I	No	No	D/Q	Yes	Yes	Yes	2- M
Swan, Carnes, & Gilman, 1988	Desc.	NA	U	U	44	I	U	U	Q	NO	NO	NO	NA
Zide & LeBlanc, 1984	Report	E/S	E/S	U	U	I	NO	YES	S	NO	NO	NO	NA

Key

Grade Level E=Elementary S=Secondary	Type of Coaching T=Technical R=Reciprocal MR=Mediated Reciprocal
Teacher Level I-Inservice P=PreService	Teacher Attitude Beliefs D=Discussion I=Interview S=Survey Q=Questionnaire
For All Categories NA=Not Available/Addressed U=Unclear	

TABLE 2

Outcomes Data from Peer Coaching Literature Review

Study	Perceived increase in knowledg	Perceived increase in skills	Observed increase in skill usage	Observed change in student	Drivers				Barriers	
					Increased collegialit	Administrative supp	Components	Useability	Time	Lack of focus
Anastos & Ancowitz, 1987	*	*	NA	NA	*	*	NA	NA	*	*
Arnau, Kahrs, & Kruskamp, 20	NA	NA	NA	NA	*	*	NA	*	NA	NA
Bowman & McCormick, 2000	NA	*	*	NA	No	NA	NA	NA	NA	NA
Chrisco, 1989	NA	NA	NA	NA	*	*	Pre Conf	*	NA	NA
Hasbrouck, 1997	*	*	*	NA	*	NA	NA	*	NA	NA
Hasbrouck & Christen, 1997	*	*	*	NA	*	NA	NA	*	NA	NA
Kohler, Crilley, Shearer & Goo	*	*	*	NA	NA	NA	NA	NA	NA	NA
Kwait, 1988	*	*	NA	NA	*	*	All	*	*	*
Lam, Yim & Lam, 2002 (Hong	*	NA	NA	NA	*	NA	NA	*	NO	NA
LeBlanc & Zide, 1987	NA	NA	NA	NA	NA	*	NA	NA	NA	NA
Morgan, Menlov, Salzberg, & 1994	*	*	*	*	No	No	No	No	No	No
Munson, 1998	NA	NA	NA	NA	*	*	Pre &	NA	*	NA
Phelps & Wright, 1986	*	*	NA	NA	*	NA	NA	NA	NA	NA
Showers, 1984	U	U	*	*	*	NA	NA	NA	NO	NA
Slater & Simmons, 2001	*	*	NA	NA	*	NA	NA	NA	NO	NA
Sparks & Brueder, 1987	*	*	NA	NA	*	*	NA	*	*	NA
Sticheter, Lewis, Richter, John Bradley, 2006	*	*	*	*	*	NA	*	*	*	No
Swan, Carnes, & Gilman, 1988	NA	NA	NA	NA	*	*	NA	NA	NA	NA
Zide & LeBlanc, 1984	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA= Not Available/Addressed U=Unclear * = YES/Indicated

Two of the peer coaching studies found were case studies (Hasbrouck, 1997; Hasbrouck & Christen, 1997) one was designated as mediated reciprocal peer coaching and one was designated as technical coaching. Information regarding grade level setting indicated one was conducted in a secondary setting, and one indicated a secondary and elementary based setting. Neither was designated as taking place in a special education setting. The number of study participants per study indicated one with 3, and one with 22 participants (but the article was a case study of 3 participants). One study indicated that

participants were inservice level teachers, and the other indicated pre-service participants. Outcomes data for teachers was indicated as teacher report and teacher behavior observation in both studies, with neither study indicating that student outcomes data (e.g., direct observation) was taken. No information on implementation integrity was given for one study and the second indicated once per week peer coaching sessions.

Two studies were correlational, one of which also had random assignment (Bowman & McCormick, 2000; Showers, 1984). Bowman and McCormick (2000) indicated a mixed use of technical and peer coaches and Showers (1984) indicated using only reciprocal peer coaching. Information regarding grade level setting indicated one was conducted in a secondary setting, the other conducted in an elementary setting. Neither was designated as taking place in a special education setting. The number of study participants per study indicated one with 24, and one with 32 participants one indicated that participants were inservice level teachers, and the other indicated pre-service participants. Outcomes data for teachers was indicated as teacher report and teacher behavior observation in both studies, and one study indicating that student outcomes data (e.g., direct observation) was taken. Both studies gave implementation integrity data indicating once per week per coaching sessions in one study and twice per week peer coaching sessions in the second.

The final two studies used single subject designs (Kohler, Crilley, Shearer & Good, 1997; Morgan, Menlove, Salzberg & Hudson, 1994), with both indicating use of a technical peer coaching model. Both took place in an elementary setting, with one indicating having taken place in a special education setting. The number of study participants per study indicated one with 3 pre-service participants, and the other with 4

inservice participants. Outcomes data for teachers was indicated as teacher report and teacher behavior observation in both studies, with one study indicating that student outcomes data (e.g., direct observation) was taken. One study gave implementation integrity data indicating twice per week per coaching sessions

What the Peer Coaching Research Tells Us. Although long term, well planned forms of staff development incorporating collegial practices such as peer coaching are called for to support the implementation of effective practice (Boudah et al., 2001; Gersten & Domino, 2001; Klinger, et al., 2001; Klinger et al, 2003), the current research base leaves many questions about the efficacy or effectiveness of peer coaching unanswered. First and foremost few of the studies are written with precision such that they could be replicated (e.g., description of participants, description of the peer coaching intervention). Second, the intensity of peer coaching training and subsequent peer coaching implementation are rarely addressed, making any connection between outcomes whether perceived or directly observed tenuous, and results unclear as to which components are the most beneficial. Finally, the majority of studies do not meet many of the criteria that are set forth in many definitions of peer coaching (e.g., voluntary, teacher directed). What the studies do indicate is that peer coaching appears to be a well received form of staff development that teachers perceive to be beneficial for themselves and their students.

Summary

Comenius was the first to write about a universal method for instruction (Comenius 1657, 1907). This concept was then incorporated into Herbart's *Principle* (Herbart, 1835/1901). These historic foundations were later expanded upon during the

boom of research on effective instructional practices that took place during the late 1970s and early 1980s, being synthesized and conceptualized by Rosenshine (1976; Rosenshine & Stevens, 1986) as DIA. Recent research incorporating general education students and students with special needs, particularly those with or at risk for E/BD, further indicate that the methodology first proposed by Comenius 350 years ago stands the test of time (Stichter et al, 2004).

The components of DIA and the prerequisite management practices can be thought of as *universal* practices, meaning they are effective for all learners. Elemental within DIA are the components of OTR; prompts, wait time and praise which when given at sufficient levels and in unison increase student engagement and academic outcomes while decreasing inappropriate behaviors. A synthesis of implementation research underscores that practitioners need sustained sources of SBR practice information in the form of well planned ongoing professional development. This information dissemination should be coupled with ongoing performance feedback, such as that experienced within peer coaching situations (Boudah et al., 2001; Gersten & Domino, 2001; Klinger et al., 2001; Klinger et al., 2003) in order to establish and maintain the use of the SBR practice such as those that are components of OTR. A review of the peer coaching literature indicates although outcomes are promising, there has been a general lack of research rigor and disregard for implementation integrity of the PC process.

Statement of Purpose

It is hypothesized that a reciprocal peer coaching (PC) process that provides for the systematic training on the PC process coupled with a review of the research pertaining to a DIA and the components of OTR will promote a genuine collegial practice

for professional growth, have social value for staff, and increase teacher knowledge and implementation of OTR practices in classrooms that provide academic instruction to students at risk for or with E/BD. It is further hypothesized that the resulting increases in collegial practice, teacher knowledge and implementation of OTR practices will lead to improved behavioral and academic outcomes for students at risk for or with E/BD.

The purpose of this study was to investigate whether or not reciprocal peer coaching increases teacher use of specific OTR components which then leads to improved student outcomes. The following research questions were explored:

1. Does knowledge of OTR instructional components increase as a result of the peer coaching intervention?
2. Does teacher use of DIA and OTR practices increase as a result of the reciprocal peer coaching intervention?
3. Does the change in teacher practice result in a change in student performance during academic instruction?
4. Do teachers find a reciprocal peer coaching process beneficial for improving their knowledge and use of effective practices?

Significance of Study

The results of this study have the potential to impact both research and practice. Specifically, this study will benefit the field in the following ways; a) provide an exploratory investigation with high rigor on the effects of a reciprocal peer coaching process on teacher practices and student outcomes, b) provide a mechanism to increase SBR practices in classrooms that educate students at-risk for special needs, and c)

explores essential features of a reciprocal peer coaching model if effective. This study may benefit practice as well. Specifically, exploration of a) professional development model to increase use of SBR practices, b) whether an increase in teacher use of OTR leads to improvements in student learning, and c) whether PC may lead to a process to meet the mandate of NCLB (i.e., implementation of practices based upon scientifically-based research).

Need for the Study

This study differed from previous studies on the use of peer coaching (i.e., Hasbrouck, 1997; Kwait, 1988; Morgan, Menlove, Salzberg, & Hudson, 1994) in that this study involved teacher participants who voluntarily participated in the peer coaching process, it had clearly defined peer coaching processes and implementation fidelity, and it focused on teacher concerns. Additionally the process incorporated a systematic development of knowledge of effective practice will simultaneously developing knowledge of and facility with a peer coaching process (Showers, 1984).

Definition of Terms

For the purposes of this study the following terms were operationally defined as follows:

Reciprocal Peer coaching: a collegial process where two or more peers volunteer to provide non-evaluatory, performance feedback, following a prescribed process, focusing on teacher usage of effective practice.

Scientifically Based Research (SBR) practice: an intervention, treatment, or practice that meets a minimal level of quality indicators, is sufficiently replicable, and thereby, has a

high degree of likeliness to produce similar outcomes in similar settings with similar participants.

CHAPTER II

METHODOLOGY

Overview

This study investigated the effects of reciprocal peer coaching on increasing teacher use of prompts, wait time, and performance feedback, which collectively comprise opportunities to respond (OTR), in classrooms serving students at risk for or with E/BD. A single subject, multiple-baseline deign was employed in order to examine teacher's implementation of the targeted instructional behaviors and target student's academic engagement behavior. Within the present chapter, an overview of the identification procedures used to select the participants will be provided. Next, the independent and dependent variables will be described. Finally, additional research procedures including the training of the participating teachers and data collectors; intervention procedures, including the process for verifying the integrity of the intervention; and an assessment for social validity of the intervention are discussed.

Participants and Setting

Teachers

All of the teaching staff of a local elementary school volunteered to participate in a building-wide peer coaching staff development program. From that pool of teachers three individuals were identified as possible participants in the present study. Identification was based on the following criteria: a) teachers who had a "low level" of implementation of one or all of the targeted instructional behaviors, b) teachers who indicated that they had students who exhibited low rates of academic engagement and moderate to high rates of problem behaviors, and c) administrative nomination of

teachers who would be open to the more prescribed peer coaching process this study required.

The verification of a low level of implementation of targeted instructional behaviors was based on data previously collected during the start-up of the building-wide peer coaching staff development program. These activities incorporated the use of self reflection checklists and structured classroom observations. Additionally two probe observations were taken by the study author to further assess the level of implementation of the targeted instructional practices. A “low level” of implementation for the probe observation data consisted of either a low or moderate level of academic prompts (i.e., fewer than 3 academic prompts per minute during whole or small group instruction), a short amount of wait time (i.e., less than 3 seconds per prompt), or a performance feedback ratio that was predominantly reprimands or negative comments rather than praise or positive feedback statements (i.e., a ratio in favor of reprimands). Based on the confirmatory nature of the two sessions of probe data, three classroom teachers were approached to be possible study participants. Each of the three teachers was part of a peer coaching dyad that had been assigned by the building administration for the building wide program. All three dyads were considered by administrators to be reciprocal, meaning there was no supervisory or evaluatory component either implied or expected in the pairings.

The three teachers selected were asked to sign a letter of consent to participate (Appendix A) and to complete a demographic data form (Appendix B). Teacher One taught full day kindergarten, Teacher Two taught second grade, and Teacher Three taught third grade. Table 3 lists each participating teacher’s demographics and provides the

teachers' self rating data of their instructional behavior (1= inconsistent or unpredictable to 5= consistent and predictable) collected at the beginning of the schoolwide peer coaching process with the Classroom Universals Inventory (CUI, Appendix C), as well as results of the data collected during the two probes that confirmed their selection as participants for this study. Peer coaching partners were chosen by the administrators, all had master degrees, Peer Coach One taught full day kindergarten and had 14 years of teaching experience, Peer Coach Two Taught third grade and had three years of teaching experience, and Peer Coach Three taught fifth grade and had eight years of teaching experience.

Table 3

Teacher Demographics and Teacher Behavior

Teachers	Number of Years Current Grade Level	Total Number of Years Teaching	Education and Certification Level	Race	Teacher Self – Ratings* (1-5 scale)	Teacher Behaviors from Probe*
Teacher One	K	First year	M.S. Early Childhood Education	Caucasian	AP= 3 PF= 2 WT= 3	AP = 2.24 PF= 1.12:1 WT= .47
Teacher Two	3rd	First year	B.S. in Early Childhood + 25 hours towards M.S.	Caucasian	AP= 4 PF= 2 WT= 3	AP = 3 PF= 3.94:1 WT= .44
Teacher Three	2nd	25	M.S. Early Childhood Education + 30 hours of coursework	Caucasian	AP= 5 PF= 5 WT= 4	AP= 2.83 PF= 1.37:1 WT= .98

*AP= Academic Prompts per minute; PF= Positive Feedback ratio to Negative Feedback; WT= Wait Time average seconds per prompt/question

Students

Target teachers were asked to select possible students to participate in the study. Each teacher nominated two students from their classrooms who displayed low levels of social skills and / or moderate to high rates of problem behavior (e.g., academic disengagement or chronic non-compliance) who were also at risk for academic underachievement. Teachers were asked to secure permission for the identified students (Appendix D). Once parental permission was obtained, teachers completed the teacher version of the Social Skills Rating Scale (SSRS-T, Gresham & Elliot, 1990) for elementary aged students. From the pool of six students, a total of three students were selected to participate. Target students were selected according to the following criteria/behavior levels: a) problem behavior scores at or greater than the 75th percentile on the SSRS, or b) social skills display at or below the 25th percentile on the SSRS (Covington, 2004; Powers, 2003). Additionally, the number of minor disciplinary referrals (e.g., visits to a buddy room) and major disciplinary referrals (e.g., office disciplinary referrals) was also collected as further corroboration of possible problems.

Instruments

Social Skills Rating System- Teacher Form. The Social Skills Rating System-Teacher Form (SSRS-T, Gresham & Elliot, 1990) for the elementary level is a standardized, norm-referenced scale that is effective for measuring current levels of children's social behavior. The SSRS-T is recommended as a useful and reliable instrument due to its multi-source approach and overall strong reliability and validity (Demaray, Ruffalo, Carlson, Busse, Olson, McManus, & Leventhal, 1995). The elementary level SSRS-T asks the teacher to answer questions concerning their student

for grades K-6. The questionnaire has 57 items; 30 of the items concern social skills in the areas of cooperation, assertion, and self-control; 18 items concern problem behaviors, specifically internalizing and externalizing behavior; and 9 items concern academic competence. The six subscales on cooperation, assertion, self-control, internalizing, externalizing and academic competence yield raw scores that are converted to behavior levels: fewer, average and more.

Demographic information for each student was also collected by the classroom teacher. Table 4 lists student demographic data, the number and type of disciplinary referrals (DR) and provides pre-test scores on the elementary version of the SSRS-T for each target student**.**

Table 4

Student Demographic and SSRS-T Pre-test Scores

Target Student	Gender	Age in Years and Month	Race	Delay / Disability	Disciplinary Referrals Minor * Major x	SSRS-T Pre-test Scores	
						Social Skills Total Rating / Behavior Level	Problem Behaviors Total Rating / Behavior Level
Target Student One	Male	3/22/2000 5 yrs. 10 mo.	Caucasian	None	2 * 0 x	27 (16th %) Fewer (Below)	12 (66th %) Average
Target Student Two	Female	11/2/1995 10 yrs. 0 mo.	Caucasian	None	0 * 0 x	30 (12th %) Fewer (Below)	14 (86th %) Above
Target Student Three	Female	1/24/1997 9 yrs. 0 mos.	African American	None	6 * 1 x	19 (2nd %) Fewer (Below)	19 (95th %) Above

Intervention Setting

The participant pool was selected from the teaching faculty of a Title 1 eligible public elementary school located in a Midwestern city of 100,000 inhabitants. The school's student population of 425 children was 69.6% Caucasian, 24.1% African American, 4.3% Hispanic, .8% Native American and 1.3% Asian. Further demographic data indicated that 37.9% of the students were either free or reduced lunch status, 8.5% of the students were recipients of Title 1 services, 19.5% had individualized education plans (IEP) and 4.3% received gifted or enrichment programs.

The school housed one classroom for Title 1 pre-school, two classrooms for Students With Intensive Needs (SWIN), one multi-categorical classroom serving students from kindergarten through fifth grade of various disability categories and 19 general education classrooms for students kindergarten through fifth grade. General education classrooms typically had 18-24 students with one general education teacher. The building had 21 general education staff, 8 special education staff, 8 paraprofessionals and 2 administrators.

Direct observations of teacher use of targeted instructional strategies and target students' on task behaviors were conducted during teacher-directed whole group literacy mini lessons. This period was chosen because the instructional format during this period of the academic day provides numerous opportunities for teachers to provide academic prompts, wait time and academic performance feedback to students. Whole group literacy mini lesson activities involve teacher-directed instruction that occurs daily and can involve such activities as guided reading, guided writing or word work. During literacy mini lesson time the class typically sits together in an open, carpeted area that allows

adequate space for the entire group, with student visual access to instructional focus (e.g., teacher, blackboard, poster paper, big books, etc.). Literacy mini lesson activities typically last 10-20 minutes and set the stage for independent work activities.

Literacy mini lessons begin with teacher review of past learning, preview of the concept for the day, teacher demonstration, guided student practice, teacher checks for understanding, instructions for independent work and follow-up questioning regarding instructions for independent work. All components of the literacy min lesson instructional sequence provide opportunities for teachers to provide academic prompts, wait time, and performance feedback.

Independent Variable

The independent variable was the implementation of reciprocal peer coaching to increase recommended levels of SBR instructional variables (Stichter et el., 2006). Collectively these variables of prompts, wait time, and feedback comprise OTR which has been shown to improve academic engagement and achievement of students with or at risk for E/BD (DePaepe et al., 1996). The reciprocal peer coaching process implemented in the study was a modification of the peer coaching model developed by Gottesman (2000). The model included a 5-step peer coaching process including: 1) Request for a Visit, 2) Observation Visit, 3) Review of the Notes, 4) Talk after the Visit, and 5) Process Review. The three teacher participants ("coaches") each had a peer coaching partner (coach) along with whom they received training on the 5-step process and the OTR components simultaneously. The steps and descriptors of each of the process steps are summarized in Table 5. Utilization of a complete 5-step process of peer coaching was considered a *peer coaching cycle*.

Table 5

Reciprocal Peer Coaching Steps and Operational Definitions

Step	*Operational Definition*
Request for a Visit	The coach and "coaches" confirm the date and time of the observation, the definitions for the behaviors to observed, and where the observer should sit in order to be unobtrusive.
Observation Visit	The coach arrives at the designated time, sits in the designated spot and begins to take the agreed upon data without being acknowledged by the coachee, and without interacting with any of the students.
Review of the Notes	The coach transforms the raw data into metrics such as a frequency of academic prompts per minute, duration of wait time per prompt, and the ratio of positive to negative feedback for dissemination to the coachee. The coach also develops 2-3 leading questions to encourage the coachee to reflect upon the data that will be shared.
Talk after the Visit	The coach and coachee sit side by side. The coach hands the "coaches" his/her data, explaining how they collected the raw data, and how it was transformed. The coach refrains from making any subjective comments (e.g., great lesson) but does pose the *leading questions* to encourage the coachee to be reflective. The coach and "coaches" then use the observation data and the Teaching Plan form to develop a plan for future improvement.
Process Review	The coach and "coaches" use the Process Review form to indicate that the steps of the peer coaching process were followed as outlined. The Process Review form is then turned in to the envelope in the study box in the school office.

Training

Training on the 5-step process of reciprocal peer coaching and the instructional techniques that comprise OTR was taught as part of the building-wide peer coaching staff development program to all staff members including the 3 teacher participants and their peer coaching partners during two, 2-hour trainings that were held after school hours. These trainings took place in late October and early January, prior to baseline, for which teachers received in-service credit. The training incorporated content, modeling, practice and feedback on the use 5-step process, the use of the data observation form and

discussion and modeling of the OTR components. Teacher participants received a packet of supplemental handouts that included an outline of the 5-step process of reciprocal peer coaching (Appendix E), the data observation form (Appendix F), the Process Review form (Appendix G) and the Teaching Plan form (Appendix H). Teacher participants also received a packet of supplemental handouts that described the research behind each of the OTR components, and metrics for best practice indicated by current research for each component (Appendix I).

Implementation

One week before the implementation of the peer coaching intervention each dyad participated in a one hour, one-on-two training with the study author to a) reiterate and practice the 5-step process, b) to review and practice the target instructional behaviors and c) to answer any questions regarding the forms involved: the process review form, the data observation form and the teaching plan form. Each coach of the dyad was given an additional 1 hour, one-on-one training on how to observe in classrooms and how to translate observation data into rates or frequencies. The study author and the coach did in-vivo training in a non-study classroom including observation and coding in an actual classroom setting during a literacy mini lesson. Each coach was trained until they met a reliability criterion with the study author of 85%.

Once the 85% criterion was met, the first peer coaching dyad was instructed to implement peer coaching. Each dyad set times for their own request for a visit meeting, observation, and for the meeting after the observation for a process review and the teaching plan development. They also received copies of necessary forms, and a blank

audio cassette to tape the process review meeting so that implementation integrity could be verified.

Treatment Integrity

Implementation integrity was assessed in order to identify and record what components of the 5-step reciprocal peer coaching process were implemented (Durlak, 1995) and to what extent the reciprocal peer coaching intervention was delivered as trained (Yeaton & Sechrest, 1981). During the process review component of 100% of the peer coaching sessions the dyads audio taped these sessions and completed a Process Review form. After the Process Review form was completed the dyads returned the form and the audio tape to a designated envelope in the office along with a copy of the Teaching Plan form that was completed by the dyad for the coachee. Outcomes are presented in the Results chapter.

Dependent Measures

Teacher Behavior

Four categories of teacher behaviors were measured as dependent variables in this study a) academic prompts, b) wait time, and c) positive performance feedback, which collectively comprise OTRs, and d) negative performance feedback (so that a performance feedback ratio could be calculated). Frequency of teacher prompts, positive feedback statements and negative feedback statements were noted on the data protocol during the fifteen minute classroom observation. When a teacher would pause for a student response to an academic prompt the data collectors would count, “One Mississippi, Two Mississippi, Three Mississippi,” ticking off a numeric indicator for each “Mississippi” counted as a measure of WT. Table 6 provides a list of each of the teacher

specific instructional behaviors that were targeted during the reciprocal peer coaching intervention, an operational definition for each is given along with an example for each.

Table 6

Teacher Behavior Categories and Operational Definitions

Behavior Categories	*Operational Definitions and Examples*
Academic Prompts Example	Academic prompts are specific directed requests for action or response (Englert, 1983). "What sound do you hear at the beginning of the word d-o-g?"
Wait Time Example	When the teacher pauses after prompting for a response, or when the teacher pauses when a student pauses during his/her answer (Rowe, 1974a, b) After making an academic prompt to class the teacher pauses for students to respond by raising their hands.
Positive Performance Feedback Example	Positive performance feedback statements are verbal comments indicating approval or admiration of student behaviors that specify the behavior that meets approval (Brophy, 1980; White, 1975). "Thank you for remembering to raise your hand when you were ready to answer the question."
Negative Performance Feedback Example	Negative performance feedback statements are verbal comments indicating disapproval, disgust or rejection of student behaviors that specify the behavior that did not meet approval (Brophy, 1980; White, 1975). "Stop it!"

Student Behavior

Two categories of student behavior were measured as additional dependent variables in this study a) academic engagement during instruction and b) problem behavior(s) (as defined by the classroom teacher) exhibited by the target student. Both academic engagement and problem behavior data were collected using a 10 second

partial interval recording system (Newcomer, 2002). Table 7 lists the student behavior categories and specific behaviors for each target student.

Table 7

Student Behavior Categories and Examples

Behavior Categories	*Specific Behavior Examples*
Academic Engagement Behavior	Observable behavior (e.g., orientation toward teacher, speaker, or instructional materials) that reflected compliance with the demands of the setting and/or activity.
Problem Behavior Student 1	Moves at high rates in whole group, easily distracted by others coming in and out of room, frequent non-compliance with teacher directives.
Problem Behavior Student 2	Second year in third grade, this child is highly distractible (e.g., when others enter or leave classroom), low task completion or "under completion," and frequently not oriented to board or speaker.
Problem Behavior Student 3	Child is frequently verbally interacting or otherwise seeking peer attention at group work times, frequent non-compliance with teacher directions, and low task completion or "under completion."

Data Collection

Paper pencil protocols were used to collect the data on teacher and student behavior (Appendix J). Data collectors directly observed teacher and student behavior daily during the baseline and intervention phases during the course of the teacher-directed, literacy mini-lessons. Prior to beginning observations the teacher participant provided the researcher with a classroom schedule for pinpointing when literacy instruction would occur and gave cues to data collectors that the class was transitioning to the literacy mini-lesson. Observations began as soon as the teacher began the preview of the lesson objective. Outcomes are presented in the Results chapter.

Data Collection Training

Data collectors were trained by the researcher prior to the baseline data collection. All data collectors received definitions of the dependent variables, recording methods, and the observational settings. Three data collectors performed all direct observation data collection procedures. The training followed a three-step process:

1. *Operational Definitions.* Operational definitions for academic engagement, academic prompts, wait time, positive performance feedback, and negative performance feedback were disseminated and discussed. Data recording sheets were presented and reviewed. Data collection procedures were modeled by the researcher, followed by opportunities to practice with the recording sheet.
2. *Video tape recording.* The second training phase involved observation and coding of video taped classroom instruction scenarios. Observers coded with the researcher until an inter-observer reliability of at least 90% was achieved during three consecutive training sessions.
3. *In-vivo training.* The third and final phase of training involved observation and coding in an actual classroom setting during literacy mini lessons. Observers were required to code with the researcher and other observers until an inter-observer reliability of at least 90% was achieved during three consecutive training sessions in non-participant teacher's classrooms.

Inter-observer Agreement

One data collector was assigned to serve as the primary data collector. Inter-observer agreement was collected in 30% of randomly assigned sessions across each condition (i.e., baseline, intervention, and maintenance phases). Reliability for frequency

data was computed by dividing the total number of agreements by the total number of intervals and then multiplying by 100. Reliability for duration data was computed by dividing the smaller amount of time by the larger and multiplying by 100. Reliability data were reviewed weekly by the researcher. Additional training was implemented if reliability dropped below 85%.

Post Intervention Follow-up

Upon completion of this study, follow up data were collected. Post intervention data was collected using the school age version of the SSRS-T, student academic achievement scores were collected from student work samples and district literacy assessments, and a report of student disciplinary referrals was generated from the School Wide Information System (SWIS) utilized for this purpose (May, Ard, Todd, Horner, Glasgow, Sugai, & Sprague, 2000). Direct observations were also conducted in all three classrooms a month following the end of the intervention to assess maintenance effects.

Social Validity

A questionnaire was given upon conclusion of the study to assess the subjective views of participating teachers. The questionnaires assessed participant perceptions of a) the effectiveness of the reciprocal peer coaching process, b) whether or not the participants believed that the outcomes were significant enough to warrant the intervention, c) whether the intervention could be replicated with ease, and d) whether the data feedback or the coaching and plan development were most beneficial. All seven of the questions had lickert scale replies, but the scale for question 1 was scaled 1 = low to 5 =high, while for questions 2 through 6 the scale was 1 = high/highly favorable to 5 = low/unfavorable. For question 7 teachers were asked to rate the components of the peer

coaching cycle using a scale of 1 = most helpful; 3 = neutral; 5 = least helpful (Appendix K).

Design

A single subject multiple-baseline design across individuals was used to answer the proposed research questions (Kazdin, 1982). The use of single subject design was appropriate for this study for two reasons. First, one of the strengths of single subject designs is that it allows the demonstration of a reliable functional relationship between the independent and dependent variables. Second, although the small number of subjects used in single subjects typically limits the generalizations, external validity can be enhanced through repeated demonstrations of experimental control across different settings and subjects (Kazdin, 1982; Lali, Browder, Mace, & Brown, 1993).

A multiple-baseline across subjects was used for three reasons. First, the design is especially suited to situations where a particular behavior or set of behaviors in need of change are constant among different persons. Second, multiple-baseline design is highly preferable to a withdrawal or reversal design, particularly when reversals to baseline conditions would be challenging or problematic (e.g., when attempting to increase teacher practice with specific skills). Third, the gradual application of the intervention allows for early assessment of a model intended for widespread application (Kazdin, 1982).

Baseline data were gathered for student and teacher behavior. The design began with baseline observations of the same behavior for each participant. After the behavior of each participant reached a stable rate, the intervention began with Teacher One while baseline conditions continued for the remaining participants. When a clear pattern of

intervention data with Teacher One was observed, intervention began with Teacher Two, while baseline conditions were maintained with Teacher Three. Once a clear pattern of intervention data with Teacher Two was observed intervention began with Teacher Three. Follow-up data were collected at the end of the school year to assess the maintenance of change two months after the reciprocal peer coaching sessions were terminated.

CHAPTER III

RESULTS

Overview

For the purpose of assessing the functional relationship between the implementation of peer coaching and teachers' use of the OTR components (academic prompting, wait time, and positive performance feedback) and target students' off-task behaviors, teacher and student behavior data were collected daily and plotted. Visual analysis of data included inspections for changes within and across phase. Specifically, levels of performance and the direction and degree of trends that occurred were examined (Tawney & Gast, 1984). Other analyses included descriptive pre and post comparisons. Results are discussed below by research question.

Research Question One: *Does teacher knowledge of DIA and OTR practices increase as a result of the reciprocal peer coaching intervention?*

Individual teacher knowledge of the instructional variables targeted were assessed pre intervention through the use of a classroom inventory checklist (Appendix J) that was distributed at the beginning of the building-wide staff development. Teacher knowledge of the targeted instructional variables was assessed post intervention through review of the audio taped process review sessions that were held at the end of every peer coaching cycle. The data indicate that none of the teachers had prior knowledge about the optimal rate of academic prompting or the optimal minimum amount of wait time, but all three were knowledgeable about the 4:1 for positive to negative feedback. Increased knowledge of instructional variables was documented as "attained" when accurate commentary was first heard during the audio tape reviews. As such the documentation of

attainment varied for each teacher participant and in some cases for each variable (see Table 8). Teachers one and two indicated an increase in their knowledge regarding the two remaining targeted instructional variables based on their audio taped process review sessions with their peer coaches. Teacher Three indicated knowledge of optimal wait time targets through her taped discussions with her peer coach, but did not directly state what an optimal prompting level would be during any of the audio taped process review sessions. After maintenance data were collected the study author met briefly with teacher three to discuss the optimal levels for the instructional variables of academic prompting and wait time and she was able to correctly verbalize the target levels for both variables in question.

Table 8

Participating Teacher Knowledge of Prompts, Wait Time and Feedback

Teacher		Prompts: What is the suggested rate of opportunities to respond when content is familiar to students and responses are at a factual level?	Wait Time: What is considered the optimal amount of wait time following an academic prompt?	Feedback: What is considered an optimal ratio of positives to negatives?
Teacher One	Pre	I don't know! I am only a first year teacher with a lot to learn.	30 seconds	4:1
	Post	"I made it to 3.4 prompts per minute during your observation. WOW! I was above the **target of 3 per minute**! My goal will be to stay close to that level of prompting." - Cycle 1 of Peer Coaching	"My wait time was only 1.5 seconds per prompt. I will work to double that so that I get closer to the **optimal of 3 seconds wait time** per prompt." - Cycle 2 of Peer Coaching	"By increasing my rate of prompting and focusing on giving feedback for academics and not just behaviors I gave 9 positive statements and 2 negative statements today. So that means **I met he 4:1 goal**!" - Cycle 4 of Peer Coaching
Teacher Two	Pre	I provide many questions to individual students, but then I also ask (other) students to raise their hand if they agree/disagree.	10-15 seconds	4:1
	Post	"I guess I'd like to increase my academic prompts, as the **optimal is 3 per minute**." - Cycle 1 of Peer Coaching	"I guess I need to know how to give more WT. Does calling on a specific student who can answer immediately, change or effect the data? I'd like to increase to **3 seconds** if a kid needs it" - Cycle 1 of Peer Coaching	"I did 7:0 on feedback so I did great, above the **4:1 goal.** I didn't have to deal with behavior! I want to continue, but I want to give more clear feedback to my kids instead of the ambiguous feedback." -Cycle 2 Peer Coaching
Teacher Three	Pre	Left blank	15 seconds	4:1
	Post	"I think I am fine with 24 prompts in 10 minutes." -Cycle 1 Peer Coaching	"Although I gave less than 1 second per prompt, all responses were accurate, so they didn't need the **3 seconds** to respond." -Cycle 1 Peer Coaching	"I want to have a **4:1** for behavior as well as academics" - Cycle 2 Peer Coaching

Implementation Fidelity

All dyad discussions were audio taped and the study author completed a process review form (Appendix F) for each session to corroborate the scoring completed by each dyad. There was 100% agreement between the study author and the dyads on all scoring of process review forms, with a range of 92-100% components completed and an average of 97% for Teacher One, while 100% of process review components for both Teachers Two and Three were completed during all PC cycles. As one of the larger purposes of this study was to ascertain the effectiveness of incorporating peer coaching to increase SBR within the natural context of the school day (e.g., limited time for planning or collaboration, preparation for and implementation of standardized testing, student or staff illness, school-wide assemblies or other changes in daily schedule outside of teacher control) loose criteria regarding how often peer coaching cycles were implemented were given to each dyad (Hockenbury et al., 2000; Lewis, Sugai, & Colvin; 1998). All three dyads were asked to attempt one peer coaching cycle per week after their training session. In order to support weekly implementation of peer coaching cycles all peer coaching dyads in the building were offered the option of release time that would be organized by building administrators, at no expense to the teachers, for time to implement the peer coaching cycles. Teacher One completed 4 PC cycles over 6 weeks, Teacher Two completed 3 PC cycles across 4 weeks, and Teacher Three completed 3 PC cycles across 3 weeks.

None of the peer coaching dyads in this study, or in the building wide staff development activity, took advantage of this release option. Instead, in all 3 dyads the participants compared schedules and utilized naturally occurring release times to observe

each other's classrooms during instructional periods that included whole group literacy instruction. Dyads met before and after school or during mutually free times (e.g., common lunch periods) to hold Request for a Visit, Talk after the Visit, and Process Review sessions.

Research Question Two: *Does teacher use of OTR instructional components increase as a result of the peer coaching intervention?*

Overall findings indicate mixed results regarding whether or not teachers can increase their rates of targeted instructional strategies following reciprocal peer coaching (see Table 9). Specific outcomes are further discussed by individual instructional variables below.

Table 9

Teacher use of Target Instructional Variables by Phase

	Teacher 1				Teacher 2				Teacher 3			
	AP	WT	PF	Student On Task	AP	WT	PF	Student On Task	AP	WT	PF	Student On Task
Average during Baseline	2.91	0.31	0.33	72.00	4.06	0.40	1.28	56.25	3.33	0.70	1.43	73.95
Average during Training	2.11	0.16	0.95	63.00	4.23	0.29	4.0	85.4	2.90	1.02	2.63	59.10
Average during PC	2.72	0.37	0.65	73	4.50	0.58	4.51	91.76	2.39	0.85	4.35	74.18
Average during Maintenance	1.4	0.2	0.3	86.5	3.86	0.67	2.01	89.00	1.33	0.74	2.30	88.00

*AP= Academic Prompts per minute; PF= Positive Feedback ratio to Negative Feedback; WT= Wait Time average seconds per prompt/question

Prompting

The daily frequency of prompts were converted to rate per minute, calculated by dividing the total number of academic prompts observed per session by the total number

of minutes observed. Overall there appears to be no functional relationship between PC and rates of teacher academic prompting (see Figure 1). The target for prompting was 3 academic prompts per minute. During baseline Teacher One's prompts demonstrated slight variability with an overall steady trend that averaged just below the target at 2.91 academic prompts per minute (range 1.58 – 4.25 academic prompts per minute) . During the three days between the dyad's peer coaching training and the implementation of the first PC cycle, Teachers One's prompting decreased slightly in level and held steady. After intervention her prompting remained slightly variable with a level change near the target range at an average of 2.72 academic prompts per minute, with a slight upward trend. Two sessions of maintenance data demonstrated a level decrease in prompting to an average of 1.4 academic prompts per minute.

For Teacher Two, baseline prompting levels had significant variability, with an overall slight downward trend that remained above the target rate with 4.06 academic prompts per minute. During the five days between the dyad's peer coaching training and the implementation of the first PC cycle her prompting had a level trend remaining just above 4.23 academic prompts per minute (range 2.8 – 6.92 academic prompts per minute). For the duration of the PC intervention Teacher Two's prompting had less variability with an overall flat trend that remained at an average of 4.5 per minute. Three sessions of maintenance data demonstrated variability for prompts with an overall decrease, but the level remained slightly above the target at an average of 3.86 prompts per minute.

For Teacher Three the baseline levels of prompts demonstrated moderate variability from below, to right at the target range with an average of 3.3 academic

prompts per minute (range 2.17 – 5.58 academic prompts per minute). During the five days between the dyad's peer coaching training and the implementation of the first PC-cycle her prompting had a slightly variable range somewhat below the target level at 2.90 per minute. For the duration of the PC intervention Teacher Three's prompting had a moderately variable rate that remained at an average of 2.39 per minute, just below the target level. During the three days of maintenance Teacher Three's prompting demonstrated a downward trend that was significantly below the target level, at an average of 1.33 academic prompts per minute.

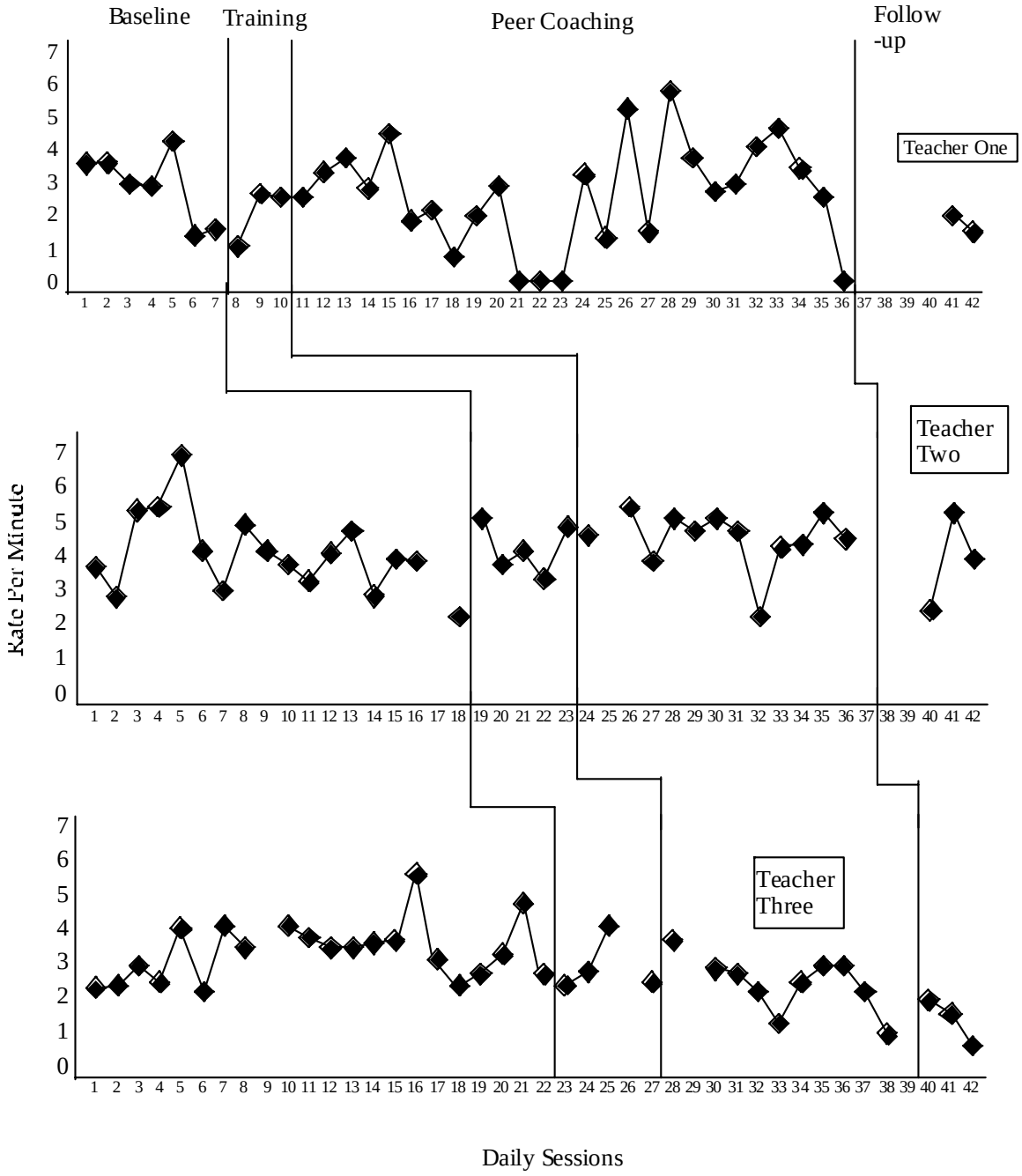

Figure 1

Rates of Teacher Prompting Across Baseline, Training and Peer Coaching

Wait Time

Wait time was converted to an average duration per prompt, calculated by taking the total duration of wait time per teacher observation divided by the total number of prompts per observation. The optimal amount of wait time identified by the literature is 3 seconds per prompt. Overall there appears to be no functional relationship between PC and rates of teacher wait time (see Figure 2). Wait time for Teacher One was slightly variable throughout the study, but at a fraction of a second wait time per prompt, it was well below the target range of 3 seconds per prompt throughout the baseline (range .15 - .53 seconds per prompt). And this fractional wait time persisted throughout PC training, intervention and maintenance phases. For Teacher Two, wait time was slightly variable but overall significantly below the target level, averaging at a fraction of a second per prompt, during both baseline (range .13 – 1.28 seconds wait time per prompt). A similar fractional wait time continued across PC training, intervention and maintenance phases. Wait time was also slightly variable and significantly below the target level, at an average of less than 1 second wait time per prompt for Teacher Three throughout all phases with a baseline range of .23 – 2.1 per prompt..

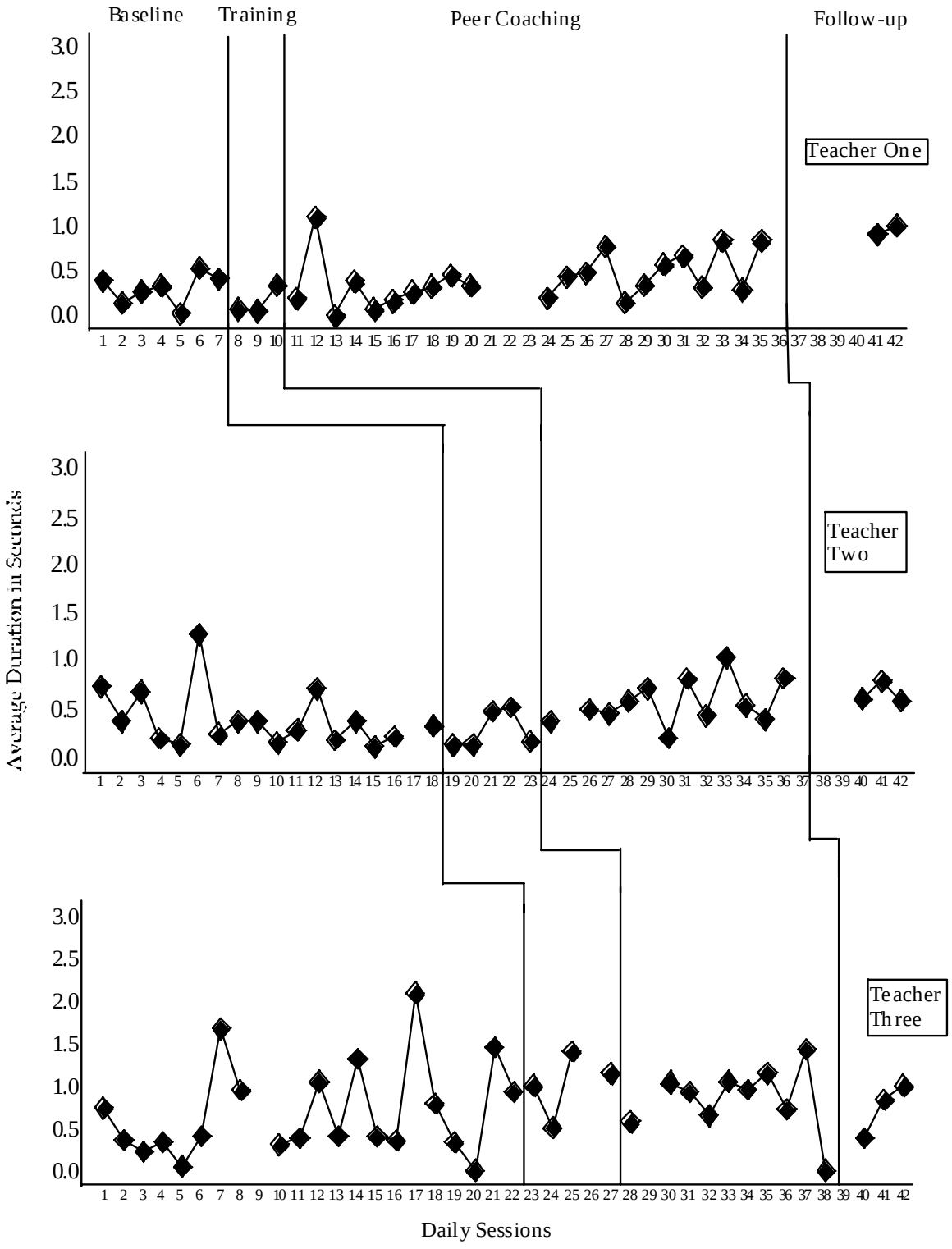

Figure 2

Teacher Wait Time in Seconds across Baseline, Training and Peer Coaching

Positive Feedback

Teacher feedback was converted to a ratio, calculated by dividing the total number of positive feedback statements per observation by the total number of negative feedback statements per observation. Overall there appears to be a mixed functional relationship between PC and rates of teacher positive feedback (see Figure 3). The optimal ratio of positive to negative feedback is 3:1. Baseline feedback ratio for Teacher One was 0.33 positive statements given for each negative statement (range .1 - .94 positives to negative ratio), which increased to a ratio of 0.65 positive statements for each negative statement during intervention. Her ratio of feedback returned to baseline levels during the maintenance phase. Baseline feedback for Teacher Two demonstrated significant variability that remained at an average of 1.28 positives to negative ratio (range .3 – 3.0 positives to negative ratio). Her feedback demonstrated a level change to 4.0:1 ratio, which maintained with a slight upward trend during intervention, averaging at 4.51:1 ratio. Three sessions of maintenance data demonstrated variability for feedback which demonstrated an overall decrease to 2.0:1 ratio. Baseline feedback for Teacher Three demonstrated significant variability from far below the 3:1 target to significantly above the target with a slight increasing trend that averaged 1.13:1 ratio (range .45 – 8 positives to negative ratio). Feedback for Teacher Three demonstrated significant variability from low to high during the PC training phase, while during intervention her feedback demonstrated greater variability with a slight upward trend at a ratio of 4.35:1 ratio. During three sessions of maintenance data feedback demonstrated a steep downward trend slightly below to a 2.30:1 ratio.

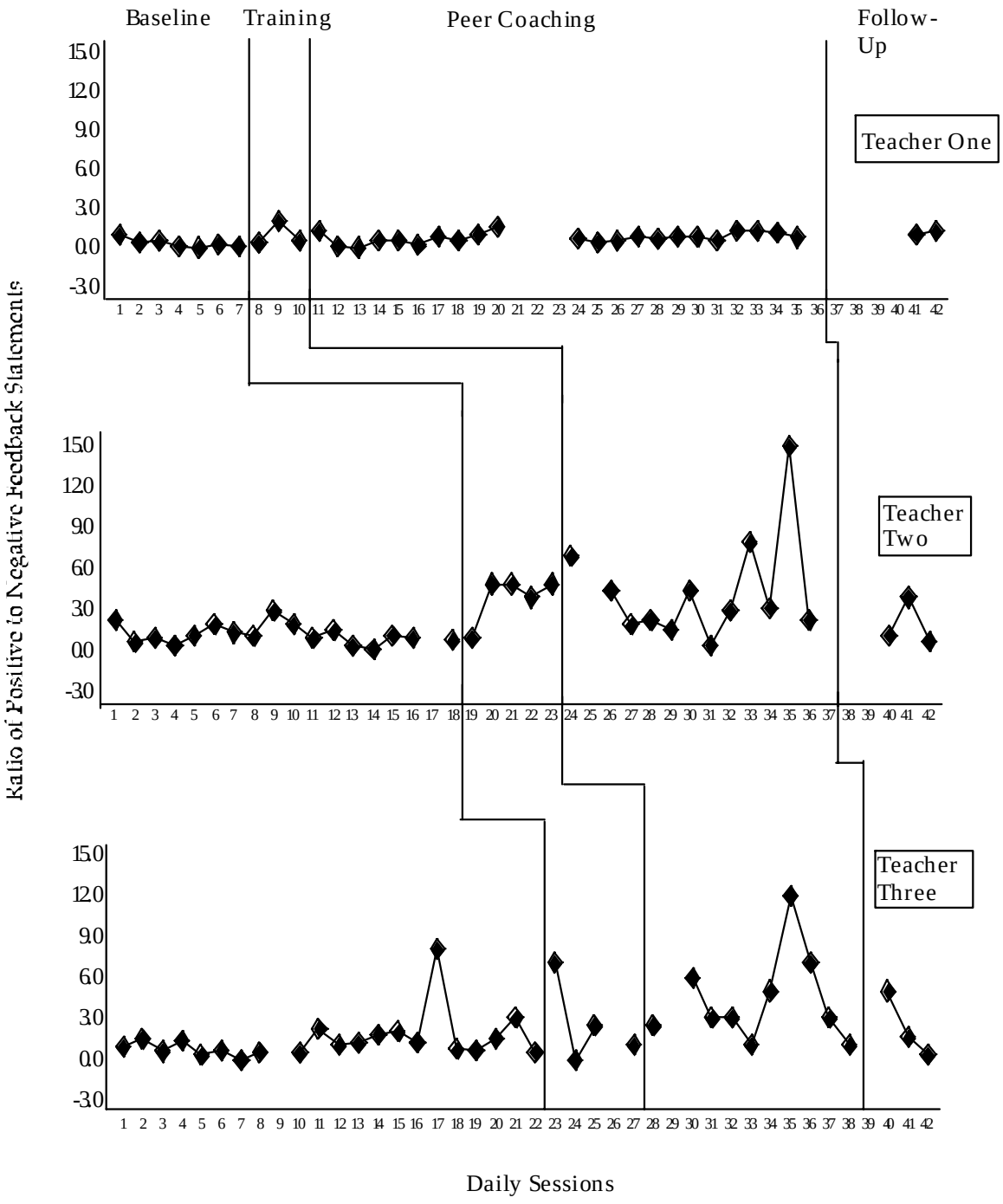

Figure 3

The Ratio of Positive to Negative Teacher Performance Feedback

Research Question Three: *Does change in teacher practice result in change in student engagement during academic instruction?*

Teacher and student behaviors were plotted on a single graph to assess the functional relationship between the implementation of reciprocal peer coaching on teacher use of the component elements of OTR and student behavior. For comparison purposes, teacher behavior was converted to a daily percentage of component behaviors at targeted levels. Results fail to demonstrate a clear functional relationship between teacher use of OTR components and student on task behavior (see Figure 4). This finding was not unexpected as there was limited impact between PC intervention and teacher implementation of OTR components at optimal levels. However, there were changes in student percentage of on-task behavior for Students Two and Three when corollary changes in teacher component behavior were observed. For Student Two there was a change in level, variability and trend demonstrating an increase in on task behavior once training for PC began, moving from an average of 56% on task to an average of 85% on task, and this change sustained over the course of the PC intervention. Student Three demonstrated significant variability of on task behavior during baseline with an average of 74% during this phase. There was a significant downward trend during training to an average of 60%, but once PC began the variability and level of on task behavior reverted to baseline pattern of an average of 75% on task. Student Three demonstrated an increase in on task behavior to an average of 88% during the maintenance phase. On task behavior for Student One demonstrated slight variability with a moderate upward trend during baseline averaging near 72%, with a slight change in level during training to 63% on task. Student One's on task behavior then reverted to baseline levels once PC began,

demonstrating no change in trend or variability from the end of training throughout the PC intervention. During maintenance the on task behavior of Student One rose to an average 86% on task.

While there is no clear overall functional relationship between the intervention and student behavior across the three baselines, there are some interesting trends in the data. When teacher use of OTR components went up, behavior improved and, when use of OTR components decreased so did student on-task behaviors across the three diads.

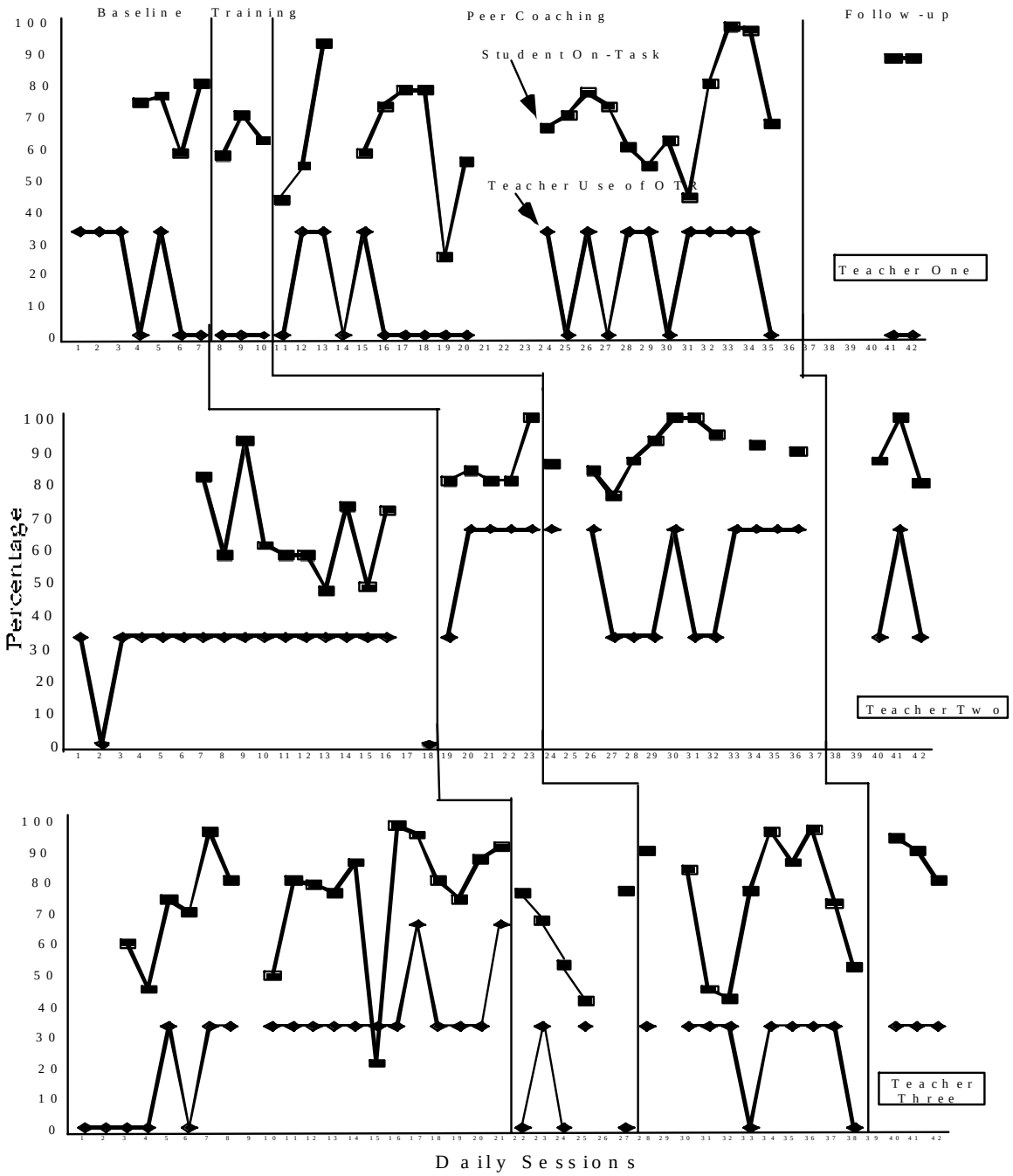

Figure 4

Percentage of Teacher Implementation of OTR Components at Targeted Levels and Student On-Task Behavior

Pre/Post SSRS-T Ratings

Teachers completed the school age version of the SSRS-T for each individual student prior to intervention, and following the completion of the maintenance phase. For Students One and Two overall ratings in the social skills and problem behaviors reveal positive direction changes between pre-scores and post-scores. For Student Three social skills remained fewer and problem behaviors remained above throughout the duration of the study. Table 9 lists the Pre- and Post- measures for each target student. Overall ratings for social skills and problem behaviors are presented, including behavioral levels for each, standard scores and percentile rank.

Table 10

Pre- and Post-test Scores for Target Students on Dependent Variable (SSRS-T)

		SSRS-T Social Skills		SSRS-T Problem Behaviors	
		Pre-score	Post-score	Pre-score	Post-score
Student One (male)	Total	27	37	12	5
	Standard	85	96	106	90
	Percentile	16	45	66	25
Student Two (female)	Total	30	37	14	12
	Standard	82	89	116	112
	Percentile	12	23	95	79
Student Three (female)	Total	19	21	19	25
	Standard	69	72	125	133
	Percentile	2	3	95	> 98
SSRS Scales for total score:	Below	Girls 0-33 Boys 0-27		Girls 0-2 Boys 0-3	
	Average	Girls 34-53 Boys 28-51		Girls 3-13 Boys 4-17	
	Above	Girls 54-60 Boys 52-60		Girls 14-36 Boys 18-36	

Disciplinary Referrals

Disciplinary referrals reports pre intervention to post intervention show mixed results for Student One, no change for Student Two, and a drop of 2/3 for Student Three, but a three fold increase in major referrals (see Table 11).

Table 11

Pre and Post Student Disciplinary Referral Data

	Disciplinary Referral Data			
	Pre-Intervention		Post-Intervention	
	Major Offense	Minor Offense	Major Offense	Minor Offense
Student One	0	2	1	0
Student Two	0	0	0	0
Student Three	1	6	3	2

Academic Achievement

The specific SBR strategies taught to the teachers through PC appear to have had little effect on student achievement. This finding regarding a lack of impact on student achievement would not be unexpected as the data regarding the effect of PC on teacher instruction demonstrated little change in teacher practice. Student One demonstrated literacy skills slightly below level before the PC intervention, and although he did make progress in reading and writing during intervention, something one would expect given instruction continued across the study, his skills remained below grade level targets. Student Two demonstrated literacy skills below grade level prior to the PC intervention and although she made some academic gains, her writing and reading skills remained

below grade level targets. Prior to PC intervention Student Three had writing scores below grade level targets, with reading scores well above grade level targets. Post intervention scores indicate she made some progress in writing, although her achievement remained below grade level targets, and she made no discernable growth in her reading levels. Actual scores on literacy assessments are contained in Table (12) below.

Table 12

Pre and Post Student Writing and Reading Scores

	Academic Achievement			
	Writing Assessment		Reading Assessment	
Target Student	Pre Intervention	Post Intervention	Pre Intervention	Post Intervention
Student One	DWA* - 1	DWA - 2	DRA^ - A (A)	DRA – 3 (4)
Student Two	DWA - 2	MAP# - 2	DRA – 28 (30-32)	DRA – 34 (38)
Student Three	DWA - 2	DWA – 2.5	DRA – 28 (18)	DRA – 28 (28)

*District Writing Assessment (DWA) 1 = needs improvement, 2 = nearing proficiency, 3 = proficient, 4 = exemplary

#Missouri Assessment Project Performance Event – Writing (MAP) 1 = needs improvement, 2 = nearing proficiency, 3 = proficient, 4 = exemplary

^Developmental Reading Assessment (DRA) - District Goal in Parenthesis

Inter-observer Agreement

A second data collector collected direct observation data on teacher and student behavior across the three classrooms and study phases. Reliability data were collected across 33% of the total observations. Average inter-observer agreement across all phases

of the study was 88.3 % (range 81% -99%). For Teacher One reliability data was collected across 31% of all observations. Overall inter-observer agreement was 91% (range 85%-96%). for teacher variables it was 91% (range 85% - 97%), and for student variables it was 90% (range 80%-96%). For Teacher Two reliability data was collected across 36% of all observations. Overall inter-observer agreement was 86% (range 81%-97%). for teacher variables it was 86% (range 81% - 97%), and for student variables it was 87% (range 82%-100%). For Teacher Three reliability data was collected across 32% of all observations. Overall inter-observer agreement was 90% (range 81%-97%). for teacher variables it was 90% (range 80% - 98%), and for student variables it was 88% (range 84%-100%).

Research Question Four: *Do teachers find a reciprocal peer coaching process beneficial for improving their knowledge and use of effective practices?*

A seven item social validity questionnaire was administered upon completion of this study in order to assess the subjective views of the participating teachers. Teachers One and Two indicated a great deal of support was required to implement peer coaching, with Teacher Three indicating a moderate level of support was needed. Teacher One indicated that peer coaching was somewhat manageable, while Teachers Two and Three indicated the intervention was moderately manageable. All three teachers indicated that the intervention was somewhat better then other forms of staff development, with Teacher One indicating that her changes in instructional practice had been meaningful, with Teachers Two and Three indicating their instructional changes as a result of the intervention had been somewhat meaningful. Teachers One and Two found change in student behaviors somewhat meaningful, while Teacher Three indicated that student

changes were not meaningful. Teachers One and Three would recommend peer coaching with moderate enthusiasm, while Teacher Two indicated she would recommend peer coaching with unquestionable enthusiasm.

When considering individual components of the peer coaching intervention all three teachers rated discussion of their own data and observing and data collecting in the classroom of a peer as either the most, or second most helpful. Transformation of observational data was considered third most helpful by Teachers One and Three, with Teacher Two rating it a 4. Process review to ensure that all components were included received ratings by the teachers of 5, 3 and 4 respectively, and the request for a visit when the coachee narrows the focuses of the visit receiving ratings of 4, 5 and 5 respectively (Appendix L).

CHAPTER IV

DISCUSSION

Overview

The purpose of this study was to examine the effects of reciprocal peer coaching (PC) on teacher implementation of the components of Opportunities to Respond (OTR). The focus of this study was on the implementation with integrity of a reciprocal peer coaching process that was designed to promote increased collegiality, increased teacher knowledge of OTR and to promote teacher use at recommended levels the component variables of OTR including; praise, wait time (WT) and positive feedback. In addition to examining if peer coaching could produce change in teacher behavior, this study was also designed to examine whether a change, if any, in teacher instructional practice effected a change in the off-task behaviors of targeted students who were identified as being at-risk for E/BD.

There are only a relative handful of studies that have examined the use of reciprocal peer coaching to increase teacher use of scientifically based research (SBR) practices in general (Hasbrouck, 1997; Hasbrouck & Christen, 1997; Kohler et al., 1997; Morgan et al., 1994; Phelps & Wright, 1986) or that specifically utilize reciprocal peer coaching to increase teacher use of OTR as a package (Stichter et al., 2006). As with prior work on peer coaching, participating teachers perceived the PC process as beneficial for increasing their knowledge and implementation of effective instructional practices. Additionally findings in the present study demonstrated modest change in teacher behavior at the conclusion of PC (Hasbrouck, 1997; Hasbrouck & Christen, 1997; Kohler et al., 1997; Morgan et al., 1994). While only two prior studies could be found,

outcomes from this investigation also demonstrated modest changes in student behavior as a result of increasing teacher use of effective strategies through the PC process (Showers, 1984; Stichter et al., 2006). This study also found, similar to previous research, that participating teachers report increased collegiality results from the implementation of a useable PC process (Hasbrouck, 1997; Hasbrouck & Christen, 1997; Stichter et al., 2006).

In addition to adding to the limited empirical analysis of PC, this study extends the current knowledge base in several important ways including the direct observation of a) the peer coaching process, b) teacher instructional behaviors, and c) the social behaviors of individual at-risk students. Additionally, the participants were all in-service level teachers who volunteered to implement a structured form of PC while the majority of prior work in this area has been conducted with pre-service teachers.

Given the largely descriptive and non-experimental nature of prior work on the efficacy of PC, a central purpose of this study was to examine the impact of PC on teachers and students through a controlled, single subject study that employed multiple measures. Specifically, while the results did not demonstrate clear and strong functional relationships between the intervention and changes in teacher behavior which then had corollary changes in students behavior, this study adds to the previous knowledge base, and calls into question the promotion of PC when examined with rigor. Through the combination of multiple measures and a clear research design, this study investigated a) whether reciprocal peer coaching dyads implemented the PC process as taught with integrity, b) direct observation of teacher use of OTR components following the PC process, c) the functional relationship between teachers' increased use of OTR

components and student rates of off-task behavior, d) the maintenance of OTR component usage beyond the intervention, and e) the social validity of the PC process for participating teachers.

Overall, participating teachers implemented the PC process with integrity. Although all three teacher participants were observed to increase twofold their delivery of positive feedback over time, none was able to increase their WT, and academic prompting remained at levels similar to pre-intervention. There appears to be a functional relationship between the change in teacher feedback behavior and student off task behaviors for one of the three dyads. All teacher participants perceived the experience as beneficial for increasing knowledge and implementation of SBR practices. Specific findings related to each of the purposes are discussed by research question below. Limitations of the study are provided and recommendations for future research and implications for practice are also discussed.

Does teacher knowledge of DIA and OTR practices increase as a result of the reciprocal peer coaching intervention? Although limited to three participants, the findings indicate that teachers who display lack of knowledge regarding optimal levels of implementation of target instructional variables can increase their knowledge and understanding of these variables through the implementation of staff development activities including a structured PC process. Each of the participating teachers had prior knowledge regarding optimal feedback ratios and this is possibly reflective of a building-wide Positive Behavior Support (PBS) process that initiated an ongoing dialog to boost positive feedback to all students. All three teachers demonstrated increased knowledge regarding optimal levels of prompting and WT through responses on pre- and post-

questionnaires. Increasing a teacher's knowledge of SBR practices through the PC process potentially makes the interventions more concrete and specific, thereby leading to an increased understanding of the intensity of application necessary for effective application of the interventions (Gersten & Domino, 2001; Greenwood & Abbott, 2001; Klinger et al, 2003; Lewis et al, 2004; Malouf & Schiller, 1995).

Additionally, all of the participating teachers were able to accurately relate their personal current practice to the SBR levels that had been discussed during the PC training and then reflect on how their implementation or lack there of was specifically impacting the target student and their entire class in general, a skill that has been observed to be heightened in coached teachers (Showers, 1982; 1984). Each teacher also had a follow-up interview via email with the study author at the beginning of the following academic school year. All three teachers were able to articulate the optimal levels for each instructional variable, and this long-term (i.e., six to nine month) retention of knowledge about strategies by coached teachers is comparable to other peer coaching studies (Baker & Showers, 1984).

This increased knowledge of SBR practice, and why it is important to alter instructional practice to improve outcomes for students at-risk for or with EB/D (Boduah, et al., 2001; Klinger et al, 2003) can serve as a powerful stimulant to teacher change (Gersten et al., 2000). Because teachers rarely believe that new practice is better than what they currently do, increased knowledge is a critical first step in the teacher change dynamic: teacher improved knowledge of practice and related student outcomes, leads to change of practice, which leads to teacher change in belief and motivations and ultimately sustained change in practice (Guskey, 2000).

This study extends the current knowledge base that supports the use of peer coaching for increasing teacher knowledge growth (Hasbrouck, 1997; Hasbrouck & Christen, 1997; Kohler et al., 1997; Morgan et al., 1994; Stichter et al., 2006). This study differs from previous teacher change studies in that it increased teacher facility with instructional practices theory without the extensive technical assistance (Covington, 2004), extended observation sessions (Christle & Schuster, 2003), or extensive data collection procedures (Morgan, Menlove, Salzburg & Hudson, 1994) described in these previous studies.

Does teacher use of OTR instructional components increase as a result of the peer coaching intervention? Guskey (2000) noted that change is a gradual process for teachers, so although teachers in this study were able to articulate knowledge of best practice, actual practice varied across and within teachers. Showers (1984) postulated that when a teacher changes even slightly what they do, it can unbalance the rest of their practice. In this study none of the teachers was able to improve delivery of all of the individual instructional variables to optimal levels at the same time. Additionally, some of the teachers demonstrated an increase in one variable, while demonstrating a decline in one or both of the others. This variable response to a change initiative mirrors Showers (1984) premise and is comparable with other research findings where teacher delivery of specific instructional variables dropped slightly during dissemination of information regarding the variable (Stichter et al., 2006). Perhaps as the teachers are spending extra time in reflection on their instructional practice, it actually slows down delivery of the variables they are reflecting on. In this study two teachers demonstrated a slight dip in

prompting, one of which rebounded and the other did not, while the third teacher demonstrated an increase in prompting until the maintenance phase.

None of the teachers was able to sustain an increase of WT above 1 second per prompt through the use of a PC process. This outcome is indicative of what WT studies such as Rowe (1974a) discovered, namely that teacher WT could only be increased by an individual holding up a red sheet of paper, thereby serving as a visual stimulus for teachers to pause. Once the paper cue was removed teachers reverted to former average WT of less than one second. Although Tobin (1983) did not describe how the increased WT was achieved, only 8 of the 13 participants were able to attain the optimal WT, and once the study was over all teachers reverted to their previous WT levels of less than 1 second.

It is possible that PC was not in place long enough or was not strong enough a stimulus for sustained teacher change on this instructional variable (Rowe, 1974a). Another possibility is that although teachers knew what the optimal WT is, they did not find it necessary or important to provide this variable at the recommended level. For example, Teacher Three indicated during her PC cycle 2 discussion, “Although I gave less than 1 second per prompt, all responses were accurate, so they didn’t need the 3 seconds to respond.” Although all students called upon did respond correctly, not all student had time to raise their hands to indicate they were ready to reply before the teacher had called on someone. This teacher had not yet internalized the rationale behind providing sufficient WT to increase the likelihood that all students could reply (Kilinger et al., 2003; Rowe, 1974a). Perhaps the teachers did not find the silence of WT as reinforcing as immediate and accurate responding. These findings are dissimilar to those

of Stichter et al. (2006) whose findings indicated that 3 of 4 participants improved their WT, although only one improved their WT to the criterion level.

All three participants increased their ratio of positive feedback. Teacher One doubled her ratio of positives, but her overall ratio remained negatively oriented. It is possible that this teacher inadvertently fell into a "criticism trap" of punishing inappropriate behavior by giving gentle reminders, when in actuality she was reinforcing the inappropriate behavior with attention (Maag, 2001). The remaining two teachers almost tripled their average delivery of a positive to negative ratio, each to a level that was above the optimal suggested by research. As positive feedback typically serves as a confirmation of correct academic responding, it is the instructional variable that is potentially the most reinforcing to the teachers themselves (Sutherland, Wehby, & Yoder, 2002).

The daily delivery of positive feedback for all three participants was somewhat variable, but it was comparable in variability to other studies (Breyer & Allen, 1975; Mesa, Lewis-Palmer, & Reinke, 2005), and the percentage of teachers who changed their overall delivery of positive feedback was comparable to other studies (Mesa, Lewis-Palmer, & Reinke, 2005; Stichter et al., 2006; Sutherland, Wehby, & Yoder, 2002). Although maintenance levels of positive feedback remained above baseline levels, they fell below the optimal ratio attained during the intervention phase, a finding supported by other research on positive feedback (Mesa, Lewis-Palmer, & Reinke, 2005).

Although none of the participants was able to change their delivery of all three instructional variables to the optimal levels, all increased their delivery of at least one variable, and two teachers were able to meet the criterion level. These findings are similar

to those of the only other reciprocal PC study that provided information regarding the fidelity of the implementation of PC. In Stichter et al. (2006) all four participants increased their delivery of at least one variable, but only one of the four teachers in the PC group was able to increase her delivery of any of the OTR components to the criterion levels. This teacher was able to increase her delivery of feedback and WT to the criterion levels, while also increasing her delivery of the prompts, although not to criterion levels. Two of the remaining teachers were able to increase their delivery of two of the OTR variables, and one was able to increase the delivery of one, but none of these teachers met the criterion levels. One of the primary differences between the current study and the Stichter and colleagues (2006) study was the length of the study and the number of PC cycles (e.g., seven weeks with three to four PC cycles in this study versus sixteen weeks with eight PC cycles) and herein lies a potentially critical factor for teacher change.

Gersten and colleagues (1995) proposed that if teachers implement new practices with intensity and fidelity, long enough to result in anticipated behavioral and academic gains, the teachers would then be more likely to demonstrate the new skill reliably and over time. In essence the current participating teachers were not able to implement the variables of prompts and WT at the intensity and for a sufficient duration of time to receive a return that was significantly motivating (i.e., improved student attention and academic achievement) in order to persist at the change in practice. In many cases the awkwardness of teacher change is frequently enough of a distraction to ensure an eventual returns to the former “smooth,” if less efficient instructional performance (Showers, 1984).

Does the change in teacher practice result in a change in student engagement during academic instruction? Teacher change in instructional practice was variable across and within teachers in this study; as a group, the teachers did not show appreciable change in two instructional variables and only two teachers demonstrated change in the third instructional variable. As a result, change in student on task behavior was in proportion to teacher change. Because there was marginal change in teacher prompting there are presently no conclusions that can be made regarding this instructional variable and student on task behavior. Additionally as teacher WT remained below one second per prompt throughout the majority of the study for all three teachers, no conclusions can presently be made regarding this instructional variable and student off task behaviors.

Although the daily delivery of feedback was somewhat variable for all teachers, Teachers Two and Three increased their average ratio of positive to negative feedback above optimal levels. While Teacher One did in fact double her ratio of positives to negatives, the ratio remained proportionally negatively focused, and as a result there was no appreciable change in the off task behavior of Student One. Although there appears to be a functional relationship for Student Two between increased positives and off task behavior, which decreased 44%, there appears to be no clear functional relationship for Student Three between the teacher's increased ratio of positive feedback and her off task behaviors.

It is however important to note that there were clear patterns of student on-task behavior going up and down, mirroring when teachers' implementation of the OTR components increased or decreased. This finding supports research regarding the

provision of OTR and increased student on-task behaviors (Sutherland, Alder, & Gunter, 2003; Stichter, Lewis, Johnson, & Trussell, 2004).

SSRS-T results for Students One and Two reflected positive differences between pre- and post-test measures on target students' total scores, behavior levels, standard scores and percentile ranks, although this was not the case for Student Three. Both Teachers One and Two indicated in the social validity survey that they found the change in student behavior moderately meaningful, with Teacher Three indicating change in student behavior was not very meaningful. Office Referral data was commensurate to teacher perceptions, with Student One demonstrating an increase by 1 in major referrals, but a decrease by two in minor referrals, Student Two demonstrated no change, with no referrals, and Student Three had a large decrease in minors and an increase in major referrals. Academic outcomes parallel those of perceived and documented behavioral change, with Students One and Two demonstrating moderate growth in literacy measures and Student Three demonstrating negligible growth in writing and no growth in reading.

The current study is only the third PC study to consider student academic outcomes, and only the second study to directly observe student social behaviors in relation to the implementation of PC and the overall student outcomes are somewhat comparable. Showers (1984) reported in a narrative fashion on the academic outcomes for students of coached teachers, indicating that these students had superior knowledge of the concept attainment model (e.g., an inductive reasoning process) that was the focus of the coaching initiative, but did not outscore the students of un-coached teachers on the general measure of the unit contents studied using the newly acquired model. As this student outcome information is more descriptive in nature, and due to the fact that the PC

initiative itself was focused on increasing teacher fluency with an instructional strategy rather than an instructional practice, it is hard to draw direct comparisons to the current study.

In a previous study conducted by Stichter et al. (2006), direct observation data on student behavior noted an increase in problem behavior in all four students across all phases of the study, additionally two of the four students showed no change in office referrals, while one of the remaining students demonstrated an increase in referrals and one demonstrated a decrease. The SSRS data indicated that all teachers perceived that students had demonstrated a decrease in problem behaviors. With regards to academic outcomes, the study reported literacy scores that indicated no change in the literacy scores of three of four student participants with a decrease in literacy scores for the final student, with the SSRS data indicating teachers perceiving that half of the students demonstrated improved academic achievement.

Other studies have reported student change in academic and/or behavioral outcomes that occurred as a result of a change in the classroom environment or teacher instructional practice. Student outcomes in these studies were most frequently reported as individual student percentages of off task and/or problem behaviors in response to increased teacher prompting (Sutherland, Alder, & Gunter, 2003), praise (Sutherland, Wehby, & Copeland, 2000; Covington, 2004; Mesa, Lewis-Palmer, & Reinke, 2005; Sutherland, Wehby & Copeland, 2000; Pfeffner, Rosen, & O'Leary, 1985), or pre-correction (Covington, 2004).

When reporting academic outcomes for students the studies frequently report rates of correct academic responding, percentages of problems completed and accuracy of

completed work for the entire class when provided increased: academic prompting (Sutherland, Alder & Gunter, 2003; Sutherland, Wehby & Yoder, 2002), increased WT (Rowe, 1974a) or increased teacher praise (Pfeffner, Rosen & O'Leary, 1985; Sutherland, Wehby & Yoder, 2002), and in content area achievement when increased WT was provided (Tobin, 1983).

Overall, this body of teacher change literature indicates that both student off task and/or problem behaviors decreased, and student academic outcomes improved when teachers changed delivery of the targeted instructional variables to optimal levels. Direct comparison between this literature base and the current study is challenging due the reporting of student problem behaviors by individual and student academic behaviors by groups. Additionally, this body of literature regarding teacher change either does not describe with replicable specificity, or relied on such a substantial amount of technical expertise or assistance as to make the drawing of comparison inappropriate. However, due to the absence of a clear functional relationship across all three teachers in the present study, and the limitations of past PC work due to weak or absent methodology, no firm conclusions can be drawn between PC and student outcomes.

Do teachers find a reciprocal peer coaching process to be beneficial for improving their knowledge and use of effective practices? All three participating teachers rated the PC experience as beneficial for improving their knowledge and use of the intervention practices, rated their change in practice as either somewhat or very meaningful, and all indicated that they would encourage colleagues to participate in a peer coaching process in the future. Discussing their own data (and the subsequent development of plans for the next time) or observing in another teacher's classroom were ranked as the most helpful or

second most helpful components of the process by all participants. Transforming the data of the peer coach, the process review meeting, and the request for the visit were all rated as being respectively less helpful. This self-reporting supports the concept of reciprocal coaching as a process whereby teachers learn and/or refine their knowledge and application of skills simultaneously, which occurs as a result of watching each other try the strategies in the classroom, and then giving each other constructive feedback (Ackland, 1987; Showers, 1984).

All three teachers indicated that the PC process was somewhat or moderately manageable within the course of the typical day, with ratings of training needed ranging from some to a great deal needed to implement reciprocal peer coaching. In spite of the indication that some training and time were needed to implement PC none of the dyads took advantage of the administrative offer of paid substitutes for release time to implement PC, an offer that could potentially be construed as a demonstration of administrative support for the initiative (Boduah, Logan, & Greenwood, 2001; Glatthorn, 1987). This dichotomy of stating that support was needed, yet not taking advantage of the support that was offered seemed curious. When queried about this after the study all three teachers stated it would have been more work to plan for a substitute than just working around openings in schedules and/or meeting during mutual release times, and before or after school. These teacher ratings are corroborative of findings of Sticther and colleagues (2006) in that although participants in general find the peer coaching process positive, time involved was a challenge and the pre and post conferences were not perceived as helpful.

Limitations of the Study

Several limitations should be considered in evaluating the results of this study. First, this single subject design study was implemented as an exploratory investigation to see if teachers could implement with integrity a systematic process of peer coaching. Although the teachers in the current study were able to implement reciprocal PC with integrity, actual observed changes in behavior were limited. Additional replications across multiple teachers are needed to support the emerging findings of this study.

Another limitation of this study was the stability of the baseline data for the teachers. Although attaining stability across three variables and three teachers was anticipated as a potential challenge, the overall inconsistency of instructional delivery by the teachers on individual variables was unanticipated. Future research in this area will perhaps need to establish a priori decisions regarding means and ranges of the variables investigated for validation of stability prior to intervention implementation. Additionally because some of the teachers were already at or near optimal levels of instructional variable delivery (e.g., prompting), providing little room for growth. Future studies should perhaps have low levels of delivery of all instructional variables as criteria for study inclusion.

In conjunction with the issue of teacher participant selection is a concern with student participant selection. Two of the three students had baseline levels of on task behavior that did not allow for significant improvement. Additionally, teacher perceptions of student social and problem behaviors were only measured with pre- and post-SSRS protocols. As the teacher perceptions were only measured twice across five months, it is unclear whether these measures were truly representative of overall

behavioral growth. In future studies criteria for student participation should be more clearly identified by a mean and range, and more systematic documentation of teacher perceptions should be collected.

Finally and perhaps most importantly, are the practical limitations imposed by the school day and year which predicated the time frame for the study duration. The resulting short duration of implementation warrants particular attention given that the long-term effects of the intervention could not be assessed. Much of the change literature attests to the need for sustained periods of time devoted to reflection on practice. In this instance the time needed to train all participants on the PC process as part of the school-wide effort resulted in PC implementation being restricted to seven weeks. During this relatively brief period of time teachers were required to master implementation of a structured process for classroom observations and feedback (something new to all three participants), while simultaneously reflecting upon and altering to optimal levels their delivery of an interconnected series of instructional practices. Although the outcomes were not as strong as anticipated, the findings do hold potential promise for future practice.

Implications for Practice

While outcomes from the present, and limited past literature base do not warrant the wide spread call for the use of PC as an effective professional development delivery method, there is a primary implication from this study that can inform current practice. Results of this study provide emerging evidence that teachers can implement with fidelity a prescribed process for reciprocal PC. Additionally this study indicates that teachers can enhance their knowledge of SBR instructional practice through the use of reciprocal PC,

and in limited cases their implementation of instructional practices as well. Teachers need ongoing sources of SBR information on instructional practice coupled with a systematic process for reflection in order to support their knowledge of and eventual implementation of these instructional practices. Although none of the participants were able to implement at optimal levels all of the components of OTR, all three demonstrated growth in their working knowledge of optimal instructional practice and promising improvements in their delivery of positive feedback. The collegial systems that a reciprocal PC process provides facilitate the opportunity to observe the impact of emergence of changing practice and resulting student outcomes. This observation of collegial peers and reflection on personal practice is elemental for changing teacher belief about instructional practice, which eventually facilitates personal motivation for instructional change (Guskey, 2000). What is emerging from this and other studies is that although teachers value the PC process, time to implement the components of a reciprocal PC process is a pivotal factor for teacher change (Stichter et al., 2006), and primary implication for future practice is a time related issue.

Time for the ongoing development of collegial communities of practice must be time that is built into the fabric of the instructional day, and not a process that is apart from regular teacher responsibilities and duties (Boudah et al., 2001). Providing substitutes for release time does not in and of itself substantiate the importance of continuing professional growth. Additionally, because of the preparation for and consequences of substitute release time, this support was not considered valuable by teachers. Time for observation, discussion and other forms of teacher reflection of practice must be built into the instructional day, and not an assumption of something

more for teachers do during dwindling planning time, or as is more often the case, something done on personal time.

Recommendations for Future Research

As this study is one of the first in a possible line to examine implementation integrity while simultaneously observing teacher and student behavioral change, additional replications are needed across teachers and content areas for continued empirical validation. Additionally, future research needs to investigate the impact of the sustained implementation of reciprocal PC for extended durations of time. During the current study, reciprocal PC was implemented for a relatively brief period of time. Although results from this study indicated that teacher delivery of one of the targeted variables did increase, a question for future research includes the extent to which teacher change would be possible across all target variables given sufficient time and support.

Another question for future investigations will center on a staggered implementation of the OTR instructional variables to ascertain which instructional variables prove most beneficial. During this study teachers were asked to focus on three instructional variables at the same time, and although all three teachers were able to increase their delivery of positive performance feedback, they demonstrated only marginal change of their promoting and WT behaviors. It is unclear whether the scope of the initiative was too great or if the current teachers were not personally privy to the potential these variables have for changing student behavior because of the initial multiple variable approach. Research indicates that teachers change practice because of perceived benefit for students and not because they perceive their personal practice to be ineffective (Guskey, 2000). Perhaps personal observation of student benefit might prove

pivotal for teachers to change delivery of instructional variables to which they have demonstrated repeated resistance to implementing in past research (e.g. prompting and wait time).

A final question for future research should be to investigate the relative importance of transformational, managerial and instructional leadership on the implementation of reciprocal PC. During this study administrators provided elements that previous studies indicated where necessary for successful implementation of a change initiative, but these factors were not investigated in relationship to study outcomes.

Conclusion

The research community has made great strides to identify academic instructional practices that demonstrate improved academic outcomes for students (Rosenshine & Stevens, 1986). What has continued to vex researchers and school administrators alike is how to increase teacher implementation of these SBR practices which is a requirement of both IDEA (U.S. Department of Education, 2002b, 2002c) and NCLB (CEC, 2004). A synthesis of findings regarding increasing implementation of SBR practices are echoed repeatedly in literature within the special education realm and include that systematically promote collegiality, teacher knowledge and teacher practice (Boudah et al., 2001; Gersten & Domino, 2001; Greenwood & Abbott, 2001; Klinger et al., 2001; Klinger et al., 2003). Peer coaching has been a systematic model that has shown potential promise in providing these essential components for teacher change (Joyce & Showers, 1980,1983; Showers, 1984; Stichter et al., 2006). Findings of this study are encouraging despite the limitations. The findings from the current study corroborate the classroom findings of past research that teachers can implement with fidelity a prescribed and

replicable model of PC (Stichter et al., 2006). The results of this study provide mixed results regarding the success of the PC process in supporting a change in teacher implementation of SBR instructional variables. Furthermore, this study supports that when teachers change practice to deliver SBR instructional variables at recommended levels for sustained periods of time (e.g., across several days) a corresponding increase in the percentage of appropriate student behavior can occur. Additionally this study corroborates past findings that teachers find the PC process useable, trustworthy, and practical, which are recognized issues of significance in the research to practice gap (Carnine, 1995; Kauffman, 1996).

REFERENCES

Abt Associates. (1976, 1977). *Education as experimentation: A planned variation model* (Vols IIIA & IV). Cambridge, MS: Author.

Ackland, R. (1991). A review of the peer coaching literature. *Journal of Staff Development,* 12(1), 22-27.

Alber, S.R., Heward, W.L., & Hippler, B.J. (1999). Teaching middle school students with learning disabilities to recruit positive teacher attention. *Exceptional Children, 65,* 253-270.

Anastos, J. & Ancowitz, R. (1987). A teacher-directed peer coaching project. *Education Leadership,* 45(3), 40-42.

Anderson, L. M., Evertson, C. M., & Brophy, J. E. (1979). An experimental study of effective teaching in first grade reading groups. *Elementary School Journal,* 79, 193-222.

Apling, R. N., & Jones, N. L. (2005, January). *Individuals with disabilities education act (IDEA): Analysis of changes made by P.L. 108-446* (CRS Order Code RL32716). Retrieved February 12, 2005, from www.cec.sped.org/pp/docs/CRSAnalysisof NewIDEAPL108-446.pdf

Arnau, L., Kahrs, J. & Kruskamp, B. (2004). Peer coaching: Veteran high school teachers take the lad on learning. *NASSP Bulletin,* 88(639), 26-41.

Baker, R. G., & Showers, B. (1984). *The effects of a coaching strategy on teacher's transfer of training to classroom practice: A six month follow-up study.* Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.

Becker, W. C. (1977). Teaching reading and language to the disadvantaged: What we have learned from field research. *Harvard Educational Review, 47,* 518-543.

Becker, W. C. (1978). The national evaluation of Follow Through: Behavior-theory based programs come out on top. *Education and Urban Society, 10*, 431-458.

Becker, W. C., & Carnine, D. W. (1981). Direct Instruction: A behavior theory model for comprehensive educational intervention with the disadvantaged. In S. W. Bijou and R. Ruiz (Ed.), *Behavior modification: Contributions to education.* Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Bereiter, C., & Engelmann, S. (1966). *Teaching disadvantaged children in preschool*. Engelwood Cliffs, NJ: Prentice- Hall.

Billups, B., & Rauth, M. (1987). Teachers and research. In V. Richardson-Koehler (Ed.), *Educator's handbook* (pp. 19-29). White Plains, NY: Longman.

Boudah, D.J., Logan, K.R., & Greenwood, C.R. (2001). The research to practice projects: Lessons learned about changing teacher practice. *Teacher Education and Special Education*, 24(4), 290-303.

Bowman, C. L., & McCormick, S. (2000). Comparison of peer coaching versus traditional supervision effects. *The journal of Education Research*, 93(4), 256-261.

Breyer, N. L. & Allen, G. J. (1975). Effects of implementing a token economy on teacher attending behavior. *Journal of Applied Behavior Analysis*, 8(4), 373-380.

Brophy, J. E. (1980). *Recent research on teaching.* East Lansing: Institute for Research on Teaching, Michigan State University.

Brophy, J. H. (1981). Teacher praise: A functional analysis. *Review of Educational Research,* 51(1), 5-32.

Brophy, J.H. (1988). Educating teachers about managing classrooms and students. *Teaching and Teacher Education,* 4(1), 1-18.

Brophy, J. H. & Good, T. (1986). Teacher behavior and student achievement. In M.C. Wittrock (Ed.), *Handbook of research in teaching.* (3rd ed., pp 328-375). New York: Macmillian.

Cameron, J., & Pierce, W.D. (1994). Reinforcement, reward, and intrinsic motivation: A meta-analysis. *Review of Educational Research,* 64(3), 363-423.

Carnine, D. (1995). Trustworthiness, useability and accessibility of educational research. *Journal of Behavioral Education,* 5(3), 251-258.

Christle, C. A. & Schuster, J.W. (2003). The effects of using response cards on student participation, academic achievement, and on-task behavior during whole-class math instruction, *Journal of Behavioral Education,* 12(3), 147-165.

Clarke, S., Dunlap, G., & Stichter, J. P. (2001). A descriptive analysis of intervention research in emotional and behavioral disorders from 1980 through 1999. *Behavior Modification,* 6, 355-374.

Cole, A.L., & Knowles, J. G. (1983). Teacher development partnership research: A focus on methods and issues. *American Education Research Journal,* 30(3), 473-495.

Comenius, J.A. (1907). The Great Didactic. In M. W. Keatinge (Trans.) *The Great Didactic of John Amos Comenius.* London: A & C Black. (Original work published in 1657).

Colvin, G., Sugai, G., & Patching, B. (1993). Precorrection: An instructional approach for managing predictable problem behaviors. *Intervention in School and Clinic,* 28(3), 143-150.

Council for Exceptional Children. (1987). *Academy for effective instruction: Working with mildly handicapped students.* Reston, VA: Author.

Council for Exceptional Children (2004, December). *The new IDEA: CEC's summary of significant issues.* Retrieved December 13, 2004, from http://www.cec.sped.org/pp/IDEA_120204.pdf

Covington, S.*S.*, (2004). The effects of targeted positive behavior support strategies on preschoolers externalizing behavior. (Doctoral dissertation, University of Missouri-Columbia 2002). *Dissertations Abstracts International, 31/37*, 690.

Demaray, M.K., Ruffalo, S.L., Carlson, J., Busse, R.T., Olson, A.E., McManus, S.M., & Leventhal, A. (1995). Social skills assessment: A comparative evaluation of six published rating scales. *School Psychology Review*, 24(4), 648-671.

DePaepe, P.A., Shores, R. E., Jack, S. L. & Denny, R.K. (1996). Effects of task difficulty on disruptive and on-task behavior of students with severe behavior disorders. *Behavioral Disorders, 21,* 216-225.

Doyle, W. (1986). Classroom organization and management. In M.C. Wittrock (Ed.), *Handbook of research in teaching.* (3rd ed., pp 392-3431). New York: Macmillian.

Dunlap, G., & Childs, K.E., (1996). Intervention research in emotional and behavioral disorders: An analysis of studies from 1980-1993. *Behavioral Disorders,* 21, 125-136.

Durlak, J.A. (1995). *School based prevention programs for children and adolescents.* Thousand Oaks, CA: Sage.

Engelmann, S., & Carnine, D. W. (1991). *Theory of instruction: Principles and applications (2nd ed).* Or: ADI Press.

Englert, C. S. (1983). Measuring special education teacher effectiveness. *Exceptional Children,* 50(3), 247-254.

Evertson, C. M., Anderson, C. W., Anderson, L. M., & Brophy, J. E., (1980). Relationships between classroom behaviors and student outcomes in junior high mathematics and English classes. *American Educational Research Journal,* 17(1), 43-60.

Evertson, C. M., Emmer, E. T. & Brophy, J. E. (1980). Predictors of effective teaching in junior high mathematics classrooms. *Journal of Research in Mathematics Education,* 11, 167-178.

Ferguson, E. & Houghton, S. (1992). The effects of contingent teacher praise, as specified by Canter's Assertive Discipline programme, on children's on-task behavior. *Educational Studies, 18,* 83-94.

Fisher, C. W., Filby, N. N., Marliave, R., Cahon, L. S., & Dishaw, M. M., Moore, J. E., & Berliner, D. C. (1979). *Teaching behaviors, academic learning time, and student achievement: Final report of phase III-B, Beginning Teacher Evaluation Study.* San Francisco, Far West Educational Laboratory for Educational Research and Development.

Fixsen, D.L., Naoom, S.F., Blasé, K.A., Friedman, R.M. & Wallace, F. (2005). *Implementation research: A synthesis of the literature.* Tampa, FL.: Louis de la Parte Florida Mental Health Institute Publication.

Fuchs, D., & Fuchs, L.S. (2001). One blueprint for bridging the gap: Project PROMISE: (Practitioners and researchers orchestrating model innovations to strengthen education). *Teacher Education and Special Education,* 24(4), 301-314.

Garmston, R.J. (1987). How administrators support peer coaching. *Education Leadership, 44(5), 18-26.*

George, N.L., George, M.P., Gersten, R., & Grosenick, J.K. (1995). To leave or to stay? An exploratory study of teachers of students with emotional and behavioral disorders. *Remedial and Special Education, 16,* 227-236.

Gersten, R., Chard, B., & Baker, S. (2000). Factors that enhance sustained use of research-based instructional practices: A historic perspective on relevant research. *Journal of Learning Disabilities, 33, 444-457.*

Gersten, R. & Domino, J. (2001). The realities of translating research into classroom practice. Learning Disabilities Research and Practice, 16(2), 120-130.

Gersten, R. Vaughn, S., Deshler, D., & Schiller, E. (1995). *What we know (and still don't know) about utilizing research findings to improve practices: Implications for special education.* Paper presented at the Research Directors Meeting, U.S. Department of Education, Washington, DC.

Gersten, R. Woodward, J. & Morvant, M. (1992). Refining the working knowledge of experienced teachers. *Educational Leadership,* 49(7), 34-39.

Glatthorn, A.A. (1987). Cooperative professional development: Peer-centered options for teacher growth. *Education Leadership,* 45(3), 31-35.

Good, T. & Grouws, D. (1977). Teaching effects: A process-product study in fourth grade mathematics classrooms. *Journal of Teacher Education,* 28, 49-54.

Good, T. L., & Grouws, D. A. (1979). The Missouri Mathematics Effectiveness Project: An experimental study in fourth-grade classrooms. *Journal of Educational Psychology, 71,* 355-362.

Greenwood, C. R, Delquadri, J. C., Hall, R. V., (1984). Opportunity to respond and student academic performance. In W. L. Heward, T. E. Heron, J. Trapp-Porter , & D. Hill (Eds.), *Focus on behavior analysis in education, (pp. 58-88). Columbus, OH: Charles Merrill.*

Greenwood, C. R., & Abbott, M. (2001). The research to practice gap in special education. *Teacher Education and Special Education,* 24(4), 276-289.

Greenwood, C. R., Arreraga-Mayer, C., & Carta, J. J. (1994). Identification and translation of effective teacher-developed instructional procedures for general practices. *Remedial and Special Education,* 15(3), 140-151.

Greenwood, C. R., Hart, B., Walker, D., & Risley, T. (1994). The opportunity to respond and academic performance revisited: A behavioral theory of developmental retardation and its prevention. In R. Gardner, D. M. Sainato, J. O. Cooper, T. E. Heron, W. L. Heward, J. Eshelman, & T. A. Grossi (Eds.), *Behavior analysis in education: Focus on measurably superior instruction,* (pp 214-222). Belmont, CA: Brooks/Cole Publishing.

Gresham, F. M., & Elliot, S.N., (1990). *Social skills rating system.* Circle Pines, MN: American Guidance Service.

Gunter, P. L. & Coutinho, M. J. (1997). Negative reinforcement in classrooms: What we're beginning to learn. *Teacher Education and Special Education, 20,* 249-264.

Gunter, P. L., Coutinho, M. J., & Cade (2002). Clasroom factors linked with academic gains among students with emotional and behavioral problems. *Preventing School Failure,* 46(3), 126-132.

Gunter, P. L. & Denny, R. K. (1996).Reserach issues and needs regarding teacher use of classroom management strategies, *Behavioral Disorders,* 22, 15-20.

Gunter, P. L. & Denny, R. K. (1998). Trends and issues in research regarding academic instruction of students with emotional and behavioral disorders. *Behavioral Disorders, 24,* 44-50.

Gunter, P.L., Hummel, J.H., & Conroy, M.A. (1998). Increasing correct academic responding: An effective intervention strategy to decrease behavior problems. *Effective School Practices, 17*(2), 55-62.

Gunter, P. L., Hummel, J. H., & Venn, M. L. (1998). Are effective academic instructional practices used to teach students with behavior disorders? *Beyond Behavior, 9(3), 5-11.*

Gunter, P. L. & Reed, T.M. (1997). Academic instruction of children with emotional and behavioral disorders using scripted lessons. *Preventing School Failure, 42,* 33-38.

Guskey, T. R. (2000). *Evaluating Professional Development.* Thousand Oaks, CA: Corwin Press.

Hamilton, M.L., & Richardson, V. (1995). Effects of culture in two schools on the process and outcomes of staff development. *The Elementary School Journal,* 95, 367-385.

Hasbrouck, J. E., & Christen, M.H. (1997). Providing peer coaching in inclusive classrooms: A tool for consulting teachers. *Intervention in School and Clinic,* 32(3), P?

Hasbrouck, J. E. (1997). Mediated peer coaching for training preservice teachers. *The Journal of Special Education,* 31(2), 251-277.

Herbart, J.F. (1901). Outlines of educational doctrine. In A.F. Lange (Trans.) *Outlines of educational doctrine.* New York: Macmillian Company. (Originally published in 1835).

Hockenbury, J.C., Kauffman, J.M., & Hallahan, D.P. (2000). What is right about special education? *Exceptionality, 8,* 3-12.

Huberman, M. (1990). Linkage between research and practitioners: A qualitative study. *American Educational Research Journal, 27, 363-391.*

Hughes, J.M. (1965). *Education in America* (2nd Edition). New York: Harper & Row Publishers.

Joyce, B., & Showers, B. (1980). Improving inservice training: The message of research. *Educational Leadership,* 37(5), 379-385.

Joyce, B., & Showers, B. (1983). *Power in staff development through research on training.* Alexandria, VA: Association for Supervision and Curriculum Development.

Kamps, D.M. & Tankersley, M. (1996). Prevention of behavioral conduct disorders: Trends and research issues. *Behavioral Disorders,* 22(1), 41-48.

Kauffman, J. M. (1993). How we might achieve the radical reform of special education. *Exceptional Children,* 60, 6-16.

Kauffman, J. M. (1996). Research to practice issues. *Behavioral Disorders, 22,* 55-60.

Kauffman, J. M. (1999). Commentary: Today's special education and its message for tomorrow. *Journal of Special Education, 32,* 244-255.

Kauffman, J.M. (2001). *Characteristics of children's behavior disorders (7th ed.).* Columbus, OH: Merrill.

Kauffman, J. M. &Hallahan, D. P. (1997). A diversity of restrictive environments : Placement as problem of social ecology. In J.W. Llyod, E.J. Kaeenui, & D. Chards (Eds.), *Issues in edcuating students with disabilities* (pp. 325-342). Mahwah, NJ : Erlbaum.

Klinger, J.K., Arguelles, M.E., Hughes, M. T., & Vauhgn, S. (2001). Examining the schoolwide "spread" of research-based practices. *Learning Disability Quarterly,* 24, 221-234.

Klinger, J.K., Ahwee, S., Piloneta, P. & Menendez, R. (2003). Barriers and facilitators in scaling up research-based practices. *Exceptional Children,* 69(4), 411-429.

Knitzer, J., Steinberg, Z., & Felisch, B. (1990). *At the schoolhouse door: An examination of programs and profiles for children with behavioral and emotional problems.* New York: Bank Street College of Education.

Kohler, F. W., Crilley, K.M., Shearer, D.D., & Good, G. (1997). Effects of peer coaching on teacher and student outcomes. *The Journal of Educational Research,* 90(4), 240-250.

Kwiat, J. (1988). *A peer coaching model for teachers of limited English proficient students.* Paper presented at the annual meeting of the American Education ,Research Association. ERIC ED 292 806.

Lali, J.S., Browder, D.M., Mace, F.C., & Brown, D.K. (1993). Teacher use of descriptive analysis data to implement interventions to decrease student's problem behavior. *Journal of Applied Behavior Analysis*, 26(2), 227-238.

Lam, S., Tim, P., & Lam, T.W. (2002). Transforming school culture: Can true collaboration by initiated? *Educational Research,* 44(2) 181-195.

Landrum, T. J. & Tankserley, M. (1999). Emotional and behavioral disorders the new millennium: The future is now. *Behavioral Disorders,* 24(40, 319-330.

Lane, K. L., Gresham, F. R., & O'Shaughnessy, T. E. (2002) Serving students with or at-risk for emotional ad behavioral disorders: Future challenges. *Education and Treatment of Children*, 25(4), 507-521.

LeBlanc, P.R., & Zide, M.M. (1987) *Peer coaching in collaborative programs: From theory to practice.* Report to the U.S. Department of Education. ERIC, ED 290 726.

Leedy, A., Bates, P. & Safran, S.P. (2004). Bridging the research-to-practice gap: Improving hallway behavior using positive behavior supports. *Behavioral Disorders,* 29(2), 130-139.

Lewis, T. J., Hudson, S., Richter, M., & Johnson, N. (2004). Scientifically supported practices in EBD: A proposed approach and brief review of current practices. *Behavioral Disorders, 29(3), 247-259.*

Lichtenstein, S. (1988). *Dropouts: Perspectives in special education.* Task for the improvement of secondary special education.

Ligas, M.R. (2002). Evaluation of the Broward County Alliance of Quality Schools Project. *Journal of Education for Students Placed At Risk,* 7(2), 117-139.

Lovitt, T.C., & Higgins, K.A. (1996). The gap: Research into practice. *Exceptional Children, 28,* 64-68.

Maag, J.W. (2001). Rewarded by punishment: Reflections on the disuse of positive reinforcement in schools. *Exceptional Children, 67, 173-186.*

Malouf, D.B., Schiller, E.P. (1995). Practice and research in special. *Exceptional Children,* 61, 424-441.

May, S., Ard, W. III., Todd, A.W., Horner, R.H., Glasgow, A., Sugai, G., & Sprague, J.R. (2000). /School-wide Information System./ Educational and Community Supports, University of Oregon, Eugene, Oregon.

McLaughlin, M. (1990). The Rand change agent study revisited: Macro perspectives and micro realities. *Educational Researcher,* 19(9), 11-16.

Mesa, J., Lewis-Palmer, T., & Reinke, W. (2005). Providing teachers with performance feedback on praise to reduce student problem behavior. *Beyond Behavior,* 15(10), 3-7.

Mooney, P., Epstein, M.H., Reid, R., & Nelson J.R. (2003) Status of trends in academic intervention research for students with emotional disturbance. *Remedial and Special Education,* 24(5), 273-287.

Morgan, R.L., Menlove, R., Salzberg, C.L., & Hudson, P. (1994). Effects of peer coaching on the acquisition of direct instruction skills by low performing preservice teachers. *The Journal of Special Education,* 28(1), 59-76.

Munson, B.R. (1998). Peers observing peers: The better way to observe teachers. *Contemporary Education,* 69(2), 108-110.

National Commission of Excellence in Education. (1983). *A nation at risk: The imperative for educational reform.* Washington, DC: U.S. Government Printing Office.

National Education Association, (2005). *Teachers take charge of their learning: Transforming professional development for student success.* Washington DC: National Education Association.

National Information Center for Children and Youth with Disabilities [NICHCY] (1997). The education of children and youth with special needs: What do the laws say? Retrieved March 28, 2005 from http://www.nichcy.org/pubs/outprint/nd15txt.htm.

National Institute of Child Health & Human Development (2000). *Teaching children to read:* An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction. Retrieved April 1, 2005 from http://www.nichd.nih.gov/publications/nrp/smallbook.htm .

National Mental Health Association [NMHA], (1993). *All systems failure.* The Federation of Families for Children's Mental Health. Manassas, VA: Author.

Noell, G.H., Witt, J.C., Lafleur, L.H., Mortenson, B.P., Rainer, D.D., & Lavelle, J. (2000). Increasing intervention implementation in general education following consultation: A comparison of two follow-up strategies. *Journal of Applied Behavior Analysis,* 33(3), 271-284.

O'Brien, D.M., & Ware, A.M. (2002). Implementing research-based reading programs in the Fort Worth independent School district. *Journal of Education for Students Placed At Risk, 7(2), 167-195.*

Pajares, M.F., (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research,* 62(3), 307-332.

Peacock Hill Working Group (1991). Problems and promises in special education and related services for children and youth with emotional and behavioral disorders. *Behavioral Disorders, 16*, 299-313.

Pfeffner, L. J., Rosen, L. A., & O'Leary, S. G. (1985). The efficacy of an all positive approach to classroom management. *Journal of Applied Behavioral Analysis, 18*, 257-261.

Phelps, M.S., & Wright, J.D. (1986). *Peer coaching: A staff development strategy for rural teachers.* Paper Presented at the Eleventh National Conference of the National Council of States on Inservice Education, Nashville. ERIC ED 277 513.

Ponticell, J.A., (1995). Promoting teacher professionalism through collegiality. *Journal of Staff Development,* 16(3), 13-18.

Powers, L.J. (2003). Examining effects of targeted group social skills intervention in schools with and without school wide systems of positive behavior support.

(Doctoral dissertation, University of Missouri-Columbia 2002). *Dissertations Abstracts International,* 31/15, 581.

Pugach, M.C., & Johnson, L.J. (1995). Unlocking expertise among classroom teachers through structured dialogue: Extending research on peer collaboration. *Exceptional Children, 62,* 101-110.

Rich, H. & Ross, S. (1989). Student's time on tasks in special education. *Exceptional Children,* 55, 508-515.

Rosenshine, B. (1976). Classroom instruction. In N. L. Gase (Ed.), *The psychology of teaching methods*. Seventy-fifth yearbook of the National Society for the Study of Education, Chicago: University of Chicago Press.

Rosenshine, B. & Stevens, R. (1986). Teaching functions. In M.C. Wittrock (Ed.), *Handbook of research in teaching.* (3rd ed., pp376-391). New York: Macmillian.

Rowe, M. (1974a). Science, silence and sanctions. *Science and Children,* 6, 11-13.

Rowe, M. (1974b). Wait time and rewards as instructional variables, their influence on language, logic and fate control: Part I – Wait time. *Journal of Research in Science Teaching,* 11, 81-94.

Rowe, K.S., Rowe, K.J., & Pollard, J. (2004, October). *Literacy, behaviour and auditory processing: Building 'fences at the top of the 'cliff' in preference to 'ambulance services' at the bottom.* Background paper to invited address presented at the 2004 ACER Research Conference, Adelaide, SA, 24-26 October, 2004.

Sanders, W.L. & Horn, S. P. (1998). Research findings from the Tennessee value-added system (TVAAS) database: Implications for educational evaluation and research. *Journal of Personnel Evaluation in Education,* 12 (3), 247-256.

Scheerens, J. (1993). Basic school effectiveness research: Items for a research agenda. *School Effectiveness and School Improvement*, 4(1), 17-36.

Schoenwald, S. & Hoagwood, K. (2000). Effectiveness of transportability, and dissemination of interventions,: What matters when? *Psychiatric Services*, 52, 1190-1197.

Schumm, J.S. & Vaughn, S. (1991). Making adaptations for mainstreamed students: General classroom teachers' perspectives. *Remedial and Special Education, 12(4),* 18-27.

Shores, R. E., Gunter, P. L., & Jack, S. L. (1993). Classroom management strategies: Are they setting events for coercion? *Behavioral Disorders,* 18, 92-102.

Shores, R.E., Jack, S. L., Gunter, P. L., Ellis, D. N., DeBriere, T. J., & Wehby, J. H. (1993). Classroom interactions of children with behavior disorders. *Journal of Emotional and Behavioral Disorders, 1*, 27-39.

Showers, B. (1982). *Transfer of training: The contribution of coaching.* Eugene, OR: Center for Educational Policy and Management.

Showers, B. (1984). *Peer coaching: A strategy for facilitating transfer of training.* Report to the U.S. Department of Education. Eugene, Oregon: Center for Educational Policy and Management, University of Oregon. ERIC EC 271 849.

Showers, B. & Joyce, B. (1996). The evolution of peer coaching. *Educational Leadership,*

Showers, B. Joyce, B. & Bennett, B. (1987). Synthesis of research on staff development: A framework for future study and a state-of-the-art analysis. *Education Leadership*, 45(3), 77-87.

Sitlington, P.L., Frank, A.R., & Carson, R. (1990). *Adult adjustment of individuals with mild disabilities one year after leaving school.* Des Moines: Iowa State Department of Education, Division of Instructional Services (ERIC Document Reproduction Service No. ED 322 466).

Skinner, C. H., Ford, J. M., & Yunker, B. D. (1991). A comparison of instructional response requirements on the multiplication performance of behaviorally disordered students. *Behavioral Disorders, 17,* 56-65.

Skinner, C. H., Smith, E. S., & McClean, J. E. (1994). The effects of intertribal interval duration on sight-word learning rates in children with behavioral disorders. *Behavioral Disorders, 19,* 98-107.

Slater, C.L., & Simmons, D.L. (2001). The design and implementation of a peer coaching program. *American Secondary Education,* 29(3), 67-76.

Smylie, M.A. (1988). The enhancement function of staff development: Organization and psychological antecedents to individual teacher change. *American Educational Research Journal,* 80(1), 111-117.

Sparks, G.M., & Brueder, S. (1987). Before and after peer coaching. *Education Leadership,* 45(3), 54-57.

Stichter, J.P., Lewis, T.J., Richter, M.R., Johnson, N. W., & Bradley, L. (2006). Assessing antecedent variables: The effects of instructional variables on student outcomes through in-service and peer coaching professional development models. *Education & Treatment of Children,* 29(4), 665-692.

Stichter, J.P., Lewis, T.J., Johnson, N., & Trussell, R. (2004). Toward a structural assessment: Analyzing the merits of an assessment tool for a student with E/BD. *Assessment for Effective Intervention,* 30(1), 25-40.

Sugai, G., Horner, R.H, & Gresham, F. (2002). Behaviorally effective school environments. In M.R. Shinn, G. Stoner,& H.M. Walker *Interventions for academic and behavior problems: Preventive and remedial approaches.* (p. 319-350). Silver Springs, MD: National Association of Psychologists.

Sutherland, K.S. (2000). Promoting positive interactions between teachers and students with emotional/behavioral disorders. *Preventing School Failure, 44, 110-116.*

Sutherland, K.S., Alder, N. & Gunter, P.L. (2003). The effects of varying rates of opportunities to respond to academic requests on the classroom behavior of students with EBD. *Journal of Emotional & Behavioral Disorders, 11,* 239-248.

Sutherland, K.S. & Wehby, J.H. (2001). Exploring the relationship between increased opportunities to respond to academic requests and the academic and behavioral outcomes of students with EBD. *Remedial and Special Education, 22,* 113-121.

Sutherland, K. S., Wehby, J. H., & Copeland, S. R. (2000). Varying rates of behavior specific praise on the on-task behavior of students with EBD. *Journal of Emotional and Behavioral Disorders,* 8(1), 2-8.

Sutherland, K. S., Wehby, J. H., & Yoder, P. J. (2002). Examination of the relationship between teacher praise and opportunities for students with EBD to respond to academic requests. *Journal of Emotional and Behavioral Disorders, 10(1), 5-13.*

Swafford, J. (1998). Teacher supporting teachers through peer coaching. *Support for Learning,* 13(2), 54-58.

Swan, E.T., & Carnes, W.J., & Gilman, D.A. (1988). *The effects of teachers teaching teachers: AN Indiana staff development model of educator attitudes and beliefs.* Paper presented at the annual conference of the American Association of School Administrators, Las Vegas. ERIC ED 291 743.

Symons, F. J., Clark, R. D., Roberts, J. P., & Bailey, D. B. (2001). Classroom behavior of elementary school-age boys with fragile X syndrome. *Journal of Special Education*, 34(4), 194-202.

Tawney, J.W. & Gast, D.L. (1984). *Single subject research in special education*. Toronto, Ontario: Charles E. Merrill.

Tobin, K. (1983). The influence of wait time on classroom learning. *European Journal of Science Education,* 5, (1), 35-48.

Todd, A. W. Horner, R. H. & Sugai, G. (1999). Self-monitoring and self-recruited praise: Effects on problem solving behavior, academic engagement, and work completion in a typical classroom. *Journal of Positive Behavioral Interventions, 1,* 66-76.

Trout, A.L., Nordness, P.D., Pierce, C.D., & Epstein, M.H. (2003). Research on academic status of children with emotional and behavioral disorders: A review of the literature from 1961 to 2000. *Journal of Emotional and Behavioral Disorders,* 11(4), 198-210.

U.S. Department of Education. (1998). *Twentieth annual report to Congress on the implementation of the Individuals with Disabilities Education Act.* Washington, DC.: Author.

U.S. Department of Education. (2002a). *A new era: Revitalizing special education for children and their families*. Washington, D.C.: Author.

U.S. Department of Education. (2002b). *No child left behind: A desktop reference*. Washington, D.C.: Author.

U. S. Department of Education. (2002c). *No Child Left Behind Executive Summary*. Retrieved July 11, 2004, from http://www.whitehouse.gov/news/reports/no-child-left-behind.html

Van Acker, R., Grant, S. H., & Henry, D. (1996). Teacher and student behavior as a function of risk for aggression. *Education and Treatment of Children, 19,* 316-334.

Walker, H. M., Forness, S. R., Kauffmann, J, M., Epstein, M. H., Gresham, F. M., Nelson, C. M., & Strain, P. S. (1998). Macro-social validation: Referencing outcomes in behavioral disorders to societal issues and problems. *Behaviroal Disoreders,* 24, 7-18.

Walker, H. M., Sprague, J. R., Close, D.W., & Starlin, C.W. (2000). What is right with behavior disorders: Seminal achievements and contributions of the behavior disorders field. *Exceptionality,* 8(1), 13-28.

Warby, D.B., Greene, M.T., Higgins, K., & Lovitt, T.C. (1999). Suggestions for translating research into classroom practices. *Intervention in School and Clinic*, 34(4), 205-211, 223.

Wehby, J. H., Lane, K. L. & Falk, K. B. (2003). Academic instruction for students with emotional and behavioral disorders. *Journal of emotional and Behavioral Disorders*, 11(4), 194-197.

Wehby, J. H., Symons, F. J., Canale, J. A., & Go, F. J. (1998). Teaching practices in classrooms for students with emotional and behavioral disorders. *Behavioral Disorders, 24,* 51-56.

White, M. A. (1975). Natural rates of teacher approval and disapproval in the classroom. *Journal of Applied Behavioral* Analysis, 8(4), 367-372.

Wolery, M., & Bailey, D.B., Jr. (2002). Early childhood special education research. *Journal of Early Intervention, 25,* 88-99.

Wolrey, M., Baily, D., & Sugai, G. (1988). *Effective teaching: Principles and procedures of applied behavior analysis with exceptional students.* Boston: Allyn & Bacon, Inc.

Yeaton, W.H., & Sechrest, L. (1981). Critical dimensions in the choice and maintenance of successful treatments: Strengths, integrity, and effectiveness. *Journal of Consulting & Clinical Psychology, 49, 156-167.*

Zide, M.M., & LeBlanc, P. (1984). *A staff development program: Behavior management issues in mainstreaming.* Paper presented at the annual meeting of the Association of Teacher Educators, New Orleans. ERIC ED248 220.

VITA

Nanci Weaver Johnson was born October 27, 1961, in St. Louis, Missouri. She attended public schools in St Louis, Missouri and received the following degrees: a B.S. in Secondary Education from the University of Missouri-Columbia (1984); Early Childhood Certification requirements from Stephen's College (1995); M.A. in Curriculum and Instruction from Lesley University (1999); and a Ph.D. from the University of Missouri-Columbia (2007).

She resides in Columbia, Missouri with her husband Randy. She currently serves as a Positive Behavior Support Facilitator for the Columbia Public Schools.

APPENDICES

APPENDIX A

Letter of Consent

April 13, 2007

Dear Teacher,

You have agreed to participate in a program designed to help children be more successful in school. The purpose of the project is to investigate the impact of reciprocal peer coaching on several teaching strategies that have been identified to potentially remediate learning and behavior difficulties of children. The program is a joint effort between your school district and the University of Missouri. The program will run approximately two months. The program involves the following activities:

First, a peer coach will observe your classroom to provide data driven feedback for you on the use of the identified teaching strategies. Second, University personnel will observe your use of the strategies and the effects of teaching strategies on a target student's social and academic behavior. All strategies are those commonly found in school classrooms and will not make any child stand out or be treated significantly different. In addition, your school will share information such as number of student work samples, office referrals, days absent, and standardized test scores with us to help us determine how well the instruction strategies are working. Finally, you will be asked to complete a brief survey asking you to indicate what you believe to be the benefits of strategies and systems of support as applied in the classroom.

Confidentiality is assured during the project. Your name will not appear on any data collected throughout the project. In addition, you are free to request that data not be collected by University staff. There are no anticipated risks associated with participating in the described project, however, if you experience any problems through participation, you are free to withdraw from the study at any time. The benefits of participating include improved social and academic school performance for the children in your classroom.

If you have any questions or would like further information please contact: If you have any questions or would like further information please contact: Nanci W. Johnson, doctoral candidate NJohnson@columbia.k12.mo.us

If you have questions concerning your rights as a research subject contact: Research Compliance Office, University of Missouri (573-882-8595).

I give my permission for to be observed during implementation of the project as described above. I further understand that allowing observation by University staff is voluntary and that I may request data collection to cease at any time.

_____ _____

(Signature) (Date)

Keep a copy of this letter for your records, return the original to Nanci Johnson

APPENDIX B

Teacher Demographic Data for Peer Coaching Study

Teacher Demographic Data for Peer Coaching Study

Study Random Designation _____ (this is a numerical code assigned for confidentiality)

Please base your answers on the end of 2003-2006 school year.

Gender	_____
Ethnicity	_____
Total number of years teaching	_____
Total number of years at current grade level	_____
Total number of years in the building	_____
Educational Level	Bachelors _____ Masters _____ Masters + 15 _____ Masters + 30 _____ Masters + 60 _____ Masters + 75 _____ Doctorate _____
Certification Type	_____ (e.g. provisional, lifetime, etc.)
Certification Designation	_____ (e.g., early childhood, elementary, etc.)

Questions: please email Nanci Johnson at NJohnson@columbia.k12.mo.us

APPENDIX C

Classroom Universals Inventory

CLASSROOM UNIVERSALS INVENTORY

Code : _____ Date: _____ Time: _____

Observer :_____ Phase: _____

Rate each feature using the following scale: **1 = inconsistent or unpredictable …….5 = consistent and predictable**	1	2	3	4	5
I. Physical Space: Is physical space organized to allow access to instructional materials?					
Work centers are easily identified and correspond with instruction	1	2	3	4	5
Traffic flow minimizes physical contact between peers and maximizes teacher's mobility	1	2	3	4	5
II. Gain/Maintain Student Attention: Does the teacher gain the attention of the students prior to instruction?					
A consistent and clear attention signal is used across instructional contexts	1	2	3	4	5
Uses a variety of techniques to gain, maintain, and regain student attention to task.	1	2	3	4	5
III. Use of Time: Does the teacher initiate instructional cues and materials to gain, maintain, and regain student attention?					
Materials are prepared and ready to go.	1	2	3	4	5
Pre-corrects are given prior to transitions.	1	2	3	4	5
Common intrusions are anticipated and handled with a consistent procedure. Unexpected intrusions are minimized with an emphasis on returning to instruction.	1	2	3	4	5
Students engaged at high rates during individual work	1	2	3	4	5
Down-time (including transitions) is minimal	1	2	3	4	5
IV. Behavior Management: Does the teacher have universal systems of PBS in place?					
Rules are posted	1	2	3	4	5
Rules are referred to at appropriate times	1	2	3	4	5
Students receive verbal praise for following rules	1	2	3	4	5
Maintains a 4:1 ratio of positive to negative statements	1	2	3	4	5
Continuum for encouraging expected behaviors is used	1	2	3	4	5
Active supervision techniques (moving, scanning) are used throughout instruction	1	2	3	4	5
Corrections are made by restating the rule/expectation and stating the appropriate replacement behavior	1	2	3	4	5
Continuum of consequences for discouraging undesired behaviors	1	2	3	4	5

V. Use of Routines: Does the teacher have procedures and routines that are clear and consistently followed?					
Start of class	1	2	3	4	5
Working in groups	1	2	3	4	5
Working independently	1	2	3	4	5
Special events (movies, assemblies, snacks, parties)	1	2	3	4	5
Obtaining materials and supplies	1	2	3	4	5
Using equipment (e.g. computer, tape players)	1	2	3	4	5
Managing homework and other assignments	1	2	3	4	5
Personal belongings (e.g. coats, hats, back packs)	1	2	3	4	5
Entering/exiting classroom (e.g. using restroom/drinking fountain, going to library, during classroom instructional time)	1	2	3	4	5
VI. Curriculum, Content & Delivery: Does the teacher implement effective instruction strategies?					
Advanced organizer is used to set the stage for lesson (ties new instruction to past instruction, previews topic to be covered)	1	2	3	4	5
Content presented at student level resulting in high rates of engagement	1	2	3	4	5
Frequently checks student learning for understanding	1	2	3	4	5
Instructional focus builds on student's current and past skills	1	2	3	4	5
Frequent opportunities to respond with academic accuracy are provided	1	2	3	4	5
Wait time is provided following prompts	1	2	3	4	5
Assignments can be completed within allotted time period	1	2	3	4	5
Gives clear set-up and directions for task completion	1	2	3	4	5
Follow up steps (e.g., homework) are discussed	1	2	3	4	5
Mental or hard copy notes taken on how many students met the learning objective	1	2	3	4	5
Planning for follow up instruction for those who did not meet the objective are planned	1	2	3	4	5
Plans for what to do next time with this activity are made	1	2	3	4	5

Adapted from Sugai, 1997; Pallt, Tripp, Ogden & Fraser, 2000

APPENDIX D

Letter of Permission

April 13, 2007

Dear Parent(s) or Guardian,

Your child has been selected by his/her teacher to participate in a program designed to help children be more successful in school. The purpose of the project is to identify professional development strategies that help teachers implement teaching strategies that are successful with children. The program is a joint effort between your child's school district and the University of Missouri. The program will run approximately two months. The program involved the following activities:

First, a peer coach will observe your child's classroom to provide your child's teacher data driven feedback on his/her use of the identified teaching strategies. Second, University personnel will observe the effects of teaching strategies on your child's social and academic behavior. All strategies are those commonly found in school classrooms and will not make any child stand out or be treated significantly different. In addition, your school will share information such as student work samples, office referrals, days absent, and standardized test scores with us to help us determine how well the instruction strategies are working.

Confidentiality is insured throughout the duration of the project. Your child's name will not appear on data collected throughout the project. In addition, you and/or your child are free to request that data not be collected by University staff. If you choose not to have your child observed, he or she will still received individualized instruction by your child's classroom teacher. Your child's teacher will keep you informed of progress and project results upon completion. There are not anticipated risks associated with participating in the described project, however, if you or your child experience any problems through participation, you are free to withdraw your child from the study at any time. The benefits of participating include improved social and academic school performance.

If you have any questions or would like further information please contact: If you have any questions or would like further information please contact: Nanci W Johnson, doctoral candidate Njohnson@columbia.k12.mo.us

If you have questions concerning your rights as a research subject contact: Research Compliance Office, University of Missouri (573-882-8595).

I give my permission for _____ to be observed during implementation of the project designed to identify professional development strategies that help teachers implement teaching strategies that are successful with children. I further understand that allowing my child to be observed by University staff is voluntary and that I may request data collection to cease at any time.

_____ _____

(Parent/guardian signature) (date)

Parents – keep a copy of this letter for your records, return the signed form to your child's teacher.

APPENDIX E

Peer Coaching 5-Step Process Outline

Peer Coaching 5-Step Process Outline

Step One begins with a coachee **requesting a visit** from his/her coach. The coach and coachee confirm the date and time of the observation, the definitions for the behaviors to observed, and where the observer should sit in order to be unobtrusive.

Step Two involves a **classroom observation** where the coach arrives at the designated time, sits in the designated spot and begins to take the agreed upon data without being acknowledged by the coachee, and without interacting with any of the students.

Step Three entails the coach **transforming the raw data** into a metric such as a frequency of academic prompts per minute, duration of wait time per prompt, and the ratio of positive to negative feedback for dissemination to the coachee. The coach also develops 2-3 leading questions to encourage the coachee to reflect upon the data that will be shared..

Step Four is the **talk after the observation visit**. The coach and coachee again sit side by side. The coach hands the coachee his/her data, explaining how they collected the raw data, and how it was transformed. The coach refrains from making any subjective comments (e.g., great lesson) but does pose the *leading questions* to encourage the coachee to be reflective. The coach supports the coachee in developing a plan for change or maintenance.

Step Five is the **process review**. The coach and coachee use the process review form to indicate that the steps of the peer coaching process were followed as outlined. The process review form and a copy of the plan are then turned in to the envelope in the study box in the school office.

APPENDIX F

Data Collection Form for Peer Coach

Teacher Name: ________________________________ Date: ________________
Time in: _____________ Time out: ______________

Coach: You will need a clipboard, a timer, this protocol and a pencil. Enter the classroom without acknowledging your peer coaching partner or any students. Sit in designated spot, place the timer so that you can observe time, orient towards the teacher and start the timer.

PPF = Positive Performance Feedback, NPF = Negative Performance Feedback

Academic Prompt	Time	Wait Time				Feedback Type		
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None
		1	2	3	4	PPF	NPF	None

APPENDIX G

Peer Coaching Process Review Form

Peer Coaching Process Review Form

Coachee: _____ Coach: _____

Request for a visit- Date: _____

___ observation requested
___confidentiality established
___ no judgment or evaluation
___ lesson to be observed identified
___ observer/coach seating established
___ time/place established
___time for Talk after the visit identified

Visit - Date: _____

___request written at top of data collection sheet as a reminder
___starting and ending time met
___data collected

Coach Review Notes

___coach reviewed data, removed any evaluations
___ coach transforms data as needed (e.g., getting a ratio or rate)
___ three leading questions listed on ***Teaching Plan***
___ no judgment or evaluation

Talk After the Visit - Date: _____

___plan where to sit in relation to each other
___coach restatement of the requested observation
___refrain from "I" statements
___coach goes over specific data collected
___coach careful to not be trapped by teacher's comment such as, "What did you think of my lesson?"
___coach asks three leading questions to analyze data collected on specific concerns
___coachee analysis: getting the teacher to reflect
___no judgment or evaluation
___coach prompts coachee to develop a plan using ***Teaching Plan***
___coach gives coachee all observation data
___agree on who turns in ***Process Review Form and copy of Teaching Plan***

APPENDIX H

Teaching Plan Form

Teaching Plan Form

Peer coaching observation held on _____ for _____ minutes.

Academic Prompts-

The **optimal rate** for **academic prompts** during direct/active instruction is **3 per minute**.

I provided _____ academic prompts in _____ minutes for a rate of ____ per minute.

How many students indicated preparedness to answer the academic prompts? _____

How many students were able to answer the prompts accurately? _____

When were most of my prompts given? _____

Other questions I have about academic prompts:

_____

_____

My goal for academic prompting: _____

Wait Time –

Wait time can be given at two distinct times, once after an academic prompt is given and once while the student is responding. The **optimal amount** of **wait time per academic prompt** is **3 seconds.**

I provided _____ academic prompts and ____ seconds of wait time, for an average of ____ seconds of wait time per prompt.

I provided wait time following academic prompts ____out of ___ times for _____ % of academic prompts receiving wait time.

I provided wait time during student responses when the child paused in ____ out of ____ times for ____ % of student pauses receiving wait time.

Who did I provide the most wait time for? _____

Other questions I have about wait time: _____

_____

My goal for wait time: _____

Positive Performance Feedback –

The **optimal ratio** of **positive to negative feedback** is **3 or 4:1** for both academic and behavioral prompts.

I provided _____ positive performance feedback statements and _____ negative performance feedback statements, for a _____:_____ ratio.

I provided _____ more/less positive statements than _____.

I gave positive performance feedback statements for _____.

I gave negative performance feedback statements for_____.

Other questions I have about performance feedback: _____

_____

My goal for performance feedback is _____.

Leading Questions

Why ask leading questions? To have coachee reflect on and dissect the lesson!

Best practice guidelines:

- phrased so that **coachee does most of the talking**
- neutral in tone
- phrased to refrain from asking questions that can be answered "yes/no"

Suggestions include:

"Here is the data I gathered. What does it tell you?"

"How can you use these data to change instruction?"

"What decisions can you make now?'

"Are there other pieces of data that you need to answer your questions?"

APPENDIX I

OTR Research Supplement

OTR Research Supplement

Overall, opportunities to respond (OTR) can be viewed as an *opportunity to learn*, whereby the teacher maximizes the time allocated for instruction. The antecedent component involves many environmental factors that have a strong relationship to student academic responding including the instructional talk that sets the stage for accurate student responding (approximately 45-55% of the instructional time), and teacher-student interaction in the form of prompts (e.g., 3.5 prompts during active review of previously learned content) that support academic responding at high levels.

Sufficient wait time (e.g., 3 seconds after asking a question or while the student pauses during giving a reply, Rowe, 1974a,b) is crucial to promote high levels of student academic responding (Greenwood et al, 1994). Finally the use of performance feedback following student accurate response has been shown to increase the number of accurate responses and increase teacher prompts (Sutherland, Wehby, & Yoder, 2002), and thus becomes an important piece of the OTR construct.

Lesson steps for effective instructional practice:
Previewing the lesson: telling the students what would be learned, and relating the new learning to previous learning (Good and Grouws, 1979).

Instruction with small explicit steps: content and with clear instructions (Brophy, 1980).

Guided practice: providing necessary scaffolding such that students are working above an independent level, but still within a level where **success is attained above an 80%** criterion (Anderson, Evertson, and Brophy, 1979; Evertson, Emmer, and Brophy, 1980). [This is what Vygotsky called the *zone of proximal development.*]

Independent "seatwork" and levels of success: Once a certain level of automaticity and fluency with content has been achieved the teacher provides clear instructions and guidance for student independent work that can be completed at a **high level of accuracy** (e.g., **above** a **90%** criterion level) (Anderson et al, 1979; Brophy, 1980; Fisher, Filby, Marliave, Cahen, Dishaw, Moore and Berliner, 1979).

Checks for understanding: throughout both presentation and guided practice, as well as during independent practice the teacher engages in high levels of questioning to check for student understanding, and providing systematic feedback and correction. (Evertson, Anderson, Anderson, & Brophy, 1980).

Wait time: Wait Time 1 (WT 1) when the teacher pauses after prompting for a response, and Wait Time 2 (WT 2) when the teacher waits if a student pauses during his/her answer. Important variables within wait time include: getting the child's attention, speaking slowly in short sentences, pausing (i.e., wait time), monitoring for understanding and establishing hearing, listening and compliance routines. A wait time of 3 seconds or more is optimal (Rowe, 1974a, 1974b; Tobin 1983). It is important to note that research indicates that WT 2 is of more import in terms of academic achievement than WT 1, but few teacher preparation programs ever address this facet of wait time (Rowe, 2004).

Follow up: Praise or follow-up feedback that is used contingently, with specificity, and credibility, and that remains in the range of a 3:1 or 4:1 range appears to be the most encouraging (Brophy, 1981)

APPENDIX J

Data Protocol for Research Observations

Data Protocol for Research Observations

Classroom: _____ Date:_____

Coder A: _____ Coder B: _____

Minute 1 OFF = student off task during the interval

Sec	Behavior	Academic Prompts	Wait Time				Performance Feedback		
10	OFF		1	2	3	4	PPF	NPF	None
20	OFF		1	2	3	4	PPF	NPF	None
30	OFF		1	2	3	4	PPF	NPF	None
40	OFF		1	2	3	4	PPF	NPF	None
50	OFF		1	2	3	4	PPF	NPF	None
60	OFF		1	2	3	4	PPF	NPF	None

Minute 2 OFF = student off task during the interval

Sec	Behavior	Academic Prompts	Wait Time				Performance Feedback		
10	OFF		1	2	3	4	PPF	NPF	None
20	OFF		1	2	3	4	PPF	NPF	None
30	OFF		1	2	3	4	PPF	NPF	None
40	OFF		1	2	3	4	PPF	NPF	None
50	OFF		1	2	3	4	PPF	NPF	None
60	OFF		1	2	3	4	PPF	NPF	None

Minute 3 OFF = student off task during the interval

Sec	Behavior	Academic Prompts	Wait Time				Performance Feedback		
10	OFF		1	2	3	4	PPF	NPF	None
20	OFF		1	2	3	4	PPF	NPF	None
30	OFF		1	2	3	4	PPF	NPF	None
40	OFF		1	2	3	4	PPF	NPF	None
50	OFF		1	2	3	4	PPF	NPF	None
60	OFF		1	2	3	4	PPF	NPF	None

Minute 4 OFF = student off task during the interval

Sec	Behavior	Academic Prompts	Wait Time				Performance Feedback		
10	OFF		1	2	3	4	PPF	NPF	None
20	OFF		1	2	3	4	PPF	NPF	None
30	OFF		1	2	3	4	PPF	NPF	None
40	OFF		1	2	3	4	PPF	NPF	None
50	OFF		1	2	3	4	PPF	NPF	None
60	OFF		1	2	3	4	PPF	NPF	None

Minute 5 OFF = student off task for whole interval

Sec	Behavior	Academic Prompts	Wait Time				Performance Feedback		
10	OFF		1	2	3	4	PPF	NPF	None
20	OFF		1	2	3	4	PPF	NPF	None
30	OFF		1	2	3	4	PPF	NPF	None
40	OFF		1	2	3	4	PPF	NPF	None
50	OFF		1	2	3	4	PPF	NPF	None
60	OFF		1	2	3	4	PPF	NPF	None

Appendix K

Social Validity Survey

Social Validity Survey

Years Teaching _____ Grade level _____

What level of training and support were necessary to implement reciprocal peer coaching?

1 = little or no training and support
2 = some training and support
3 = a moderate level of training and support
4 = a great deal of training and support
5 = extensive training and support

1 2 3 4 5

Was the reciprocal peer coaching process manageable within the course of the typical day?

1 = very manageable
2 = somewhat manageable
3 = moderately manageable
4 = not very manageable
5 = unmanageable

1 2 3 4 5

How does the reciprocal peer coaching model of staff development compare to other typical forms of staff development (e.g., one-shot sit and get it)?

1 = significantly better than other forms of staff development
2 = somewhat better than other forms of staff development
3 = moderately better than other forms of staff development
4 = not much better than other forms of staff development
5 = worse than other forms of staff development

1 2 3 4 5

Has the change in your instructional practice been meaningful?

1 = very meaningful
2 = somewhat meaningful
3 = moderately meaningful
4 = not very meaningful
5 = not at all meaningful

1 2 3 4 5

Has the change in student behavior (i.e., academic engagement) been meaningful?

1 = very meaningful
2 = somewhat meaningful
3 = moderately meaningful
4 = not very meaningful
5 = not at all meaningful

1 2 3 4 5

Would you encourage colleagues to participate in a reciprocal peer coaching process in the future?

1 = with unquestionable enthusiasm
2 = with moderate enthusiasm
3 = with mild enthusiasm
4 = without enthusiasm
5 = I would discourage participation

1 2 3 4 5

Please rate the components of the peer coaching process (e.g., 1 being the most helpful, 3nuetral, to 5 the least helpful) and describe your thoughts about how you rated the components:

___Your request for a visit
___Observation and data collection in another teacher's classroom
___Transformation of another teacher's data
___Discussion of your data
___Process review after the discussion of your data
_____

Appendix L

Social Validity Survey Responses

Social Validity Survey Responses

Question	Teacher 1	Teacher 2	Teacher 3
What level of training and support were necessary to implement reciprocal peer coaching?	1- A great deal of training and support	1- A great deal of training and support	2 - Some training and support
Was the reciprocal peer coaching process manageable within the course of the typical day?	2 -Somewhat manageable	3 - Moderately manageable	3 – Moderately manageable
How does the reciprocal peer coaching model of staff development compare to other typical forms of staff development (e.g., one-shot sit and get it)?	2- Somewhat better than other forms of staff development	2- Somewhat better than other forms of staff development	2- Somewhat better than other forms of staff development
Has the change in your instructional practice been meaningful?	1- Very meaningful	2 - Somewhat meaningful	2 - Somewhat meaningful
Has the change in student behavior (i.e., academic engagement) been meaningful?	3- Moderately meaningful	3 - Moderately meaningful	4 - Not very meaningful
Would you encourage colleagues to participate in a reciprocal peer coaching process in the future?	2 -With moderate enthusiasm	1 - With unquestionable enthusiasm	2 -With moderate enthusiasm
Please rate the components of the peer coaching process (e.g., 1 being the most helpful, 3 nuetral, to 5 the least helpful) and describe your thoughts about how you rated the components:			
Your request for a visit	4	5	5
Observation and data collection in another teacher's classroom	2	1	2
Transformation of another teacher's data	3	4	3
Discussion of your data	1	2	1
Process review after the discussion of your data	5	3	4