

2015

Peer Coaching Effects on Targeted Teaching Behaviors and Teacher Self-Efficacy in an Early Field Experience

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PEER COACHING EFFECTS ON TARGETED TEACHING BEHAVIORS AND
TEACHER SELF-EFFICACY IN AN EARLY FIELD EXPERIENCE

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The School of Education

by

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August 2015

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This work is dedicated to my grandparents,

Charlotte and Claude Rice, Sr.

*Set your sights to the highest peak...
and it is that mountain you shall conquer.*

Quote from a circa 1980 plaque.

A gift to my aunt from my grandparents
when she was in pursuit of her terminal degree
that she gifted to me.

Acknowledgements

Although I may be the sole author of this dissertation, Team Rice has supported me all along the way.

- * my mom, Suzie, for supplying me with homemade granola and beauty products.
- * my dad, Caleb, for daily encouragement, extra cash, and reminding me to check the oil.
- * my aunt, Sandra, for inspiring me to earn the tam.
- * my uncle, Claude, always available for a chuckle.
- * my aunts, Betty and Billie, for their prayers.
- * my committee, Dr. Denny, Dr. Gansle, Dr. Arbuthnot, and Dr. McRoberts, for sticking with me to the end.
- * my actress, Elise, for lending her talents to the training videos.
- * my teacher, Halbrook, for challenging me as a writer and a student.
- * my professor, Patty, for encouraging me to go for it.
- * my technical support, William, who listened to my challenges and worked with me to resolve my tech issues.
- * my scorer, Adam, for being a true colleague.
- * my yoga instructors, Amanda, Anna Laura, Becky, Beth, Brooke, Chloe, DeeDee, Jennifer, kate, Katherine, Phi, Reba, and Tina, for keeping me flexible.
- * the tutor coordinators, Allison, Lisbon, Tricia, and Margaret T., and Margaret D., for their willingness to support my study.
- * and, Leah, for her mentorship into the academy.

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Abstract

This study examined the effect of peer coaching on the development of effective teaching behaviors and teacher self-efficacy of education students in an early field experience. The convenience sample ($N = 99$) included undergraduate students enrolled in a required foundational course in special education at a large public university in the southern United States. Training methods included online video instruction on targeted effective and ineffective teaching behaviors. The effective behaviors included (a) established student learning objective prior to beginning a lesson, (b) explained and/or modeled how pupil can discover answer or solve a problem, (c) checked for understanding by asking content-related questions or asked pupil to verbally explain/demonstrate answer/concept, (d) academic or behavior specific praise statement. The ineffective behaviors included (a) began activity without stating student learning-objective, (b) ask binary content related question without follow-up probe, and (c) negative comment/feedback considered derogatory. Participants submitted pre-and-post-intervention videos via a web-based storage service.

Binomial logistic regression and ANCOVA analyses indicated no statistically significant differences between the treatment and control groups for main effects of peer coaching on the development of the targeted effective teaching behaviors. Additionally, ANOVA analyses indicated no statistically significance between groups on the three subscales of the OSTES. However, frequency of observed effective teaching behaviors increased for both groups in 3 of the 4 targeted effective teaching behaviors. Study participants and public school personnel provided feedback regarding the value and positive impact of the intervention and training on targeted teaching behaviors. Implications and future research are explored.

Chapter 1

Introduction

Eighty-seven percent of inservice teachers surveyed identified clinical/field-based experiences as the most important component of their traditional teacher education programs (Feistritzer, 2011). Field experiences for preservice teachers are critical in the development of effective teacher behaviors, similar in design to the participatory internships of medical students and residents (Huling, 1998). Preservice teachers begin to apply knowledge gained in university classrooms with pupils in small group settings, eventually planning and implementing whole class instruction (Freeman, 2010). Feedback is a key component in the development and transfer of skills from the instructional setting to application in the grade school classroom (Duhon, Mesmer, Gregerson, & Witt, 2009; Henry & Weber, 2010; Kluger & DeNisi, 1996). However, institutions of higher education have endured tremendous budget cuts in recent years, resulting in downsizing of instructional and supervisory staff during a period when total enrollment continued to increase (Oliff, Palacios, Johnson, & Leachman, 2013). Additionally, the practice of teaching is less valued in universities than engaging in research (Feiman-Nemser, 2001). Demands on junior faculty to conduct research and meet tenure publication requirements often take precedence over field supervision of preservice teachers (Pierce & Miller, 1994). The reduction of supervisory hours in the field has resulted in the loss of essential feedback for preservice teachers in the early development stages of effective teaching behaviors.

In his landmark text, *Work and Motivation*, Vroom (1964) equated feedback with knowledge of performance. During skill development, Vroom discussed the necessity of not only receiving information regarding the correctness of skill performance, but explanation regarding the precision of the performance. Feedback consists of multilayered components including the source and type of the information (Franks, 1997; Hein & Koka, 2007). Although the feedback

exchange process may be complex, Carpentier and Mageau (2013) posit the function of feedback is two-fold: to maintain or increase desired behavior and to change or extinguish undesired behavior. With the decrease in university supervisory hours of preservice teachers, teacher educators and researchers have explored the effectiveness of alternate sources of feedback for preservice teachers (Lu, 2010; Slagter van Tryon & Schwartz, 2012). One of the most cost-effective options in providing feedback to preservice teachers is peer coaching.

Peer Coaching

Joyce and Showers (1980) are credited with introducing the concept of peer coaching as a source of feedback to teachers as a component of continuing education. McAllister and Neubert (1995) defined peer coaching as “ ‘in-class assistance’ that a teacher receives...provided by a colleague—often another teacher in the school—as opposed to the assistance of an expert or facilitator from outside the school” (p. 8). Valencia and Killion (1988) defined the term as a “process where teams of teachers regularly observe one another and provide support, companionship, and assistance” (p. 170). Research utilizing peer coaches as agents of feedback in preservice teacher field experiences includes peer coaching dyads with the same levels of experience (Dodds, 1979; Englert & Sugai, 1983; Hasbrouck, 1997; Neubert & McAllister, 1993) and peer coaching dyads with one student serving as a peer supervisor (Anderson, Caswell, and Hayes, 1994; Lignugaris-Kraft & Marchand-Martella, 1993; Morgan, Gustafson, Hudson, & Salzberg, 1992; Morgan, Menlove, Salzberg, & Hudson, 1994). In addition to the variation on peer coaching dyads, targeted behavior protocols have also been used as an intervention along with peer coaching (Hasbrouck, 1997; Mallette, Meheady, & Harper, 1999; Pierce & Miller, 1994). These studies all reported increases in targeted teaching behaviors by participating preservice teachers. However, due to the variability in the interventions and the

variety of components involved in the interventions, peer coaching cannot be determined as the sole specific factor responsible for increasing preservice teachers' effective teaching behaviors.

Several studies exploring the effects of peer coaching in preservice teacher preparation also utilized procedural checklists defining targeted teaching behaviors. Mallette, Maheady, and Harper (1999) conducted a multiple-baseline study with three preservice teaching dyads. The preservice teachers received instruction in the Peabody Peer Assisted Learning Strategies (PALS) to implement with pupils in tutoring sessions. Although reciprocal peer coaching is cited as the primary independent variable, the teaching dyads provided feedback during baseline data collection on the fidelity of implementation of PALS during tutoring sessions with pupils identified with learning disabilities. After baseline data were collected, the preservice teachers received training in peer coaching. However, procedural fidelity checklists for PALS were introduced during peer coaching training to be used during post-observation sessions. Fidelity of implementation increased after training in peer coaching, but a limitation of the study is the simultaneous introduction of the PALS procedural fidelity checklist. The authors reported the quality of the feedback improved after the implementation of the checklist, resulting in increased professional vocabulary describing teaching strategies from the previous general comments focusing on pupil behaviors.

Peer coaching is supported in the literature as a valid source of feedback for preservice teachers during field placements. However, the variability in the implementation of peer coaching in the research makes it difficult to conclude whether the effectiveness of the feedback was due to the implementation of peer coaching or the simultaneous use of observational checklists. Clear, well-defined goals are a crucial component of feedback (Cusella, 1987). An observational checklist is a focused list of the defined, targeted-teaching behaviors used to

identify the practices expected of preservice teachers while working with pupils. It appears from the previously mentioned studies that effectiveness of peer coaching is strengthened when observational checklists are used. Research is needed to control for the use of observational checklists in studies exploring the effects of peer coaching.

Teacher Self-Efficacy

Bandura (1977) defined self-efficacy as “the conviction that one can successfully execute the behavior required to produce outcomes” (p. 193). Teacher self-efficacy differs from personal self-efficacy in that it is context specific to the role of the classroom teacher. Holzberger, Phillip, and Kunter (2013) defined teacher self-efficacy as “beliefs about their capacity to teach their subject matter even to difficult students” (p. 774). Teacher education programs are charged with preparing future educators to meet the complex challenges of teaching. Preservice teachers are usually instructed in behavior management and inclusive instructional methods. Regardless of the adequacy of the preparation, research indicates future teacher success can be predicted by “teachers’ self-efficacy beliefs about their own abilities to successfully perform specific teaching and learning related tasks within the context of their own classrooms” (Dellinger, Bobbett, Oivier, & Ellett, 2008, p. 751). Teacher self-efficacy is not static, but rather can increase with experience and mastery of skills (Dunst & Bruder, 2014). Teacher education programs are influential in preparing new teachers to enter the classroom with the confidence to implement effective teaching practices (Enderlin-Lampe, 2002; Tschannen-Moran & Hoy, 2007). It is important for preservice teachers to begin to develop teacher self-efficacy early in their teacher training programs. A measure of teacher self-efficacy can serve as an indicator of the effects of peer coaching in an early field experience.

Social Validity

Researchers have a responsibility to participants and the community to conduct experiments that are accepted and supported by society (Strain, Barton, & Dunlap, 2012). The measure of public approval, social validity, is defined as the acceptance of procedures and outcomes of research that has value to the members of a community (Foster & Mash, 1999). The social validity of implementing peer coaching in an early field experience directly affects preservice teacher candidates. The implementation of peer coaching also has implications for the school personnel coordinating the tutoring programs at the experimental sites. An important component of this research is to determine the social validity of peer coaching as a component of an early field experience in a teacher education program for both the preservice teacher participants and school personnel at the study sites.

Theoretical Perspectives

Theoretical perspectives for examining the effects of peer coaching in preservice teacher education include two humanistic disciplines, behaviorism and social cognitive theory. Behaviorism is based on the relationship between observed behavior and the environment, while also considering genetics and personal history (Skinner, 1974). Social cognitive theory explores the causality of human behavior as an interconnection of behavior, cognition, and the environment (Bandura, 1986).

Behavioral theory or learning theory rests in the works of Watson, Pavlov, and Skinner (Alberto & Troutman, 2013). At the foundation behavior (a moment that can be measured and counted) is the basis for analysis. The behavior, or response, occurs in relation to environmental events or stimuli in a relatively close temporal relationship. Environmental events are classified temporally as antecedents or consequences, each serving to alter the probability of future

responses. Antecedent events signal to the learner that certain responses will result in particular consequences. Their role is to increase or decrease the value or valence of the following consequence.

Applied behavioral analysis (ABA) is a discipline based on the science of behaviorism. Cooper, Heron, and Heward (2007) define ABA as “the science in which tactics derived from the principles of behavior are applied systematically to improve socially significant behavior and experimentation is used to identify the variables responsible for behavior change” (p. 20). Although widely known as an effective intervention for autism spectrum disorder and other developmental disabilities, ABA is also utilized in other settings, including adult education. Dodds (1979) conducted a study utilizing ABA strategies along with peer coaching dyads to determine the effect on the demonstration of verbal teaching behaviors in preservice teachers. Anderson, Caswell, and Hayes (1994) stressed the importance of “feedback, reinforcement, and controlled conditions for training” preservice teachers (p. 212). Kretlow and Bartholomew (2010) conducted an extensive literature review and found the process of coaching to be grounded in behavioral principles. The authors concluded coaching has the potential to increase the fidelity of implementation of evidence-based practices learned in training due to reinforcement by coaches in the natural environment of the classroom.

Social cognitive theory defines human behavior as “a model of triadic reciprocity in which behavior, cognitive and other personal factors, and environmental events all operate as interacting determinants of each other” (Bandura, 1986, p. 18). In addition to the effects of environmental consequences, Bandura posits humans have the ability to self-regulate by manipulating their environment and reinforcing consequences, allowing people to “[contribute] to their own motivation and actions” (p. 20). Self-reflection is a tenet of social cognitive theory,

whereby humans have the ability to affect their future behavior by “evaluating the adequacy of [their] knowledge, thinking skills, and action strategies” (Bandura, p. 21). According to Bandura, self-knowledge through self-reflection enables humans to determine their perceived self-efficacy, defined as “people’s judgments of their capacities to organize and execute courses of action required to attain designated types of performances” (p. 391). Bandura’s integrated approach to predicting future behavior includes observational learning or modeling. Observers of modeled behaviors may acquire new patterns of behaviors or refine and modify existing ones.

The importance of a reflective teaching practice is a component of several peer coaching studies. Goker (2006) conducted a study exploring the effect of peer coaching on the self-efficacy of preservice teachers in a program for English language teaching, contending that preservice teachers who believe they can “cause an event [will] conduct more active and self-determined teaching” (p. 247). Malette, Meheady, and Harper (1999) discussed the importance of self-efficacy of preservice general education teachers in regards to seeking support when teaching pupils with disabilities. Peer coaching was explored as a component to develop self-regulating strategies and efficacy in “their ongoing teaching practice, monitoring...their instructional adaptations, and planning future educational activities” (Malette, Meheady, & Harper, p. 202). McAllister and Neubert (1995) and Trautwein and Ammerman (2010) outlined the importance of developing reflective thinking as a component of preservice teacher education, citing the skill as necessary for future analytic teaching practices.

Peer coaching is supported by both behaviorism and social cognitive theory as a viable option in preservice teacher education for increasing feedback in early field experiences. Both Skinner and Bandura agree on the importance of the reinforcement of behaviors in the environment where they take place. Peer coaching is a social activity involving aspects of

modeling and feedback (Joyce & Showers, 1980; Showers & Joyce, 1996; Killion, 2012). Peer coaching also promotes reflective teaching (Joyce & Showers, 2002). The peer coaching pairs benefit from observing their coaching partners. Reinforcement of targeted behaviors takes place in the natural teaching environment. Skinner (1974) stated a “person who has been ‘made known to himself’ by the questions he has been asked is in a better position to predict and control his own behavior” (p. 31). Bandura (1986) discussed the impact of self-reflection on self-efficacy and its effect on predicting future behavior. The theoretical perspectives of behaviorism and social cognitive theory support this line of inquiry into the effects of peer coaching in preservice education of teachers.

Significance of the Study for Audiences

This study explored the effects of peer coaching on preservice teacher behavior and will contribute to the body of research by providing focused information regarding teaching behavior. First, the control and experimental groups will both receive training in targeted teaching behaviors with the experimental group only engaging in peer coaching. This will expand the seminal work of Englert and Sugai (1983) where both groups participated in peer coaching. Second, because peer coaching is the only independent variable, causal effects can be determined. Third, this study seeks to implement peer coaching with minimal training. The minimalist approach to peer coaching in an early field experience, if successful, will provide teacher educators information on a proven method of providing feedback to preservice teachers that is easy to implement and cost effective.

Teacher education programs have come under scrutiny to graduate teaching professionals who are prepared to meet the demands of twenty-first century classrooms with fewer resources than in decades past. This study will provide information regarding a practice that can increase

feedback to preservice teacher candidates without increasing university staff or requiring additional funding. Peer coaching has the potential to impact the quality of future educators by developing effective teaching practices early in the educational process. Stakeholders of effective teacher education practices include university administrators, professors of education, politicians, teacher candidates, parents, and the public. The primary stakeholders are the pupils that will be the consumers of the instructional product they will receive from graduates of teacher education programs.

Summary

The following statement represents the rationale for planning and executing this study. If preservice teachers (a) observe their coaching partners practice targeted teaching behaviors, (b) receive feedback regarding targeted teaching behaviors from peers in the natural teaching environment, and (c) develop reflective teaching practices, then (d) targeted effective teaching behaviors and self-efficacy will increase.

Purpose and Objective

The purpose of this study is to determine if there is a difference in the demonstration of instructional behaviors by preservice teacher education students who participate in peer coaching and preservice teacher education students who do not participate in peer coaching while tutoring at-risk elementary pupils in an early field experience. A secondary purpose of the study is to determine whether participating in peer coaching has an effect on preservice teacher self-efficacy.

The study's objectives are to: (a) investigate the effect of peer coaching on the demonstration of instructional behaviors, and (b) determine the effect of peer coaching on

preservice teacher education students' self-efficacy. The following questions guide this investigation.

1. When a peer coaching model is implemented in a college course with an early field experience, what is the influence on the instructional behaviors of students in a required special education course?
 - a. Do education students receiving peer coaching establish pupil learning objectives prior to beginning an activity more frequently than uncoached education students?
 - b. Do education students receiving peer coaching explain or model more frequently than uncoached education students?
 - c. Do education students receiving peer coaching check for understanding more frequently than uncoached education students?
 - d. Do education students receiving peer coaching give academic or behavior specific praise more frequently than uncoached education students?
2. When peer coaching is implemented in an early field experience, does the experience have an impact on the teacher self-efficacy of education students?

Potential Limitations

Four potential limitations are evident within the design of the study: participant selection, self-reporting, potential contamination, and time constraints. First, preservice teachers enrolled in three sections of an undergraduate introductory course in special education will be given the opportunity to volunteer to participate in the study. The sample will not be randomly selected or randomly assigned to the treatment. The results will not be ideally generalizable due to the selection process. Second, the measure for teacher self-efficacy is a self-reporting scale. Participants may be inclined to respond in a manner that is perceived to be what the researcher

wants. Third, the treatment and control groups may communicate with each other, discussing the variations between groups. The communication between groups may affect outcome measures. Fourth, the observational checklist used to measure teacher behaviors of the participants may not be sensitive enough to detect changes in the defined behaviors in the short data collection phase (Theis-Sprinthal, 1984).

Chapter 2

Review of Literature

Introduction

Coaching and mentoring are terms often used interchangeably in the literature; however, important distinctions exist between the two feedback models. Mentoring is the process of initiation, “designed primarily to assist the development of the mentee’s expertise and to facilitate their induction into the culture of [a] profession” (Hobson, 2012, p. 60). Coaching is a relationship between an expert and novice or colleagues with similar professional experience who provide support and feedback to an individual or group for the “development of one or more job-specific skills” (Hobson, 2012, p. 60). Various models of coaching in education include cognitive coaching and peer coaching (Hargreaves & Skelton, 2012), technical coaching, collegial coaching, and team coaching (Joyce & Showers, 2002), literacy/reading coaching (International Reading Association, 2006), and instructional coaching (Knight, 2007).

Joyce and Showers are credited with promoting coaching as a component of inservice teacher training. Typically, inservice teacher training sessions are presented in a lecture format with little participation by the attendees. Although lecture style trainings increase awareness, Joyce and Showers explored the transfer of new content and knowledge to classroom teaching practices (Joyce & Showers, 1980; 1982). They posited the lecture format was not enough to impact teacher practice and subsequent student achievement, but for behavior change to take place, teachers needed to engage in application and problem solving. According to Joyce and Showers, the training components that had the greatest impact on increasing teachers’ skills included a combination of instruction and modeling of the targeted teaching strategies, practice, and structured feedback. In a subsequent study, Showers conducted research where peers took the role of coaches (Showers, 1984).

Peer coaching has been explored as a component of preservice teacher education in hopes of increasing the level of feedback during field experiences to impact the level of effective teaching practices, while also increasing collegiality and self-efficacy. Variations of peer coaching in preservice education are found in the literature. For this study, peer coaching “is a collegial relationship between student teachers who provide reciprocal, in-class assistance to another as they attempt to incorporate new teaching skills, strategies, and approaches toward their teaching” (Neubert & Stover, 1994, p. 7). A key component of reciprocal peer coaching is the non-evaluative nature of feedback provided by a colleague with similar skills (Ackland, 1991; Kretlow & Bartholomew, 2010). The anxiety often experienced when university supervisors conduct observations is replaced with a focus on improving teaching skills rather than performing to achieve high marks (Britton & Anderson, 2010). Fostering collegial relationships between preservice teachers promotes collaboration and reduces competition, developing professionalism and a learning community (Neubert & Stover, 1994). Peer coaches also develop reflective teaching practices as they alternate from being coached to coaching (Jenkins, Garn, & Jenkins, 2005; McAllister & Neubert, 1995).

The following literature review explores the history of the effective teaching practices targeted in this study. The literature on peer coaching in preservice teacher education, feedback with inservice teachers, and the value of social validity are also reviewed. The peer coaching literature with preservice teachers examines the variations in defining characteristics of peer coaching among the studies. First, a review of descriptive and qualitative studies provides a foundation for reciprocal peer coaching and the social validity of the feedback method in preservice teacher education. Next, quantitative studies utilizing peer coaching are reviewed. A review of four peer coaching studies that used divergent intervention strategies with peer

coaching are examined. A review of feedback literature with inservice teachers will explore the impact of feedback on transfer of teacher behaviors from training to classroom implementation. Research in teacher self-efficacy is summarized. The history and current practices in social validity measures are presented.

Effective Teaching Practices

Effective instructional practices research emerged from interest in military training activities of World War II (Dick, 1987). Psychologists interested in how people learn began developing methods for evaluating instruction including Skinner (1954, 1968, 1974) and Gagné (1962; Gagné & Rohwer, 1969). Skinner began his research on the science of learning in the laboratory, exploring schedules of contingent reinforcement in the acquisition and maintenance of skills with pigeons (Skinner, 1960). He subsequently applied the technique with human subjects (Skinner, 1968). Gagné was an early cognitive psychologist who focused much of his research on the hierarchical relationship of prerequisite skills and the acquisition of new intellectual skills (Reiser, 2001). Gagné's early work is considered foundational for current practices known as learning task analysis or instructional task analysis. Gagné was also interested in K-12 instructional practices, especially in the area of reading (Gagné, Wager, Golas, & Keller, 2005). Educational researchers followed and applied the instructional design principles developed in schools. The results served to establish the theories of 20th century psychologists as hallmarks of effective instruction.

Gagné (1962) conducted a study exploring the interactions of instructions and student proficiency of prerequisite skills. According to Gagné (1962), instructions have four functions that he investigated: (a) the identification of the learning outcome, (b) the identification of the elements or components of the learning situation, (c) the provision of a variety of examples for

each component of the task, and (d) the integration of new student knowledge by using prompts to guide acquisition and reduce incorrect responses. An exploratory study was implemented with seven participants, all 9th grade males who had completed courses in mathematics, including algebra. A series of nine mathematical learning sets was created with hierarchical difficulty and presented in order of most to least difficult. The tasks were presented to the participants with and without instructions. Gagné (1962) concluded the completion rates of tasks were influenced by the appropriateness of the instructions provided for the participants based on their individual knowledge of prerequisite skills.

A variety of instructional models appears to stem directly from Gagné's work. One of the most popular sources is Russell and Hunter's (1976) outline, popularly known as the "Madeline Hunter Model for Effective Instruction" or the "Madeline Hunter Seven Step Lesson Plan." The seven-step format for effective instruction includes (a) anticipatory set, (b) the objective and purpose, (c) instructional input (d) modeling, and (e) checking for understanding, (f) guided practice, and (g) independent practice (Russell & Hunter, 1976). Echevarria, Vogt, and Short (2008) developed the SIOP Model of instruction that addresses the prerequisite language needs of English language learners. The SIOP protocol, an observational instrument used to evaluate the implementation of the SIOP model, defines 30 components of a SIOP lesson including (a) content objectives clearly defined, (b) variety of techniques used to make content concepts clear (e.g., modeling), and (c) a variety of questions or tasks that promote higher-order thinking skills (Echevarria, Vogt, & Short, 2008). Mazano (2007) outlined a framework for effective instruction by asking instructional design questions including "What will I [teacher] do to establish and communicate learning goals, track student progress, and celebrate success?" (p. 7). TAP, the System for Teacher and Student Advancement, supported and managed by the National Institute

for Excellence in Teaching, has been adopted as the system for measuring teacher performance in several states (Our Partners, 2015). Teaching behaviors considered “exemplary” on the TAP rubric include (a) learning objectives are communicated in ways that are accessible to all students, including those with disabilities; (b) modeling and explaining students outcomes; and (c) teacher questions are varied, open-ended, and include mix of questioning formats (Pathwise Instructional Rubric, 2013).

Skinner’s (1954) work added directly to that of Gagné and Hunter by discussing the importance of reinforcement in classroom instruction. Skinner discussed the importance of dividing processes into “very small steps, and reinforcement must be contingent upon the accomplishment of each step” (p. 94). Skinner (1968) continued to explore contingencies of reinforcement and the impact of teacher behavior on student learning in *The Technology of Teaching*. Skinner emphasized that students do not learn by doing, experiencing, or trial and error, but rather when their responses to academic stimuli are contingently reinforced. The following review of literature focused on the four teaching behaviors included on the *Targeted Teaching Behaviors Checklist*. These were chosen as the models of effective instruction discussed above commonly include all four, beginning with the statement of the student learning objective and proceeding with lesson components. Research has been conducted implementing the sequence of teaching behaviors as protocols of instruction (Echevarria, Richards-Tutor, Canges, & Francis, 2011; Shillingsburg, Bowen, Peterman, & Gayman, 2015; Stallings, 1985). The studies below implemented the individual teaching behaviors as independent variables.

Providing Student Learning Objectives

Robert F. Mager published *Preparing Objectives for Programmed Instruction* in 1962. Mager wrote the text as a “how to” guide for teachers, defining the components of objectives and how to implement them as the first strategy of an effective lesson (Reiser, 2001; Mager, 1997). The third edition, *Preparing Instructional Objectives: A Critical Tool in the Development of Effective Instruction* (1997), defined instructional objectives as “a collection of words and/or pictures and diagrams intended to let others know what you intend for your students to achieve” (Mager, 1997, p. 3). Mager’s article *Preparing Instructional Objectives* (1962) has been cited more than 3000 times (scholar.google, 2015) and the subsequent text has sold more than 3 million copies (Mager, 1997).

Smith and Crittenden (1972) conducted a study to determine the impact of behavioral objectives and structural sequencing in an elementary school music curriculum guide compared to a traditional guide. The study was implemented with 42 elementary school music teachers with 3,200 5th and 6th grade pupils. A pretest/posttest was administered to measure student achievement in the music curriculum. Elementary schools were randomly selected as experimental or control locations. The treatment group scored significantly higher on the music achievement assessment at the end of the study than the control group. The music teachers who used the experimental curriculum guide perceived an increase in classroom participation by the experimental group.

Lawson (1974) reviewed the history and varied opinions of instructional objectives; at the time it was published, the importance of instructional objectives in the literature appeared to be more logically or rationally based rather than empirically based. Lawson reviewed research that focused on different components of instructional objectives including (a) disclosing instructional

intents, (b) the specificity of objectives, and (c) the placement of objectives prior to or during instruction. Lawson (1974) concluded the impact of stated learning objectives was influenced by the instructional conditions along with the specificity and placement during instruction.

Mosely and Bell (1976) explored the effects of specific and non-specific learning objectives with 138 students in 8th grade. The non-equivalent control group design utilized a pre-post-test measure. Three science teachers implemented the study in six different sections of 8th grade science prior to an instructional unit on chemical activity. Students in the treatment group were given specific learning objectives for the unit, while students in the control group were given non-specific learning objectives. Results for the main effect were significant for the treatment group on the posttest. Students reported the learning objectives provided guidance for study throughout the unit.

Umoren and Ogong (2007) conducted a study to explore the impact of stated learning objectives on student achievement on a biology achievement test. Four intact groups were given learning objectives at three different times: 2 days prior to the lesson, 1 day prior to the lesson, immediately before the lesson, or no learning objectives were given. The results of the pre-test/-post-test design were tested by analysis of covariance (ANCOVA) with post hoc analyses of Scheffé pairwise comparisons. Students performed significantly higher on the biology text when provided learning objectives immediately prior to the lesson. The study provided evidence of the impact of student learning objectives on academic achievement. It also provided information regarding the differences in effect of learning objectives based on the presentation schedule.

Explained or Modeled

Hunter (1982) outlined three basic principles to provide information effectively. First, the information for the lesson must be determined and organized. This step is similar to determining

student learning objectives prior to instruction. Second, the new information must be presented using vocabulary the students can understand. This step includes providing “real world” examples the students can relate to based on their prior knowledge. Third, the information or process must be modeled by demonstrating the principle that is the student learning outcome.

McNeill and Krajcik (2008) explored the impact of teacher instructional practices on the ability of middle school pupils to construct scientific explanations during a unit in chemistry. Thirteen certified science teachers taught 1197 pupils in 7th grade in the pre-test-/post-test study. Additionally, teacher instruction was video recorded and analyzed for specific instructional activities. The curriculum guide for the chemistry unit included instructional guidelines for three components of scientific explanation (i.e., claim, evidence, and reasoning). The instructional protocol for scientific explanations in the guide included (a) defining scientific explanation, (b) explaining the rationale of scientific explanation, (c) modeling scientific explanation, and (d) providing real life application for scientific explanation. Video recordings of the lessons were analyzed for participating teachers’ adherence to the instructional protocol. The researchers measured whether the pupils increased their knowledge of scientific explanations after the unit and whether their performance could be predicted based on the instruction they received. Posttest scores showed significant gains in the pupils’ knowledge and writing of scientific explanations. A hierarchical linear regression model was developed to determine whether there was a relationship between instruction and student achievement. The effect size for the thirteen teachers ranged from 1.11 to 5.84. The researchers concluded that although all teachers in the study provided instruction on the same unit and pupils made significant gains, differential learning occurred due to the teachers’ explicit explanations for constructing scientific explanations.

The following studies are examples of current literature exploring teacher explanations. The research not only investigated how teachers develop instructional skills, but also sought to understand how teacher preferences and cultural diversity impact the effectiveness of verbal instructions. The studies move beyond simply providing explanations to identifying variables that influence success of teacher explanations.

Levenson, Tsamir, and Tirosh (2010) conducted a mixed methods study that explored the explanation preferences of elementary teachers regarding the parity of integers. Sixty-one Israeli public school teachers participated in the study. A two-part questionnaire was administered to gather information regarding whether the teachers preferred mathematically based (MB) explanations or practically based (PB) explanations when explaining the concept of even and odd numbers. The first half of the questionnaire asked teachers to explain the parity of four numbers (14, 9, 0, 286). The second half of the questionnaire provided three each of MB and PB explanations for the parity of 14 and 9. Teachers were asked the following questions regarding the examples: (a) Which explanation was most convincing to you? (b) Which explanation would be most convincing for your students? (c) Which explanation would you use in your classroom? and (d) Which of the six explanations may also be used to explain conjectures regarding 0 and 286? Interviews were also conducted with two teachers, one who preferred MB explanations and one who preferred PB explanations. Results for teacher-generated explanations were significant for MB explanations. Thirty-one percent indicated they would use both MB and PB explanations during instruction. The results indicated the participants were knowledgeable of different types of explanations and of elementary mathematics content, a predictor of student academic progress.

Charalambos, Hill, and Ball (2011) conducted a qualitative study that explored whether preservice teachers could learn to provide instructional explanations after participating in teacher education courses and activities. Additionally, the study sought to understand the process that contributed to the skill development of providing instructional explanations. The study was implemented in two teacher education courses that led to K-8 teacher certification and a Masters of Arts degree in education. Four students were purposefully selected for the case study. Data included pre- and post-observations of each participant performing an instructional explanation for fraction division. Student generated artifacts were analyzed including notes from in-class activities, homework assignments, reflective writing, and video analyses of course sessions. Pre- and post-coursework interviews, survey questionnaires, and post-program interviews were also conducted. The participants engaged in course content, participating in both independent and group activities. The participants had opportunities to engage in teaching activities with pupils in elementary school classrooms. Data were first analyzed individually, followed by a cross-case analysis. The researchers concluded that the ability to provide instructional explanations was a key component for the advancement of one's teaching practice. Student reflective writing and self-monitoring appeared to support the development of quality instructional explanations. Additionally, gaining insight of varied approaches to mathematic problems provided the participants with understanding that multiple approaches were needed in instructional explanations.

Riconscente (2014) explored the effects of teacher attributes, including teacher content explanations, on Latino students' interest and academic progress in mathematics. Surveys were administered to 326 high school students three times during the school year. Student perceptions of teacher practices (e.g., teacher content explanations) were found to have a significant impact

on student math class interest, self-efficacy, and achievement. Teacher caring was a predictor of student self-efficacy in mathematics, however teacher caring was not found to be a significant indicator of student achievement. The regression model suggested an interrelationship between the variables, with teacher caring perceived as a critical component for the success of Latino students' mathematic achievement.

Checked for Understanding

Research regarding checking for understanding as a component of effective instruction has roots in the mid-20th century. Redfield and Rousseau (1981) utilized a meta-analytic technique to explore the effect of teacher questioning on student achievement. Twenty studies were included in the review. The experimental or quasi-experimental studies were divided into two groups according to the teacher questioning practices in the studies, low cognitive questions or high cognitive questions. Fourteen studies were included in the final analysis, all with dependent variables of student achievement and independent variables of levels of teacher questioning. The results of the meta-analysis found an overall positive effect of +0.7292. The researchers concluded student achievement increases when teachers use predominantly higher-content cognitive questions during classroom instruction. Checking for understanding by asking questions that require students to explain content understanding at deeper levels than simple binomial responses is an important skill for preservice teachers to develop early in their teaching practice due to the impact on student academic achievement.

Forman, McCormick, and Donato (1998) conducted an exploratory case study regarding the development of mathematic discourse. The study focused on one middle school teacher who worked to create communication patterns that emphasized student mathematical reasoning, fostered student exploration of multiple strategies to solving problems, and developed peer-

tutoring skills. The classroom session analyzed for this study was selected from nine video recordings of mathematic lessons. The students' explanations of parameter problems were analyzed for authoritative and overlapping speech by the teacher. Although the teacher allowed for students to share explanations, the teacher remained authoritative by talking over students and selecting student presenters that mirrored her explanation of the concept. The researchers noted that in later analyses the teacher developed new strategies for engaging students in mathematical discourse. The researchers concluded that the case study provided insight into the development of classroom instructional processes and the tone of teacher/student discourse may affect the willingness of students to take academic risks, especially when asked to publically explain personal understanding of a concept. This study identified specific teacher behaviors, authoritative speech, and talking over students as deterrents to student engagement, especially in the area of mathematics exploration and understanding. Checking for understanding involves more than asking question, but listening to student responses and using the information provided in the response to inform future instruction.

Ruiz-Primo and Furtak (2006) explored three research questions regarding questioning during science instruction: (a) what is the topography of informal assessment in the of scientific inquiry teaching? (b) can informal assessment practices be identified? and (c) can levels of informal assessment affect student achievement? The researchers adopted the term *assessment conversation* from Duschel and Gitmer (1997) that referred to assessment embedded into classroom instruction and activities that were already occurring. The researchers defined four components of what they call the ESRU assessment conversation cycle. The four components are: (a) teacher questions to elicit a student response, (b) student gives a response, (c) teacher recognizes the students answer, and (d) the teacher uses the information from the student to

adjust teaching to support student understanding. Twelve middle school science teachers were randomly assigned to the treatment or control group. The participants video recorded 12 teaching sessions. The dialogue from the videos was transcribed and coded for the four components of the ESRU cycle. Pupils were given a pre- and post-test to measure academic performance.

Differences between the four groups of pupils were analyzed using one-way ANOVA and no significant differences were determined on the pretest. A general linear model determined post-test growth was dependent on the pupils' teacher. Increases in post-test means by teacher ranged from 2.52 to 12.70. Analyses of the transcribed teaching sessions determined considerable differences between the teachers use of the ESRU cycle of assessment conversation. Results indicated the students whose teachers implemented the ESRU cycle during instruction with the most consistency scored significantly higher on the post-test. The informal assessment procedure was more than questioning. The second and third steps focused on listening to students and acknowledging their responses. The results of the study indicated effective questioning has a critical listening component. Informal assessment is more than asking questions. Teachers must listen to students and use the information to inform instructional decisions. The teachers' ability to check of understanding and modify instruction led to higher student achievement in this study.

Heng and Sudarshan (2013) explored the impact of clinical interviews with early primary pupils regarding math understanding on teacher perceptions and understanding of mathematic pedagogy and pupil learning. The clinical interview process included the development of flexible questioning to inform instruction. Participants in Phase 1 of the study included nine elementary teachers and 51 1st grade pupils. Participants in Phase 2 included two elementary teachers, 30 1st grade students, and 29 2nd grade students. The intervention consisted of professional development and ongoing mentorship from the researchers. Pre-intervention data were collected

for all data sources. Data collection for Phase 1 consisted of weekly observations of math instruction utilizing Big Math for Little Kids curriculum program (Balfanz, Ginsburg, & Greenes, 2003) for seven weeks. A key component of the curriculum is “math talk” that focuses on the development of math literacy. The focus of the observations was to gather data regarding teacher-pupil interactions. Teachers and researchers also conducted clinical interviews with individual pupils and small groups to gain insight into their mathematic reasoning and constructions of knowledge. Pre- and post-project interviews were conducted with teachers to explore individual teaching practices and beliefs. Participating teachers gained insight into unwarranted effects of their teaching practices on pupil mathematic understanding. The clinical interview with individual pupils was found to reveal student misconceptions about mathematics that had not been apparent in whole class instruction. The researchers concluded clinical interviews provided teachers with valuable information regarding decisions for effective primary mathematics instruction and whether students understood what they were learning. The clinical interview provides an opportunity for teachers to engage with students to check for understanding that may not be obtainable in a whole class setting. Preservice teachers in the tutoring setting participated in this type exchange when checking for understanding and listening to pupils explain their understanding of mathematic concepts.

Heritage and Heritage (2013) explored the use of conversation analysis to investigate the real-time use of questioning as a component of formative assessment. Their research questions were: (a) what are the teaching behaviors that constitute formative assessment? and (b) are there classroom routines and structural practices that support formative assessment? The participants included one literacy teacher and two 5th grade students who were both English language learners. The teacher held one-on-one sessions with each of the students as a component of a unit

on persuasive writing. The sessions were video recorded and analyzed using the qualitative method of conversation analysis. The transcribed interactions were compared to the teacher/student communication pattern initiation-response-evaluation sequence (Sinclair & Coulthard, 1975). The researchers concluded the teacher created a non-threatening atmosphere for collaboration. The sessions had similar structure, but responses to the two students were unique and based on the student learning needs. The system or structure of the sessions provided stability and established predictability for teacher-student engagement. The researchers concluded more research is needed in the analysis of real-time, *in situ*, teacher-student interactions to evaluate the level of formative assessment implemented in classrooms. Checking for understanding is a key factor in formative assessment that has been found to have an impact on student achievement (Fuchs & Fuchs, 1986).

The four studies above (Forman, McCormick, & Donato, 1998; Heng & Sudarshan, 2013; Heritage & Heritage, 2013; Ruiz-Primo & Furtak, 2006) extended the work of Redfield and Rousseau (1981) by focusing on the listening component of teacher questioning. Although it is important for teachers to develop lesson plans with appropriate levels of questions, it may be just as important for teachers listen to students responses. Listening to student answers provides opportunities for teachers to make “real time” adjustments to instruction and informed decisions for future lessons. Listening and responding are foundational for informal assessment. The effective teaching behavior *checked for understanding by asking content-related questions or asked pupil to verbally explain/demonstrate answer/concept* is a teaching behavior not only important for tutoring sessions, but is the beginning of skill development for informal student assessment.

Specific Praise Statements

Praise statements linked to academic responses or prosocial behaviors have been found to support the behaviors' reoccurrence (Sutherland & Wright, 2013). However, the development of effective teacher praise is complex and extends beyond a simple verbal "good job" or high-5 gesture. For praise to reinforce student academic performance, the praise statement should focus on the learning process or skill mastery (e.g., "Good thinking solving the problem"), instead of a judgmental statement about the pupil (e.g., "You're so smart," Good & Brophy, 2008). The ratio of criterion praise statements in Direct Instruction programs is 9:1; that is, the teacher should praise students nine times more often than redirecting or correcting inappropriate student behavior (Marchand-Martella, Slocum, & Martella, 2004).

Chalk and Bizo (2004) explored the differences in the effect of general praise and specific praise statements by teachers on pupil on-task behavior, enjoyment of numeracy lessons, and pupil academic self-concept. Four elementary teachers and 109 pupils ages 8 to 9 years old participated in the study. Following baseline data collection, the teachers participated in a 45-minute training session regarding the use of praise statements. Two teachers were instructed on the use of positive, non-specific praise statements, and two teachers were instructed on the use of specific praise statements. The teachers recorded their use of praise statements and student on-task behavior after mathematics lessons. A repeated measures ANOVA was conducted and significant positive results were found for pupils' on-task behaviors whose teachers used specific praise statements during mathematics instruction. Significant increases were also found for student academic self-concept as measured by the "Myself-As-Learner" Scale.

Pisacreta, Tincani, Connell, and Axelrod (2011) conducted a multiple baseline study to determine whether teachers could maintain a 1:1 ratio of specific praise statements to behavior

correction statements when provided training and performance feedback. Additional research questions explored if pupil disruptive behavior would be reduced if teachers maintained a 1:1 praise-to-behavior correction and if the teaching behavior would generalize to other classroom settings. Three middle school teachers requested support for classroom management with an average of 5 years teaching experience. Praise statements for all three teachers were very low during baseline, with a range of 0-2 praise statements in a 20-minute teaching session. The first phase of intervention included a preliminary meeting with each teacher where the researcher reviewed performance feedback for baseline data. Second, the researcher modeled appropriate teacher praise statements in the individual classrooms for 20 minutes. After the modeling session, the researcher gave verbal and gestural prompts for the teachers to give contingent specific praise statements for 20 minutes. The researcher provided performance feedback after each of the prompted teaching sessions. The last phase of the intervention included weekly performance based feedback on teacher rates of praise-to-behavior correction without modeling or prompting. All teachers maintained the 1:1 ratio during the modeling and feedback only phases of the intervention. Student disruptive behavior fell from a range of 22%-40% of occurrence during observed intervals to 8%-23% during the modeling/feedback phase of the intervention and 15%-18% during the feedback only phase of the intervention. All three teachers increased their praise statements in the generalized settings.

Thompson, Marchant, Anderson, Prater, and Gibb (2012) explored the impact of behavior specific praise on classroom behavior. The participants were three elementary general education teachers who had requested support for behavior management or were identified by their school principals. Each teacher identified one pupil in her class that exhibited off-task behaviors as the focus for the intervention. The dependent variable was the frequency of

behavior-specific statements for either appropriate academic or social behaviors. Pupil on- and off-task behaviors were also recorded in conjuncture with teacher behavior. The intervention to increase teacher specific praise statements was based on a Response to Intervention model, utilizing a three-tiered approach. Tier 1 was school-wide professional development on behavior specific praise. During Tier 2 intervention, teachers video recorded lesson segments, self-analyzed the videos for the frequency of specific praise statements, and sent the count information to the researcher. Tier 3 intervention included coaching by a district-level special education specialist. The coach provided non-evaluative support including emails and personal sessions. Additionally, all participants used a MotivAider, an electronic signaling device used as a reminder to verbally praise. A multiple probe design was used to evaluate the effects of the independent variable. Results found no change in teacher behavior following Tier 1 training. Teacher specific praise statements increased during both Tier 2 and Tier 3 intervention cycles. All participating teachers increased their rate of behavior specific praise statements by more than 50%. Pupil on-task behavior also increased during Tier 2 and Tier 3 intervention phases.

Briere, Simonsen, Sugai, and Myers (2015) conducted a concurrent multiple-baseline study investigating the effects of a with-in school consultation model on the rate of specific praise statements of new elementary teachers during classroom instruction. Participants included three teachers with less than 2 years teaching experience and three in-school mentors with an average of 13-years teaching experience. The new teacher participants all averaged less than 6 specific praise statements per 15-minute teaching session during baseline data collection. The new teachers self-monitored their praise statements daily during one 15-min teaching session by using a hand-held golf counter and recording the counts in an Excel spreadsheet. The intervention included weekly meetings between new teachers and mentors. The mentors

followed a scripted protocol that included performance feedback, strategies for improvement, and goal setting. Trained observers collected data on the new teachers use of specific praise statements throughout the study, but did not share the information with the participants. All participating new teachers increased their rates of specific praise statements during the treatment phase to the target ratio, 6 per 15-min segment of direct instruction. Additionally, all three new teachers maintained their ratio of specific praise statements during the follow-up condition.

Relationship of the Literature to the Behaviors Targeted in the Study

The four effective teaching behaviors included on the *Targeted Teaching Behaviors Checklist* are foundational for the behaviors teachers are expected to demonstrate during instruction. The *Targeted Teaching Behaviors Checklist* and the online instruction in effective teaching behaviors were designed to provide an introduction to effective teaching practices prior to education students first field placements working with pupils in schools.

Peer Coaching in Preservice Teacher Education

Descriptive and Qualitative Studies in Peer Coaching

The nine studies summarized below span more than 15 years of research of peer coaching in teacher education programs. The descriptive and qualitative studies explored a variety of field placements, from elementary education classrooms to physical education majors teaching in gymnasiums. Results included information regarding the source of feedback and social validity of peer coaching.

Neubert and McAllister (1993) implemented peer coaching with preservice teachers for a two-year period, collecting qualitative data exploring (a) the value of perceived peer coaching of preservice teachers, (b) what problems were perceived in the peer coaching process, and (c) whether participation in peer coaching increased the reflective practices of preservice teachers.

The feedback was non-evaluative, providing support and planning strategies. An open-ended questionnaire was administered at the end of each semester and participation was a voluntary. The value placed on peer coaching by the preservice teachers included “ ‘loving’ (41%) or ‘liking very much’ (52%)” the peer coaching experience. Concerns regarding the peer coaching process included offending their teaching partners with suggestions for future teaching. In addition to the questionnaire, audio recordings of the coaching sessions were analyzed. The analyses of the transcribed coaching sessions concluded peer coaching supported the transfer of strategies and concepts studied in the university classroom to teaching practice. Neubert and McAllister (1993) did not directly explore the influence of peer coaching on skill development but provided evidence of social validity for peer coaching in their preservice teacher program.

Anderson, Caswell, and Hayes (1994) conducted a qualitative study investigating the differences between preservice teachers responses when observed by a university supervisor or a peer. Additionally, the study explored what preservice teachers experience when observing a peer. The authors noted that the feedback in traditional teacher preparation programs was mainly summative, providing information regarding what preservice teachers “have learned about teaching” rather than “providing... students an opportunity to learn how to teach” (Anderson, Caswell, & Hayes, 1994, p. 212). The authors implemented peer coaching as a source of additional feedback for preservice teachers in a three-part longitudinal study.

Thirty-four preservice elementary education majors participated in the qualitative study. Data collected during the study included student journals and a post-field experience survey. Student journals were analyzed for themes relating to the research questions. Seventy-three percent stated they were “nervous” before/during and/or after the university supervisor’s observations. Students’ recorded “feedback” from peers was “helpful,” with only 9% stating they

felt “nervous” during peer coaching sessions (Anderson, Caswell, & Hayes, 1994, p. 216). Comments regarding emotions while observing peers were “overwhelmingly positive,” including the sessions were “learning experience[s],” “enjoyed it,” and “went well” (Anderson, et al., 1994, p. 217). Ninety percent of the students responding to the survey indicated peer coaching was “very helpful to moderately helpful” (Anderson, et al., 1994, p. 218). Additional data collected in later phases of the study revealed 45% of students recommended a field placement of two preservice teachers assigned to the same classroom as peer coaching dyads.

Wynn and Kromrey (1999) reported on a four-year descriptive study with peer coaching in early field placements. The study was conducted for two years and replicated the following two years, with 38 and 41 preservice elementary education majors per group. The first semester of the first year, open-ended questionnaires were distributed to peer coaching dyads and cooperating teachers. The resulting themes were used to create Likert-scale surveys that were used in the data collection process the remaining three and one-half years of the study. The coaching dyads engaged in reciprocal peer coaching, providing feedback on all teaching sessions. Peer feedback included a pre-observation conference where the preservice teacher “identified specific instructional concerns for the peer coach to observe,” notetaking by the peer coach during observation, post-observation feedback, and reflective journaling by both participants (Wynn & Kromrey, 1999, p. 26). A peer coaching form, which the authors developed and used, included the targeted teaching concerns identified by the teaching peer and the *Purdum-Wynn Lesson Plan Format* (Wynn & Kromrey, 1999). Results of the study included the “development of support and collegiality” between coaching dyads, increased transfer of teaching behaviors from role play to instructional practice, and greater opportunities to develop a reflective teaching practice (Wynn & Kromrey, 1999, p. 37).

Anderson and Radencich (2001) conducted an ethnography exploring the perceptions of preservice teachers in response to feedback from different sources: a peer, the directing teacher, and the university supervisor. The 34 elementary education majors were assigned in teaching dyads for an early field experience. The feedback provided from all three sources was non-evaluative, and “followed the format of the coaching model...naming effective behaviors and strategies, selecting areas that needed improvement, and telling students specific ways to achieve the improvement” (Anderson & Radencich, 2001, p. 67). Data were obtained from three sources. Peer coaching dyads utilized data forms to document each preconference, observation, and post conference. Dialogue journals were exchanged weekly between the preservice teachers and the university supervisor. End of course surveys administered by the university were analyzed for student satisfaction regarding the structure of the field experience. Results from the surveys indicated the preservice teachers valued the feedback from the university supervisor slightly more than from the cooperating teachers, with feedback from peers valued the least. However, it is important to note the feedback from the university supervisor was non-evaluative and no grades were based on the observations.

Jenkins and Veal (2002) conducted a qualitative study exploring the development of pedagogical content knowledge (PCK) in preservice physical education teachers during peer coaching activities. Eight senior preservice practicum students with previous peer coaching experience volunteered for the study. They were assigned in teaching dyads at an elementary school where they alternated teaching and observing during physical education lessons. Data sources were audio recordings of coaches’ comments during observation of teaching partner, audio-recorded feedback sessions, and daily written reports by coaching dyads. Additional data included an interview with the course professor, focus group discussions with participants, and

the researcher's journal. The authors reported the preservice teachers developed PCK as a result of participating in reciprocal peer coaching. Conversational content between the preservice teachers changed during the course of the study from general comments regarding teaching to explicit discussion of the pedagogical differences in instructional strategies for varied content.

Ovens (2004) conducted a qualitative study exploring the implications of an alternative practicum structure, incorporating peer coaching and action research. Twelve senior physical education majors were selected for the alternate practicum. Participants were assigned to field placements in teaching dyads, serving as "a critical friend" to their teaching partner (Ovens, 2004, p. 49). The participants were required to observe at least eight teaching episodes of their dyad partner and provide feedback during meetings. Details regarding training in peer coaching, guidelines for feedback, or use of protocols were not included in the report. Participants were also required to complete an action research study during the field placement. Data collected for analyses used surveys, observations, and interviews. Results provided were brief summations and quotes from the participants. Specific details regarding peer coaching were not included in the reported narrative data.

Jenkins, Garn, and Jenkins (2005) conducted a qualitative study exploring how physical education majors observe preservice teaching peers in an early field experience. The researchers were seeking to shift the focus of the preservice teachers from observing instruction from a pupil perspective to a teacher perspective. Thirty-seven preservice teachers volunteered to participate in the study that spanned two years. Participants were assigned to field placements in coaching groups. The preservice teachers were trained in systematic observation techniques and reciprocal peer coaching methods. The observations of targeted teaching behaviors were recorded on observation checklists. The data from the observation checklists were used to complete peer

coaching feedback forms used in coaching conferences following teaching episodes. Data from the coaching forms in the Praise Statement and Observation Notes sections were analyzed for emerging themes across coaching triads. The researchers identified three findings. First, the use of specific protocols defining targeted teaching behaviors guided the preservice teachers during observations. Second, peer coaching should be implemented over a period of time, allowing preservice teachers time to develop PCK through consistent observation of peers and pupils. The researchers identified a “shift in observational comments” (Jenkins, et al., 2005, p. 14), from general language to specific pedagogic vocabulary, as the study progressed over time. Third, when peer coaching is implemented over time with the same pupils, preservice teachers began to recognize the pupils as individuals with varied abilities and needs, allowing for a deeper development of PCK. A limitation of the study was the additional use of video self-analysis. The preservice teachers participating in peer coaching also reviewed their individual video recorded teaching episodes and documented their self-observations on the same protocols the coaches used during in class observations. The development of PCK and professional vocabulary cannot definitively be attributed to participation in peer coaching due to the simultaneous implementation of video self-analysis.

Fry and Hin (2006) conducted a qualitative study with 21 preservice elementary physical education teachers. The participants were assigned to peer coaching pairs and engaged in reciprocal peer coaching during a four-week practicum utilizing “bug-in-the-ear” technology. The data collected included weekly surveys, consisting of five items on a five-point Likert-scale and audio transcripts of the coaches in the moment feedback. The survey items explored the participants’ satisfaction with the use of ear-bug device during teaching sessions. Survey results were reported weekly by item with mean totals. The students were satisfied with the device (3.6

to 4.06) and the amount of communication (3.25 to 3.81). The students reported a decrease in the “extent of the influence” of the communication over the four-week period, falling from 4.10 in week one to 3.76 in week four (Fry & Hin, 2006, p. 200). Examination of the transcribed coaches’ remarks indicated the lesson analysis sheets guided their coaching remarks.

Britton and Anderson (2010) conducted a qualitative study “to explore the effects of peer coaching and its influence in altering or affirming practices of pre-service teachers” (p. 307). Four preservice teachers volunteered to participate in the study. The participants were placed in coaching dyads in a field placement at a high school where they engaged in reciprocal peer coaching. Data included interviews with the participants at the conclusion of the practicum with the open-ended questions given to the participants in advance. The participants also submitted answers to five reflection questions via email. Transcripts of the interviews were analyzed for common themes among participants. All participants indicated they benefitted from peer coaching, developed a trusting relationship with their team member, and did not experience anxiety receiving or giving feedback during coaching sessions. The authors concluded peer coaching affects the teaching practices of preservice teachers and recommended peer coaching as a standard model for teacher preparation programs.

The qualitative research in peer coaching in preservice education programs has identified several variables that warrant additional research. The following review summarizes studies that explored the effects of peer coaching utilizing quantitative methods. Included are both multiple baseline and group design studies.

Quantitative and Mixed Methods Studies in Peer Coaching

Dodds (1979) designed a multiple baseline study with two preservice teaching dyads. The four senior physical education majors participated in a 12-week practicum. The teaching partners

alternated teaching and observing their dyad partner. A structured protocol developed by the investigator included 68-targeted teaching behaviors. The multiple baseline study analyzed four verbal behavior teaching modules, including both positive teaching behaviors and negative behaviors. Dodds concluded “student teachers can systematically gather data and provide feedback to peers...while functioning as change agents for each other” (p. 28). Although Dodds has been cited as a study in the peer coaching literature, (Anderson & Radencich, 2001; Lu, 2010), the results of the study are inconclusive regarding the effects of peers as change agents for the transfer of teaching skills. Dodds simultaneously implemented applied behavior analysis strategies, including a detailed protocol of teaching behaviors, with peer coaching. The results do not lead to a firm conclusion regarding the independent effectiveness of peer coaching on skill transfer with preservice teachers.

The research of Englert and Sugai (1983) explored the use of an observational instrument to guide peer coaching feedback. The authors hypothesized the use of “well-defined observation systems...would result in greater trainee demonstration of behavior management and direct instruction behaviors” (Englert & Sugai, 1983, p. 8). Twenty preservice special education teachers in two sections of a practicum course were designated as the experimental or control group. The preservice teachers were assigned in teaching dyads of their choice, each member observing and teaching five times. Both the experimental and control groups received instruction in behavior management, planning instructional programs, direct instruction, and evaluation. The experimental group was trained to use two observational protocols to use with their coaching partners. One focused on teacher and pupil behaviors and the other was a checklist for direct instruction techniques. The control group developed their own methods for providing feedback to their teaching partners. Results indicated no statistical difference between groups in regard to

classroom behavior management. The results indicated the experimental group was able to maintain a statistically significant higher rate of pupil accuracy during direct instruction lessons than the control group. The authors concluded feedback from peers was beneficial in increasing feedback to preservice teachers (Englert & Sugai, 1983); however, both the experimental and control groups engaged in peer coaching. The major difference between the groups was the detailed observational forms used to guide feedback discussions. Since both groups engaged in peer coaching, the results of the study are inconclusive regarding the effects of peer coaching but indicated using a structured protocol to guide peer coaching feedback can increase the development of targeted teaching behaviors of preservice teachers.

Pierce and Miller (1994) conducted a pre-test/post-test two-group design study comparing “the effectiveness of peer coaching procedures to traditional faculty supervision on the acquisition of effective teacher behaviors” (p. 216). Twenty-nine preservice teachers enrolled in a special education methods course participated in the study. Both the experimental and the control groups received the same instruction in effective teaching methods prior to baseline data collection. After baseline data were collected, the experimental group was informed of the intervention. The experimental and control groups both received training on the use of a modified version of the Florida Performance Measurement System and the university practicum rating form. The experimental group received training in peer coaching techniques. The peer coaching teams observed their teaching partners twice during the intervention phase of the study. The observed teaching episodes were followed by feedback sessions discussing the self-evaluation of the lesson by the coached preservice teacher, performance of targeted teaching behaviors, and goals for the next teaching session. Additionally, the peer coaching dyads provided immediate feedback during observed teaching episodes regarding performance of

targeted teaching behaviors in the form of gestures (e.g. pulling on ear for targeted ineffective teaching behaviors, thumbs up for targeted effective teaching behaviors). The coaching teams also created support groups to expand the discussions in the feedback sessions, sharing cuing strategies and curriculum planning ideas. The university supervisor observed preservice teachers in the control group twice during the intervention phase, providing feedback following the observed teaching sessions. The university supervisor did not cue observed students during teaching episodes. The control group did not create peer support groups.

Both the experimental and control groups increased effective teaching behaviors and reduced ineffective teaching behaviors after the intervention phase. The results of a full factorial multivariate analysis of variance showed there was no statistical difference between the experimental and control groups. The authors concluded feedback provided by peer coaches was as effective as feedback provided by a university supervisor in the development of appropriate teaching behaviors in a preservice field placement.

Bowman and McCormick (2000) conducted a mixed methods study exploring the differences in a traditional supervision model to a peer coaching model of feedback in a preservice teacher education program on the development of clarity teaching skills, pedagogical reasoning actions, and preservice teacher satisfaction of the field experience. Thirty-two elementary education majors in the third or fourth year of an undergraduate program were randomly assigned to the experimental and control groups. All participants received the same instruction on the seven clarity skills and post-conference guiding questions. Pre-intervention data indicated no statistical significance between the experimental and control groups in their use of clarity skills during video recorded teaching sessions. The experimental group was assigned to a field placement in peer coaching dyads. Each teaching session was observed by the coaching

partner and the cooperating teacher. Peer coaches provided feedback immediately following the teaching sessions. The experimental group received immediate feedback after the twelve teaching sessions, 10 times from their coaching partner and two times from the university supervisor. The control group was individually assigned to a field placement and received feedback after 12 teaching sessions from either the university or the cooperating teacher. Although the details are not specific in the article regarding the frequency of observations, the control group received feedback 12 times. Sometimes the feedback was based on the preservice teacher's self-evaluation of the teaching session not direct observation by the university supervisor. The feedback was not always provided immediately after the teaching sessions, but delayed. The frequency of delayed feedback was not described. The authors reported statistically significant differences between of the usage of clarity skills by the experimental group compared to the control group. The authors concluded peer coaching was effective in the development of clarity skills; however, they also noted "the more consistent feedback received by the experimental group helped the preservice teachers integrate the strategies into their teaching repertoires" (Bowman & McCormick, 2000, p. 261).

Goker (2006) conducted a mixed methods study exploring the effects of peer coaching in a teacher education program for the teaching of English as a foreign language (TEFL). The three research questions included the effect of peer coaching on teacher self-efficacy, demonstration of instructional skills, and student preference of field experience structure. Thirty-two participants were randomly assigned to the experimental and control groups. Both groups received instruction in the clarity skills that were the targeted teaching behaviors for the field experience. The experimental group was assigned to classrooms in dyads and the preservice teachers in the control group were individually assigned to classrooms. The experimental group provided

feedback to their teaching partners following each teaching episode. The control group participants only received feedback from university supervisors. The feedback from the faculty member and the cooperating teachers was inconsistent, reporting the same scheduling challenges as Bowman and McCormick (2000). Analysis of the video recorded teaching sessions after the intervention “showed statistically significant differences in favor of the experimental group for all variables” (Goker, 2006, p. 247).

The studies examined previously all concluded peer coaching was a viable model for providing feedback to preservice teachers during field experiences. However, questions remain. Dodds (1979) and Englert and Sugai (1983) implemented peer coaching with all participants in their studies. The comparison between groups in Englert and Sugai involved the use of a structured protocol to guide feedback discussions. Both teaching dyads in the Dodds study utilized protocols for observations and feedback sessions. The results of the two studies do not clearly support peer coaching as a model to increase effective teaching behaviors in preservice teachers, but rather provide evidence for the effective use of protocols detailing targeted teaching behaviors to teaching dyads. Bowman and McCormick (2000) and Goker (2006) compared the effective teaching behaviors of two groups: experimental groups participating in peer coaching and control groups receiving feedback only from individuals in authority. Both studies found the peer coaching groups demonstrated more effective teaching behaviors than the control groups. However, both studies indicated inconsistency in the feedback schedules of the supervisors. The inconsistency in feedback by the supervisors is a limitation of the studies, bringing into question the significant results for peer coaching effectiveness. Pierce and Miller (1994) included the use of a protocol with both the experimental and control groups. The control group received consistent and immediate feedback from a university supervisor, following the same structure as

peer coaching dyads. Pierce and Miller found no difference in the development of effective teaching skills between the two groups. The researchers concluded undergraduate peers could provide useful feedback during the transfer of teaching skills from the university classroom to practice. However, the effect of providing a protocol for guiding self-reflection without immediate feedback from an observer is a remaining question.

Divergent Peer Coaching Studies

The following four studies are included in the body of literature for peer coaching, but implemented peer coaching with components inconsistent with the traditionally accepted definition. Hasbrouk (1997) utilized graduate students with experience in teaching as mediators, supporting peer coaches during observations and feedback sessions. Lignugaris-Kraft and Marchand-Martella (1993), Morgan, Gustafson, Hudson, and Salzberg (1992), and Morgan, Menlove, Salzberg, and Hudson, (1994) selected low performing preservice teachers and paired them with preservice peers who had previously demonstrated advanced teaching skills.

Hasbrouck (1997) conducted a mixed methods study exploring the effects of mediated peer coaching on the improvement of instructional skills with preservice teachers in a summer practicum. Additional research questions focused on the effect of mediated peer coaching on the inter-rater reliability of preservice teachers and the perceived value of mediated peer coaching. Twenty-two preservice teachers were randomly assigned as peer coaches during a summer internship. The peer coaches were assigned in pairs or individually to either elementary or middle school classrooms for four weeks. The peers observed their teaching partner three times during the internship and provided feedback based on *The Scale for Coaching Effective Instruction* (SCIE). Experienced teachers in education graduate programs were used as mediators for the preservice teachers. The mediators observed the preservice teachers along with the peer

coaches. The mediator and peer observer discussed their observation protocols and came to a consensus prior to the peer coaching sessions led by the peer observer. A mediator was present during these sessions to provide support and guidance in the coaching process. The purpose of the mediators in this study was to minimize the training time of preservice teachers prior to participation in peer coaching by providing ongoing training during the intervention.

Targeted teaching behaviors increased across all three domains of the SCIE after the intervention (Hasbrouck, 1997). Researcher's field notes revealed positive interactions between peer observers and mediators, with the peer coaches gaining confidence over time and advocating for their points of view. The preservice teachers completed questionnaires at the conclusion of the study "indicat[ing] that 18 PT's [preservice teachers] felt that receiving coaching from their peers (and mediators) was 'very helpful' in preparing them for student teaching" (Hasbrouck, 1997, p. 267). In addition, 13 "wrote comments suggesting that the specific feedback provided through coaching was helpful for setting goals and improving their teaching skills" (Hasbrouck, 1997, p. 267). The mediators considered the "peer coaching experience as having a 'very positive' effect on the PTs' future teaching skills" (Hasbrouck, p. 27).

Hasbrouck (1997) was unable to conclude peer coaching had a causal effect on increased teaching behaviors due to the additional sources of feedback including cooperating teachers, mediators, and university supervisor. The analysis of data from three case studies examining three participants' classroom placements provided insight into the differences in preservice teachers' experiences in the same practicum. Although peer coaching could not be specifically named as the causal factor for preservice teacher skill development, social validity of peer coaching was supported by the qualitative data collected throughout the study.

Morgan, Gustafson, Hudson, and Salzberg (1992) conducted a multiple baseline study investigating the effects of peer coaching on the teaching practices of low-performing preservice teachers. Three senior preservice teachers who had excelled in a required field experience were assigned as peer coaches to five low-performing preservice teachers. The coached participants were selected because of low performances in a previous field experience and had the lowest cumulative grade point averages of their cohort group. The coached preservice teachers' effective and ineffective teaching behaviors were compared to four high-achieving preservice teachers in the current practicum. Prior to the intervention of coaching, the participants' effective teaching behaviors were considerably lower than the comparison group, and their ineffective teaching behaviors higher. The researchers defined the targeted teaching behaviors for the both the experimental and control groups, but the peer coaches did not use a protocol as a feedback guide. Results after coaching revealed the low performing participants had similar frequencies of effective and ineffective teaching behaviors compared with high achieving participants.

A characteristic of peer coaching models is the non-evaluative nature of feedback given by a coaching partner with similar training and skills. The model used by Morgan, Gustafson, Hudson, and Salzberg (1992) included "(a) recording trainees' effective and ineffective teaching behaviors..., (b) providing immediate feedback on teaching behaviors during sessions, (c) providing written and verbal feedback immediately after each session, and (d) determining progress toward mastery of each objective in the practicum" (p. 253). The feedback was evaluative in nature; there were no elements of reflection by the coached or discussion for future planning. The peer coaches were functioning more as specialists than peers who possessed the same level of knowledge and skill. The authors listed several limitations. One was the expense of training and monitoring the coaches. Second, preservice teacher performance varied

depending on whether the teaching episodes were observed for feedback purposes only or for grade evaluation. An additional concern was the effect university supervisors might have had when observing peer coaches as they provided feedback to the coached preservice teachers.

Lignugaris-Kraft and Marchand-Martella (1993) conducted a study utilizing senior special education majors as peer supervisors for preservice teachers in their first field experience. The eight peer supervisors were in their final year of teacher preparation and had excelled in their coursework and field experiences in Direct Instruction (DI) teaching skills. The 19 preservice teacher trainees were beginning their special education coursework and had no experience with DI techniques. The peer supervisors conducted eight observations with each of their assigned trainees, four informal and four formal. The purpose of the informal observations was to provide information to the coached preservice teachers regarding DI skills that needed improvement. The formal observations were used to generate grades as well as additional feedback on skill performance. The peer supervisors met with university faculty weekly. The authors did not specify a research design, but evaluated their study based on the “acquisition of the targeted interactive teaching skills and trainee evaluations of their supervisors” (Lignugaris-Kraft & Marchand-Martella, 1993, p. 314).

The supervisory role of the peer coaches in the Lignugaris-Kraft and Marchand-Martella (1993) study did not follow the typical model of peer coaching as defined in the literature. First, the coaches were senior students with experience compared to the preservice teachers in their first field placement. Second, the senior students gave evaluative feedback at the end of each observation and provided grade recommendations to university staff. The authors utilized undergraduates as supplementary field supervisors, not peer to peer coaches.

Morgan, Menlove, Salzberg, and Hudson (1994) conducted a multiple baseline study exploring the effects of peer coaching on the acquisition of DI skills in preservice teachers based on reviews of video recorded teaching sessions. The five preservice teachers selected to receive coaching had the lowest scores on three assessments following initial training in DI techniques and phonics instruction of 21 students enrolled in a required practicum. Three peer coaches were selected who had excelled in the DI practicum from the previous semester. Observers in the classrooms video-recorded the participants as the preservice teachers taught DI reading and spelling lessons to small groups of students. The observers used an author-created DI protocol to record targeted teaching behaviors. The in-class observers were blind to the intervention and did not interact with the peer coaches or coached participants.

The peer coaches and preservice teachers met twice per week for 14 weeks. Prior to each coaching session, the peer coach watched the video of a teaching session and evaluated the teaching behaviors of the preservice teacher using the DI protocol. The preservice teacher candidates also watched their own videos prior to meeting with their coaches, evaluating their teaching performances based on the defined targeted teaching behaviors without the use of the protocol. The peer coaches and preservice teachers met for 30-45 minutes to discuss their evaluations. The peer coach provided feedback and suggestions to increase targeted behaviors. The authors concluded “that peer coaching improved direct instruction teaching behaviors of five preservice trainees who were not acquiring these behaviors” (Morgan, Menlove, Salzberg, & Hudson, 1994, p. 73). However, two of the five preservice teachers immediately improved their DI teaching skills after the first peer coaching session and first video self-analysis. Also, university personnel observed each teaching session, video recording and evaluating the preservice teachers performances. The impact of video self-analysis and direct observation of

teaching sessions by university personnel are variables that may have impacted the results of the study.

The two Morgan et al. studies (Morgan et al., 1992; 1994) identified low-performing preservice teachers as participants in their studies to receive peer coaching. One concern discussed in both studies was the time and expense involved in training the peer coaches. An element emphasized in the peer coaching literature of preservice teachers is the value of feedback that “excludes the evaluative component of observation” (Neubert & Stover, 1994, p. 9). Morgan et al. (1992) and Morgan et al. (1994) trained the advanced preservice teachers to function more as an expert rather than a peer at the same developmental level in teaching skills. A possible future benefit for the coaches noted in one discussion section was “the coaching experience may have provided coaches with skills usable in their teaching careers as supervisors or consultants” (Morgan et al., 1994, p. 75).

Although the divergent studies in peer coaching implemented the strategy with variations, the research supports the findings of Pierce and Miller (1994) that undergraduate peers can provide feedback that affects the development of effective teaching strategies in preservice teacher education programs. The following literature review explores the nature of feedback in the transfer of skills from awareness to practice.

Importance of Feedback

Performance feedback has been “defined as information about an employee’s past behaviors with respect to established standards of employee behaviors and results” (Aguinis, Gottfredson, & Joo, 2012, p. 105). Performance feedback needed for skill transfer and development has been widely researched with inservice teachers, focusing on fidelity of implementation of specific teaching strategies or treatment interventions (Colvin, Flannery,

Sugai, & Monegan, 2008; Gilbertson, Witt, Singletary, & VanDerHeyden, 2007; Sanetti, Luiselli, & Handler, 2007). Components of the feedback message have been explored including message valence and communicator credibility (Bloom & Hautaluoma, 1987). The following studies examine research conducted on the effects of feedback on the development of teaching behaviors of inservice teachers.

Burns, Peters, and Noell (2008) conducted a multiple baseline study examining the effect of performance feedback on the implementation of procedures for problem-solving teams. The authors developed a checklist of 20 operations from the literature considered typical behaviors observed meetings of problem-solving teams. Teams from three elementary schools participated in the study. Baseline data were collected using the 20-item checklist. At the conclusion of the baseline period, performance feedback was given to all the members of each team, including verbal, written, and graphic feedback. All three teams improved their implementation fidelity after receiving performance-based feedback.

Duhon, et al. (2009) conducted a multiple baseline study exploring the effect of performance-based feedback (PBF) on the fidelity of implementation of academic intervention strategies developed by response to intervention (RTI) teams. Elementary school teachers who referred students to the RTI team were included in team meetings following the implementation of the academic interventions developed by the teams. PBF was delivered to the participating teachers in the weekly team meetings if the implementation of the intervention fell below 70%. All teachers improved their implementation to satisfactory levels during the PBF stages. However, when the teachers were no longer required to attend team meetings and were no longer receiving feedback, the implementation of the interventions ceased. One limitation of the study

was the simultaneous removal of PBF and meeting attendance. Additionally, a possible explanation of the teachers discontinuing the interventions was the success of the interventions.

Gilbertson, Witt, and Singletary (2007) conducted a multiple baseline study to extend the previous findings on feedback and the fidelity of implementation by classroom teachers, specifically examining the effects of a faded training process, the dependence of feedback on treatment integrity, and student academic performance. Five general education teachers volunteered to participate in the study, requesting assistance with students in their classes who were struggling with mathematical concepts. Permanent products were the primary outcome measure used to determine the implementation of the peer tutoring procedures. Results obtained from the permanent products included (a) conducting of the peer tutoring sessions, (b) administering math probes to monitor student progress, (c) grading of probes and recording results on student charts, and (d) documenting student choices of a preferred activities for improved performance on math probes. Additional data monitored during the intervention included student math performance. The participating teachers, tutors, and tutees received training from the consultants in three stages: (a) first stage, teachers were provided prompts and step-by step instructions in the classroom; (b) second stage, teachers received feedback immediately after each session; and (c) third stage, delayed feedback was provided the day after sessions based on permanent product samples. When implementation of the intervention fell below 100% after stage three training, a consultant would meet with the teacher for approximately five minutes to review a graph detailing student performance and percentage of treatment steps completed. Results of implementation for each stage were 100% after immediate feedback intervention. Three teachers met 100% integrity after one session, while one teacher required three sessions to reach the 100% criterion after session feedback. Student achievement

also increased during each phase of the intervention. The results conferred with prior studies on the effectiveness of performance based feedback in the development of skills and the fidelity of implementation of classroom based academic strategies.

Sanetti, Luiselli, and Handler (2007) conducted a single-subject A-B-BC-B-BC study investigating the fidelity of implementation of a behavior support plan (BSP) for a second grade student. The purpose of the study was to compare the impact of verbal only performance feedback and verbal feedback accompanied with graphic representation of observed teacher behaviors on the fidelity of implementation of the BSP. The researcher observed the teaching teams in the student's classroom weekly for the duration of the study. Baseline data were collected for five weeks following training. During baseline data collection, fidelity of implementation fell from 100% to 30%. Verbal performance feedback was provided following the next three observations, where the fidelity of implementation ranged from 38%-50%. Verbal and graphic feedback was provided after the next four observations. During this phase of the intervention, fidelity of implementation rose to 100%, with a range of 80%-100%. The researcher discontinued the graphic feedback for the next four consultations and only provided verbal feedback. The fidelity of implementation of the BSP fell from 82% to 0% for the observed sessions. The final three consultations of the study included both verbal and graphic feedback. The rate of implementation for the last three observed sessions ranged from 75%-100%. The results of the study implied fidelity of implementation of classroom-based interventions by practitioners would increase with the inclusion of graphic representations of the treatment in feedback sessions.

Mortenson and Witt (1998) conducted a multiple baseline study measuring performance feedback effects on teacher fidelity of implementation of prereferral intervention strategies with

students identified with academic performance deficits. Student academic progress was also measured during the intervention. The teachers taught in grades two through five, with 4 to 12 years teaching experience. Teacher selection for the study was based on interviews. Results supported previous research findings in that “a lack of adherence to the treatment protocol was noted despite explicit verbal and written instructions by the consultant to the teacher” (Mortenson & Witt, 1998, p. 623). Although fidelity of implementation of the prereferral strategies improved immediately upon introduction of performance feedback, there were several limitations to the study. First, one of the four teachers’ percentage of implementation never fell below criterion, resulting in her not participating in the performance feedback phase. Second, one of the pupils left school two weeks prior to the conclusion of the study which could have impacted his variable academic performance. Finally, one of the pupils consistently received additional reinforcement due to completing bonus work, resulting in satiation of the reinforcer menu.

Noell, Witt, Gilbertson, Rainer, and Freeland (1997) conducted a multiple baseline study investigating the effect of performance feedback on the fidelity of implementation of an academic intervention with three elementary teacher/pupil dyads. The teachers received training and traditional consultation on the academic intervention. During baseline data collection all teachers implemented the strategy with 100% accuracy at least once. Permanent products created during the academic intervention with the pupils determined teacher implementation trend. Performance feedback was implemented when a teacher’s implementation was low and stable or trending downward. The 3 to 5 minute feedback sessions included graphic presentations of student’s academic performance and the teacher’s implementation data. Results included implementation of the academic intervention declined during baseline until performance

feedback was introduced, supporting the literature that training and raising awareness is not sufficient for sustained change in teacher behavior.

Cusella (1980) described five purposes for feedback: reward, inform, cue, motivate, regulate, and learning. The following reports, which include a meta-analysis and one literature review, examine the components of feedback across studies.

Kluger and DeNisi (1996) conducted a meta-analysis of feedback intervention literature prior to and including 1992. One hundred and thirty-one research projects were included in the study, representing 5% of the articles generated from database searches. The weighted mean of the distribution of results was .41, indicating a moderate positive effect for feedback intervention (FI) on experimental results. The authors noted a potential problem with the meta-analysis due to a violation of the assumption of independence. Ninety-one effect sizes of the 131 included were from one researcher, all with “extreme negative FI’s and similar tasks” (Kluger & DeNisi, 1996, p. 258). The authors analyzed the literature for possible moderators that could provide possible factors that contributed to the effect of feedback interventions. The resulting feedback intervention theory included five basic arguments:

- (a) behavior is regulated by comparisons of feedback to goals or standards,
- (b) goals or standards are organized hierarchically, (c) attention is limited and therefore *only feedback-standard gaps* that receive attention actively participate in behavior regulation, (d) attention is normally directed to a moderate level of the hierarchy, and (e) FIs change the locus of attention and therefore affect behavior. (Kluger & DeNisi, 1996, p. 259)

Scheele, Ruhl, and McAfee (2004) conducted a literature review of feedback in the transfer of skills from instruction to classroom practice by preservice and inservice teachers. The review included 10 experimental/quasi-experimental studies from 1970 to 1997 from a pool of 77 papers identified by database searches. The review focused on conditions of the feedback including the nature (content and medium), time-based (immediate or delayed), and source

(expert or peer). Immediacy of feedback was the only variable determined to definitively affect future teacher behavior. The authors discussed the peer coaching literature and concluded “peer coaching has been oversold on the basis of a woefully inadequate research base” (Scheele, Ruhl, & McAfee, 2004, p. 404). However, one study cited by the authors indicated the lack of difference in feedback source from university supervisor and peer coaches in a preservice practicum (Pierce & Miller, 1994).

Teacher Self-Efficacy

Teacher self-efficacy is a measure of “teachers’ judgments about their abilities to promote students’ learning” (Hoy & Spero, 2005, p. 343). Measures of teacher self-efficacy are measures of what teachers believe they can do, a measure of their capacity to perform certain behaviors, rather than a measure of what they will do, a measure of intent (Bandura, 2006). Teacher self-efficacy has been identified as a predictor of future teaching behaviors that impact student achievement (Midgley, Feldlaufer, & Eccles, 1989) and referral to special education (Meijer & Foster, 1988). Emotional exhaustion and burnout has also been linked to low levels of teacher self-efficacy (Dicke, Parker, Marsh, & Kunter, 2014). The following section examines the relationship between teacher self-efficacy and teacher behavior.

Holzberger, Phillip, and Kunter (2013) conducted a study exploring teacher self-efficacy and its effect on instructional quality. The study spanned two years and took multiple measures of teacher efficacy and student ratings. Results confirmed the positive relationship between teacher self-efficacy and instructional quality. However, the researchers hypothesized that the quality of instruction was not an indicator of the level of teacher self-efficacy, but rather levels of teacher self-efficacy were influenced by student academic progress and classroom behavior management success. The study also reported that teacher self-efficacy fluctuated throughout the

academic year. The changing levels of teacher efficacy could be due to variations in student performance, supporting the hypothesis that teacher self-efficacy is contingent on student success.

Dicke, March, Parker, and Kunter (2014) investigated the relationship between teacher self-efficacy and teacher burnout. The researchers hypothesized teachers with lower beliefs of efficacy in classroom management would correlate with teachers reporting high rates of emotional exhaustion. Three self-reporting scales were administered to 1,227 participants measuring emotional exhaustion, self-efficacy in classroom management, and classroom disturbances. A moderated mediation analysis was conducted. The results confirmed the hypothesis, suggesting that providing support for teacher self-efficacy in classroom management can affect emotional exhaustion, a correlate to teacher burnout.

Midgley, Feldlaufer, and Eccles (1989) conducted a longitudinal study of 1,329 pupil and teacher participants exploring the effect of teacher self-efficacy on the mathematics performance and perceived success and difficulty of mathematics items of students transitioning from elementary to junior high school. The researchers followed pupils during their last year of elementary school and the first year of junior high school to measure student self- and task-related beliefs in mathematics. Measures of teacher self-efficacy were taken and correlated with students' beliefs about mathematics, especially exploring how student beliefs were affected by changes in teachers' self-efficacy. Although results confirmed the hypotheses that teacher self-efficacy would effect student beliefs about mathematics, low-performing students were markedly affected in their beliefs regarding math when their teacher had low teacher self-efficacy.

Experiencing success in teaching, whether perceived effective academic instruction or classroom management, is the most significant variable attributed to the development of teacher

self-efficacy (Tschannen-Moran & Hoy, 2007). Feedback provided by peer coaching in an early field experience is hypothesized to increase effective teaching behaviors and decrease ineffective teaching behaviors. The effects of peer coaching may support the development of mastery skills early in the preparation process of preservice teacher candidates. Early experiences of competence in teaching skills could support the development of teacher self-efficacy, a predictor of future teacher success (Dicke, et al., 2014; Holzberger, et al., 2013; Hoy & Spero, 2005).

Social Validity

Foster and Mash (1999) defined social validity as “a term coined by behavior analysts to refer to the social importance and acceptability of treatment goals, procedures, and outcomes” (p. 308). With the rise of applied behavior analysis (ABA) in the 1970’s, the community of behavior analysts began to acknowledge the importance of the subjective endorsement of human subjects to the interventions and procedures implemented on their behalf by the social scientists.

Montrose Wolf, a founding editor of the *Journal of Applied Behavior Analysis*, introduced and named the concept of social validity (Risley, 2005). Wolf (1978), a pioneer in ABA procedures, detailed how social validity evolved as a component of applied behavior research. He outlined how the objective results of an intervention could only have relevance and social importance if the goals of the research had social significance, if the procedures were socially acceptable, and if the effects of the results were acceptable. A measure of social validity has become a standard practice in social science research with examples ranging from research the treatment fidelity of a peer-mediated reading intervention (Grandstaff-Beckers, Saal, & Cheek, 2013) to a positive behavior interventions and support model (Miramontes, Marchant, Heath, & Fischer, 2011).

Social validity is an important component of the peer coaching model. The methods used to prepare preservice teachers should be acceptable and provide support for growth and

development of effective teaching behaviors. Gathering information regarding the preservice teachers' experiences with peer coaching is an important component to insure the social validity of the feedback source. It is also important to obtain feedback from school personnel who manage the tutoring program in the local elementary schools. Gaining insight into the implementation of peer coaching in the existing tutoring program is imperative to the success and probability that peer coaching will become a viable component of the teacher education process.

Rationale

Teacher educators have a responsibility to prepare graduating education majors to provide effective instruction for pupils in their first classrooms. Education majors develop these skills in their field experiences. Many education students are required to participate in early field experiences prior to receiving any pedagogic instruction. Although it is important for education students to engage with pupils prior to traditional student teaching in their last year of an undergraduate program, the field experiences are often not perceived as opportunities for developing teaching skills. Additionally, the tutoring sessions are only viewed as necessary to meet the field hours, not to engage pupils for academic progress. The content courses in the first years of a degree program are generally not structured to allow time for pedagogic instruction. University personnel are often not available for field supervision of early field experiences. The lack of instruction and feedback provided to students in early field experiences only serve to reinforce the casual nature of the tutoring requirement. Education students need instruction on how to teach effectively prior to their first field placement. Fortunately, an introduction to effective teaching behaviors can be accomplished outside of classroom instruction by providing the information via cost-effective and efficient online training. Further, peers rather than

university supervisors can provide feedback on skill development. Assessment of student skill development can be achieved by observing video recordings of “real time” instruction. The following methods will be implemented in the study designed to impact the development of effective teaching behaviors by efficiently training, increasing feedback, and accountability in an early field experience.

Chapter 3 Methodology

The purpose of the study was to determine the effect of peer coaching on the targeted effective teaching behaviors of education students in a college course with an early field experience compared to those students without peer coaches. A secondary purpose was to determine the effect of participating in peer coaching on the teacher self-efficacy of education students in a college course with an early field experience. Additionally, the training and data collection procedures utilized in the study contributed knowledge regarding implementation of peer coaching in college teacher education programs.

The following chapter is a description of the study design and research procedures implemented to achieve the research objectives. The chapter provides detailed information in the following sections: (a) objectives of the study, (b) research design, (c) participants and sampling, (d) measures, (e) procedures, and (e) data analysis.

Objectives of the Study

The primary objective was to determine the effect of peer coaching on the effective teaching behaviors of education students when implemented in a college course with an early field experience compared to those students without peer coaches. Additionally, the effect of peer coaching on the teacher self-efficacy of the education students was investigated. The following questions guided the investigation.

1. When a peer coaching model is implemented in a college course with an early field experience, what is the influence on the instructional behaviors of students in a required special education course?
 - a. Do education students receiving peer coaching establish pupil learning objectives prior to beginning an activity more frequently than uncoached education students?

- b. Do education students receiving peer coaching explain or model more frequently than uncoached education students?
 - c. Do education students receiving peer coaching check for understanding more frequently than uncoached education students?
 - d. Do education students receiving peer coaching give academic or behavior specific praise more frequently than uncoached education students?
2. When peer coaching is implemented in an early field experience, does the experience have an impact on the teacher self-efficacy of education students?

Research Design

A nonequivalent control group design was selected to explore the research questions (Campbell & Stanley, 1963). The quasi-experimental design utilized a convenience sample consisting of intact sections of a required special education course for elementary and special education majors (Creswell, 2009). Data were collected pre- and post-intervention and analyzed to determine the effect of the independent variable, peer coaching, on the dependent variables, four effective teaching behaviors and teacher self-efficacy.

Participants and Sampling Procedures

Participants were a convenience sample of university students enrolled in one of three sections of a required course in special education procedures and methods for elementary and special education majors in a teacher education course at a large public university in the southern United States (Hinkle, Wiersma, & Jurs, 2003). Students from each section were given the opportunity to volunteer to participate in the study. To decrease the possible effects of discussion among the classmates regarding coaching, it was decided in advance that the sections would be designated as belonging to the treatment or control groups. The section with the largest

enrollment was designated a priori as the section where the treatment would be implemented. The results are not generalizable to the general population of preservice teachers due to the lack of random assignment of participants to the treatment. Demographic and pre-intervention data were analyzed to determine any statistical differences between the groups.

Ninety-nine students volunteered to participate in the study. Ninety-six participants provided demographic information. Ninety-four were undergraduates in teacher education, one was a non-education major, and one was a certified teacher seeking a special education endorsement. Seventy-five percent stated they had prior experience working with children in a teaching capacity. Examples of teaching experiences included academic tutor, summer camp counselor, gymnastics coach, dance instructor, and religious program teacher. Ninety-five were female, one male. Three identified as Hispanic. Racial identity included 81 Caucasian, 10 African Americans, 4 Bi-Racial, and 1 Asian Indian.

The treatment group totaled 32 students: 2 African American (6%), 1 Asian (3%), 1 Bi-Racial (3%), 28 Caucasian (88%). The control group totaled 67: 6 African American (9%), 3 Bi-Racial (4%), 58 Caucasian (87%). Three students in the control group identified as Hispanic (4%). Thirty-one students volunteered to participate as peer coaches who were enrolled in the section where the treatment was implemented. One student from a section designated as part of the control group requested to tutor at the intervention site due to sharing transportation. The student participated in the intervention and the student's data were included in the treatment group. Seven students from the section identified as the treatment section could not participate in peer coaching due to scheduling conflicts. The seven students' data were included in the control group.

The study was implemented as a component of an ongoing tutoring program in a local public school district. The district serves a diverse population with over 70% of students enrolled in the free/reduced school lunch program. The school district is in partnership with the school of education at the university as a professional development school. The students in the study were required to complete a 15-hour field experience that included 11 hours of tutoring elementary pupils. The pupils were selected to receive tutoring services due to below benchmark performance in mathematics. One elementary school was designated a priori as the treatment site due to previous positive working relationships with school personnel. The 32 students in the treatment group self-selected their coaching partners and the sixteen peer coaching pairs were assigned to the treatment site for their field placement. The students in the control group selected from four elementary schools in the district for their tutoring assignments.

Benefits received by the participants included instruction in targeted teaching behaviors, feedback from peer coaches if in the treatment group, extra points on their final grade in the course, and a chance to win a gift card to an online retailer.

Measures

“Targeted Teaching Behaviors Checklist”

The control and treatment groups received training on the effective and ineffective teaching behaviors included on the *Targeted Teaching Behaviors Checklist* found in Appendix A. The researcher-created checklist included four effective and three ineffective teaching behaviors identified in the literature as positively or negatively impacting student achievement and/or behavior. The four effective behaviors on the checklist were (a) established student-learning objective prior to beginning activity, (b) explained and/or modeled how pupil can discover the answer or solve a problem, (c) checked for understanding by asking content related-

questions or asked pupil to verbally explain/demonstrate answer/concept, and (d) provided academic or behavior specific praise statement. Operational definitions were developed for training and scoring purposes. The *established learning objective* is a statement of the academic content and the behavior the pupil is expected to perform. *Explained or modeled how pupil can discover or solve a problem* is a verbal explanation and/or demonstration of step-by-step procedures for an academic outcome. *Checked for understanding by asking content related questions* is the asking of how or why questions requiring a verbal explanation or demonstration by the pupil of an academic concept. *Provided academic or behavior specific praise statement* is a verbal expression of praise or gratitude of an academic performance or observed behavior. The three ineffective teaching behaviors on the checklist were (a) began activity without stating student-learning objective, (b) ask binomial content-related question without follow-up probe, and (c) negative comment/feedback considered derogatory. *Began activity without stating a student-learning objective* is beginning an activity without stating an academic purpose. *Asking a binomial content-related question without a follow-up probe* is the asking of yes/no question or question when answer choices are provided without an additional question exploring the pupil's understanding of the concept that required a verbal explanation or demonstration of the concept. *Negative comment/feedback considered derogatory* are verbal comments that would be considered demeaning, derogatory, insulting or sarcastic by a typical person. The operational definitions were included in the script of the training video for the participants.

The effective teaching behaviors on the checklist were the behaviors measured to determine the impact of peer coaching on students' tutoring practices in an early field experience. Expanded operational definitions with examples and non-examples for scoring purposes were developed. The acceptable inter-rater agreement ratio was set a priori at .80. The

inter-rater agreement is a measure “to estimate the extent to which the different observers produce similar observational variable scores using the same measurement system” (Yoder & Symons, 2010, p. 159). The inter-rater agreement provided reliability data that the scoring of the videos was more than “chance agreement” (Yoder & Symons, 2010, p. 167).

“The Ohio State Teacher Efficacy Scale”

The Ohio State Teacher Efficacy Scale (OSTES) was developed by Tschannen-Moran and Hoy (2001). The OSTES is grounded in previous research by Bandura (1977), Guskey and Passaro (1994), and Rotter (1966). The OSTES long form (Appendix B) addressed concerns in prior scales measuring teacher efficacy by developing a scale that “assess[es] both personal competence and an analysis of the task in terms of resources and constraints in particular teaching contexts” (Tschannen-Moran & Hoy, 2001, p. 795). The scale was developed over the course of three studies that focused on creating an instrument that balanced specificity while measuring teacher efficacy of typical tasks present across most content and grade levels. Three factors emerged from the analysis: (a) efficacy for student engagement, (b) efficacy for instructional strategies, and (c) efficacy for classroom management. Reliabilities calculated for each subscale were 0.82 for engagement, 0.81 for instruction, and 0.72 for management (Tschannen-Moran & Hoy, 2001). Examples of items in the instructional subscale include “To what extent can you respond to difficult questions from your students?” and “To what extent can you craft good questions for your students?” (Tschannen-Moran & Hoy, 2001, p. 800). Examples of items in the classroom management subscale include “How well can you respond to a defiant student?” and “How much can you do to calm a student who is disruptive or noisy?” (Tschannen-Moran & Hoy, 2001, p. 800). Examples of items from the student engagement subscale include “How much can you do to help your students value learning?” and “How much

can you do to help your students think critically?” (Tschannen-Moran & Hoy, 2001, p. 800). A long and a short form of the scale utilized a 9-point scale to rate each item with anchors at 1-nothing, 3-very little, 5-some influence, 7-quite a bit, and 9-a great deal. The 24-item long form was administered in this study to measure the influence of the treatment because “for preservice teachers, the total score seems to be the most appropriate gauge of efficacy” (Tschannen-Moran & Hoy, 2001, p. 801). Results reported include a total score and a score for each subscale.

Procedures

Student Training

The training and assessment videos for the *Targeted Teaching Behaviors Checklist* were recorded and compiled using iMovie. The 15-minute training video included the researcher providing operational definitions of the effective and ineffective teaching behaviors along with vignettes demonstrating the behaviors. The training video was made available to participants in both the treatment and control groups via a link from Dropbox, a cloud-based service for file storage.

Instructional videos for setting up a Dropbox account and the recording and submission of videos were created using QuickTime Player. The instructional videos were made available to both the treatment and control groups on the online learning portals for each section of the course where the study was implemented.

Pre-Intervention

The study was implemented in three sections of a required special education course for elementary and special education teachers. The students were given the requirements for the 15-hour field experience and presented the opportunity to participate in the study during the first week of the semester course. Students chose sites and times for the tutoring requirement based

on personal schedules. Students in the section where the treatment was implemented were provided logistic information regarding peer coaching (e.g., tutors would be assigned in pairs, the peer coaching would only be at one site). Students participating in the treatment selected their peer coaching partners based on convenience of personal schedules. Participants provided demographic information including prior teaching experience, gender and racial identity.

The Ohio State Teacher Efficacy Scale (OSTES) was administered to participants in both the treatment and control groups prior to training on the *Targeted Teaching Behaviors Checklist* and the implementation of peer coaching tutoring pairs. The scale was distributed as a hard copy during a class session and students completed it according to verbal directions to consider how they felt about the items in a tutoring session, not a classroom setting.

Participants in both the treatment and control groups were instructed to video record a 15-minute segment of their second tutoring session prior to training on the *Targeted Teaching Behavior Checklist*. The researcher showed the instructional video in each section during a class session modeling how to focus the recording device so that only the student participant would be in the frame without the pupil(s) being tutored. Participants in both the treatment and control groups were provided written instructions on how to video record and information on the available memory needed if recording on a smart phone. Screen shot videos on how to submit videos to Dropbox were posted on the course online learning portal. The instructional video and written instructions were also posted on the online learning portal. Participants from both the treatment and control groups could access the training materials throughout the experiment.

Participants in both the treatment and control groups used their personal electronic devices to record the video data. Recording devices included smart phones, tablets, and laptop computers. One student requested a recording device and was provided an e-reader with video

recording capability. The treatment and control groups submitted both pre and post intervention videos to the researcher via shared folders on Dropbox. The Dropbox service provided the encryption requirements for security purposes as outlined by the Internal Review Board. Dropbox also allowed for viewing of videos on any viewing platform regardless of original recording software. Each video was renamed with a numeric code that allowed the researcher to verify the participant and experimental group membership. Videos were moved from the individual participant's shared folders into folders for each scorer.

Treatment Implementation

A link to the 15-minute training video was sent to each participant in both the treatment and control groups after submission of their pre-intervention video. Both treatment and control participants were required to watch the training video outside of class time. A 15-minute video of a model tutoring session was shown during class sessions to participants in both the treatment and the control groups after they had viewed the training video outside of class. Participants in both the treatment and control groups watched the video and recorded their observations of the defined teaching behaviors on the *Targeted Teaching Behaviors Checklist*. The in-class viewing of a model tutoring session and the scoring of observations on the checklist concluded the training on the *Targeted Teaching Behavior Checklist*. All participants who were absent the day the model tutoring session was shown in-class met with the researcher at a mutually convenient time and viewed the video on a personal computer. The students recorded their observations on the *Targeted Teaching Behaviors Checklist* to conclude their training regarding the targeted teaching behaviors.

The treatment group received additional training in reciprocal peer coaching. The researcher conducted a 20-min in-class training session with the treatment group and explained

the purpose and procedures of peer coaching in the tutoring sessions. Students received information about giving and receiving feedback (Stone & Heen, 2014), including the Praise-Question-Polish (PQP) format (McAllister & Neubert, 1995) found in Appendix C.

The peer coaching pairs of the treatment group alternated between tutoring and coaching for the 3rd through 10th tutoring sessions of the field experience. Each tutoring session one participant engaged in tutoring and the other participant observed and completed the *Targeted Teaching Behavior Checklist* and a PQP form. Following each tutoring session, the peer coaching pair met for a conference to share the observation with their coaching partner and provide feedback. Control group participants tutored individually and did not receive feedback regarding their tutoring instruction. Participants in both the treatment and control groups video recorded a 15-minute segment of their last tutoring session and submitted it to the researcher via individual shared folders on Dropbox.

The OSTES was administered after participants in both the treatment and control groups submitted their post-intervention videos. The scale was provided as a hard copy or as an attachment to an email. Students returned the scale via email attachment or as a hard copy.

Participants in the treatment group were given a peer coaching questionnaire developed by Neubert and McAllister (1993). The 7-item questionnaire was a combination of open-ended questions and Likert-scale items including opportunities to provide details for chosen responses (Appendix D). The control group was given a 5-item questionnaire developed by the researcher (Appendix E). The purpose of the questionnaire was to provide information on the perceived effectiveness of using the *Targeted Teaching Behaviors Checklist* as a component of tutoring instruction.

Scoring of Videos

A 5-minute segment at the beginning of each video was scored. The 5-minute segment began when the participant directed her/his attention toward the pupil and spoke to the pupil about an activity or academic topic. The first three effective teaching behaviors (established student learning objective, explained/modeled how pupil can solve a problem, and checked for understanding) were scored as being present or not present. The scorers counted the behavior the first time it was observed in the video segment. The fourth effective teaching behavior, academic or behavior specific praise, was scored as a frequency count during the 5-minute video segment. The ineffective teaching behaviors were not counted. Although the ineffective behaviors were not exact opposites of the effective behaviors, one would expect the first ineffective behavior to not be present if the effective behavior was observed (e.g. stating a learning objective vs. not stating a learning objective). After preliminary screening of 10% of the pre-intervention videos, the third ineffective behavior was not observed (e.g. derogatory comments).

Scorer Training

The researcher and a doctoral student in the School of Education scored the video data. The researcher is a certified special education teacher with 10 years middle school teaching experience. The doctoral student, Scorer 1, is a certified mathematics teacher with a total of 4 years secondary teaching experience. Scorer 1 had no knowledge of the intervention. Scorer 1 was trained by the researcher with an overview of the *Targeted Teaching Behaviors Checklist* including the operational definitions, the training video watched by participants, and the in-class model tutoring video. Scorer 1 was also trained on identifying the beginning of the 5-minute video segment, timing the segment, the scoring procedures, and the scoring form.

Videos were divided into 2 equal groups based on treatment group and pre-/post-intervention data collection. The researcher and alternate scorer each scored half of the videos. Twenty percent of the treatment and control group videos were randomly selected and scored by both the researcher and Scorer 1 to determine inter-rater agreement for both pre and post intervention videos. The acceptable inter-rater agreement of .80 was established as an indication of reliability of the scoring procedures.

The training for the scoring procedures was conducted by the researcher. The operational behaviors for the four effective behaviors were reviewed and discussed. Examples and non-examples of the behaviors were provided. The scoring form was reviewed. The scorers independently scored five tutoring videos. The overall inter-rater agreement after training for the five videos was 80%. However, the inter-rater agreement for *explained/modeled* was 60%. The scorers met and reviewed the operational definitions and discussed concerns and questions regarding scoring of “real time” tutoring sessions. The scorers independently scored four different videos of tutoring sessions. The overall inter-rater agreement on the second set of videos was 93.75%. The video submissions were then divided between the two scorers, each receiving an equal number of videos from the treatment group. Twenty percent of the pre-intervention videos and 20% of the post-intervention videos were randomly selected and scored by both scorers to calculate inter-rater agreement.

Scoring of the OSTES

The 24-item long version of the OSTES was administered post-intervention. The responses for both the treatment and control groups were entered into a spreadsheet indicating the level of efficacy for each item on the 9-point scale (e.g. 1-nothing, 3-very little, 5-some influence, 7-quite a bit, 9-a great deal). The items on the scale were scored components of three

subscales, Efficacy in Student Achievement, Efficacy in Instructional Practices, and Efficacy in Classroom Management (Mertler & Vannatta, 2001).

Data Analysis

One independent variable, reciprocal peer coaching, was implemented to explore the impact on five dependent variables, four effective teaching behaviors (*established student learning objective, explained/modeled how pupil can solve a problem, checked for understanding, and academic or behavior specific praise*) and a measure of teacher self-efficacy. Binomial logistic regression was used to measure the magnitude of the relationship between peer coaching and the presence of the effective teaching behaviors for the three dichotomous variables (e.g., *established student learning objective, explained/modeled how pupil can solve a problem, checked for understanding*). Three separate analyses were conducted for each of the three dichotomous variables. The pre-intervention observation was included in the model as a covariate due to the lack of random assignment to treatment and control groups resulting in non-equivalent groups. The assumptions for the analyses were met. The dependent variables were dichotomous. The independent variable was nominal (i.e. treatment or control group). The dependent variables are mutually exclusive.

An analysis of covariance (ANCOVA) was conducted to analyze the impact of peer coaching on the frequency of the effective teaching behavior *specific praise statements*. The study was implemented with intact groups, therefore the participants were not randomly assigned. The ANCOVA addressed the errors that can occur when using intact groups by increasing the sensitivity of the test of main effects and controlling for the lack of random assignment by adjusting for differences by including the pre-intervention measure as a covariate (Tabachnick & Fidell, 2007). Assumptions for the ANCOVA were addressed in the design of the

study. Normality and homogeneity of variance can be assumed due to the sample size (n=99, treatment group 32, control group 67). Independence cannot be assumed due to the use of intact groups. However, the Analysis of Covariate is a statistical adjustment that improves the research design when random assignment to the treatment cannot be implemented. The pre-intervention measure was used as the covariate in the analysis. The data were checked for outliers on all dependent variables. Data were analyzed using Statistical Package for the Social Sciences (SPSS).

An error was made in collection of pre-intervention data with respect to teacher self-efficacy. As a result, all participants completed the Short Version of the OSTES when the Long Version should have been used. In addition, they were erroneously collected without identifying information that could be linked to the other dependent or independent variables. An analysis of variance (ANOVA) was conducted to compare the results of the three subscales: Efficacy in Student Achievement, Efficacy in Instructional Practices, and Efficacy in Classroom Management (Mertler & Vannatta, 2001).

Chapter 4 Results

The effect of peer coaching on the development of effective teaching behaviors was determined by using binomial logistic regression for the dichotomous dependent variables, *stated learning objective*, *explained/modeled*, and *checked for understanding*. Binomial logistic regression was selected for the analyses due to the categorical and binomial nature of the variables (Mertler & Vannatta, 2001). The analyses attempted to predict group membership, treatment or control group, based on whether the effective teaching behavior was observed or not observed. The pre-observation was included in the model as a covariate due to lack of random assignment of participants to conditions. The Wald test is the test statistic for binomial logistic regression indicating statistical significance (Tabachnick & Fidell, 2007). Additional results produced by the analyses are Nagelkerke R^2 , or the percent of variance in the dependent variable, and the classification table that compares the actual observations to predicted values based on the model (Mertler & Vannatta, 2001).

The effect of peer coaching on the development of the effective teaching behavior *specific praise statements* was determined by using Analysis of Covariance (ANCOVA). ANCOVA was selected to compare the means of the treatment and control groups for the observed continuous dependent variable, *specific praise statements* (Mertler & Vannatta, 2001). The first assumption for ANCOVA was partially met, the observations were independent but the participants were not randomly assigned to treatment and control conditions. The pre-observation scores were used as a covariate to adjust for the lack of random assignment. The second assumption of a normal distribution on the dependent variable was tested by Kolmogorov-Smirnov test. The assumption of homogeneity of variances was tested using Levine's test (Mertler & Vannatta, 2001).

Eighty-nine participants were included in the final analyses of the effects peer coaching on effective teaching behaviors ($n = 31$ treatment, $n = 58$ control). Although the initial number of participants for whom permission was secured ($N = 99$), 10 were not included in the final analyses. The reduction of the final number of participants for analyses was caused by technical problems with pre-intervention video submissions ($n = 2$) and participants who did not submit post-intervention videos ($n = 7$). The scores of one participant, a certified teacher, were not included in the final analyses. The study was designed as an intervention for education students with minimal teaching experience. The certified teacher tutored students in her own classroom, and the scores would not have reflected those of a preservice teacher. Eighty-one participants were included in the final analyses of the effects of peer coaching on teacher self-efficacy ($n = 31$ treatment, $n = 50$ control). Participant variation was due to errors in administration of the post-intervention measure of self-efficacy. The short version of the scale was administered in one section of the course where the study was implemented. Students were available on a limited basis to complete the long version of the scale.

The effect of peer coaching on teacher self-efficacy was determined by One-Way Analysis of Variance (ANOVA). One-Way ANOVA was selected to determine the significance of mean differences between the treatment and control groups on the dependent variables (Mertler & Vannatta, 2001). There were three dependent variables for these analyses; the three subscales of the long form of *Ohio State Teacher Efficacy Scale* (OSTES). The assumption that the observations within each sample were independent was met. The nature of the statistical analysis, One-Way ANOVA, is a robust test statistic and assumptions of normality and homogeneity of variance are generally presumed (Harris, 1998).

Inter-Rater Agreement

Inter-rater agreement for the observed effective teaching behaviors was assessed for 20% of the pre-intervention videos and 20% of the post-intervention videos. Videos selected for inter-rater agreement included an equivalent number of observations for the treatment and control groups. Percent ratios were calculated by dividing total agreements by number of observations and multiplying by 100 (Sutherland, Wehby, & Yoder, 2002). The inter-rater agreement for the pre-intervention videos across all variables was 86.25% (range = 80%-95%). See Table 1 for the values for individual variables. The inter-rater agreement for the post-intervention videos across all variables was 86.48% (range = 74%-95%; see Table 2).

Table 1 Inter-rater Agreement Pre-intervention Data

Dependent Variable	Agreements	Disagreements	% agreement
Stated learning objective	16	4	80%
Explained/Modeled	16	4	80%
Checked for understanding	19	1	95%
Specific Praise Statement	18	2	90%
Across all variables	69	11	86.25%

Table 2 Inter-rater Agreement Post-intervention Data

Dependent Variable	Agreements	Disagreements	% agreement
Stated learning objective	17	2	89%
Explained/Modeled	12	5	74%
Checked for understanding	17	2	89%
Specific Praise Statement	18	1	95%
Across all variables	64	10	86.48%

Between Groups Analyses

Targeted Teaching Behaviors

Correlation coefficients were low for the three dichotomous dependent variables. The Nagelkerke R^2 values for *stated objective* was 0.054, *explained/modeled* 0.033, and *checked for understanding* 0.133. The Wald test statistics did not identify significant statistical effects for the treatment as a predictor of group membership for any of the three teaching behaviors. Wald values included 1.987 for *stated objective*, 0.346 for *explained/modeled*, and 3.281 for *checked for understanding*. Odds ratios for predicting group membership were very low, all falling below 1%. The results of the binomial logistic regression analyses for the dichotomous teaching behavior variables are presented in Table 3.

ANCOVA was used to determine the impact of the intervention on the observance of specific praise statements. Analyses were conducted to determine whether assumptions were met for the ANCOVA. Results of the Kolmogorov-Smirnov test were significant ($p = 0.001$) indicating the distribution of the dependent variable, *specific praise statement*, was not normally distributed. A log transformation of the data was not possible due to the zero values of 69 of the 89 post-intervention observations. However, due to the large sample size (> 30 or 40), the violation of the normality assumption does not indicate a major concern due to the robust nature of the analysis (Ghasemi & Zahedias, 2012; Glass, Peckham, & Sanders, 1972) The results of the Levene's test were not significant $F(1, 87) = 3.80$, $p = .054$, indicating homogeneity of variance among the groups. The inclusion of the pre-observation scores as the covariate controlled for the absence of random assignment of participants to the treatment. Observations of *specific praise statements* for the treatment group totaled 0 pre-intervention and 18 post-intervention. Observations of specific praise statements for the control group totaled 2 pre-intervention and 19

post-intervention. ANCOVA results indicated no significant main effects for peer coaching, $F(1) = 1.28, p = 0.261$. The measure of effect size of the intervention was very small (partial $\eta^2 = .015$).

Table 3 Binomial Logistic Regression Results for Dichotomous Dependent Variables

Dependent variable	S. E.	Wald	Sig.	Exp(B)	Nagelkerke R ²
Stated Objective	0.457	1.987	0.160	.525	.054
Explained/Modeled	0.599	0.346	0.557	.703	.033
Checked for understanding	0.524	3.281	0.070	.387	.133

Teacher Self-Efficacy

A One-Way ANOVA was conducted to determine the statistical difference post intervention between the treatment and control groups on the three subscales of the OSTES, Efficacy for Instructional Strategies, Efficacy for Classroom Management, and Efficacy for Student Engagement. The final analysis included 80 participants (treatment $n = 31$, control $n = 49$) due to missing data. The ANOVA results indicated no statistical differences between the treatment and control groups on the total scale score or for the three subscales. Results for the total scale score was $F(1, 78) = 0.162, p = .688$. Results for Efficacy for Instructional Strategies subscale were $F(1, 78) = .004, p = .950$. Results for Efficacy for Classroom Management subscale were $F(1, 78) = 0.117, p = .733$. Results for Efficacy for Student Engagement were $F(1, 78) = 0.692, p = .408$.

Additional Analyses

Frequencies of effective teaching behaviors pre- and post-intervention are presented in Table 4. Increases in the behaviors were observed from pre- to post-intervention for both the treatment and control groups for three of the targeted behaviors (*established objective, checked*

for understanding, and *specific praise statement*). *Stated objective* increased for the treatment group ($n = 31$, pre 11, post 19). *Established objective* increased for the control group ($n = 58$, pre 17, post 26). *Checked for understanding* increased for the treatment group ($n = 31$, pre 8, post 12). *Checked for understanding* increased for the control group ($n = 58$, pre 6 post 10). *Specific praise statements* increased for the treatment group ($n = 31$, pre 0, post 18). *Specific praise statements* increased for the control group ($n = 58$, pre 2, post 19). *Explained/modeled observed events* decreased from pre-to-post intervention for both the treatment ($n = 31$, pre 15, post 6) and control ($n = 58$, pre 23, post 8).

Table 4 Frequency of Observed Effective Teaching Behaviors

Dependent Variable	Treatment		% change	Control		% change
	Pre	Post		Pre	Post	
Stated Objective	11	19	42%	17	26	35%
Explained/Modeled	15	6	-60%	23	8	-65%
Checked for Understanding	8	12	33%	6	10	40%
Specific Praise Statement	0	18	100%	2	19	89%

Statistical significance from pre- to post-intervention was evaluated using Pearson Chi-Square for the three dichotomous dependent variables. The assumptions for the analyses were met because both the independent and dependent variables were categorical and consisted of independent groups (Hinkle, Wiersma, & Jurs, 2003). Significant results were found for *checked for understanding* for all participants ($N = 89$), $\chi^2 = 5.71$, $p = 0.017$, and for the control group ($n = 58$), $\chi^2 = 20.49$, $p = 0.001$. Results were not statistically significant for either the treatment or control groups from pre-to-post intervention for the effective teaching behaviors of *established*

objective or specific praise statement. Treatment group ($n = 31$) findings for *established objective* were $\chi^2 = 3.028, p = 0.082$ and for *explained/modeled* $\chi^2 = 0.008, p = 0.930$. Control group ($n = 58$) findings for *established objective* were $\chi^2 = 0.048, p = 0.8.26$ and for *explained/modeled* $\chi^2 = 2.024, p = 0.155$. The results of the Pearson Chi Square analyses can be found in Table 5. Paired sample t tests was conducted to explore mean differences between pre- and- post intervention with groups for the continuous dependent variable *specific praise statement*. Results were statistically significant for the treatment group ($M = -.581, SD = 1.205, n = 31$), $t(30) = -2.683, p = 0.012$. Results were statistically significant for the control group ($M = -.138, SD = 0.437, n = 58$), $t(57) = -2.403, p = 0.020$.

Table 5 Chi Square Analyses of Observed Effective Teaching Behaviors Pre-Post Intervention

Behavior	Total $N = 89$			Treatment $n = 31$			Control $n = 58$		
	χ^2	df	sig	χ^2	df	sig	χ^2	df	sig
Established learning obj	1.685	1	0.194	3.028	1	0.082	0.048	1	0.826
Explained/modeled	1.417	1	0.234	0.008	1	0.930	2.024	1	0.155
Checked for understanding	5.706	1	0.017*	0.854	1	0.355	20.487	1	0.001*

* $p < .05$

Chapter 5 Discussion

The purpose of this study was to explore the effects of peer coaching on the development of effective teaching behaviors of education students in an early field experience. A second research question measured the impact of peer coaching on the teacher self-efficacy of education students after participating in an early field experience. Results were mixed across the behaviors regarding increases and decreases in effective teaching behaviors after the intervention. Although statistically significant results were not found for the research questions, increases in the observance of the three of the four effective behaviors were found post-intervention. The feedback from both participants and school personnel supported the implementation of peer coaching the online training for effective teaching behaviors. The following discussion will explore the contribution the study made to the body of literature on peer coaching in preservice teacher education. The limitations of the study and implications for future research and practice will also be addressed.

Unstructured Tutoring

This study was designed to address the need for pedagogical instruction prior to education students' first experience working with pupils in schools and to increase feedback during early skill development. Much of the research exploring the effect of peer coaching in preservice teacher education utilized detailed protocols to measure the impact of feedback from peers in skill development (Dodds, 1979; Englert & Sugai, 1983; Lignugaris-Kraft & Marchand-Martella, 1993; Morgan, Menlove, Salzberg, & Hudson, 1994). The targeted teaching behaviors for this study were selected based on effective teaching principles that should be present in a variety of instructional settings, whether one-to-one tutoring or classroom instruction. The existing tutoring program where the study was implemented required education students to tutor

elementary pupils in one-to-one or small group setting. It is important to provide preservice teachers with early field experiences (Darling-Hammond, 2006), however, education students with no prior experience in teaching academics prior to their educational methods courses are sometimes assigned to “tutor” pupils to fulfill the course requirements of their teacher preparation programs with no formal instruction in effective instructional methods. This is common practice at the university teacher preparation program at which this study was conducted. Early field experiences are opportunities to begin developing effective teaching behaviors prior to formal student teaching in a classroom setting. This study was designed to address the needs of early education students by providing introductory instruction in effective teaching practices that are universal to effective instruction (Rose & Gravel, 2010).

The unstructured nature of tutoring sessions made data analyses challenging. The novice preservice teachers were adjusting to the needs of the pupils moment by moment. The tutoring sessions were not structured to follow certain steps, but to provide needed instructional support to pupils’ development of identified deficit skills. The challenge of the study was not the methods and implementation of the intervention, but of designing a study that captured the effects and that could measure the results scientifically. The discussion below explores the limitations to the study and offers suggestions for future research.

Length of Study

The study was implemented in an early field experience as part of an existing tutoring program at four local elementary schools. The tutoring component of the field experience required 11 hours of tutoring. Participants in the study video recorded a segment of their second tutoring session and a segment of their 10th tutoring session. Peer coaching was implemented for only seven sessions. Treatment group participants only received feedback three or four times

during the intervention phase. Most peer coaching dyads tutored twice per week, resulting in the intervention spanning 3 to 4 weeks. The targeted effective teaching behaviors selected as the focus of the study are complex and multifaceted. The duration of the intervention may not have been long enough to have a significant impact on the development of the targeted instructional practices.

Minimal Training

Due to course requirements and semester scheduling, the time the researcher had to engage the participants in training on the targeted effective teaching behaviors was limited to a video the students were asked to watch outside of class time. Although there was an assessment of the video training during a class session, there was no method to insure all participants watched the training video. The training video was available to students to watch at any time during the study for follow-up, but there was no method to track whether or not participants used the video as a resource. The lack of accountability of training could have impacted the effectiveness of the intervention. If the participants did not engage in the training of the behaviors, there could be no expectation that there would be an increase of the teaching behaviors during the intervention.

Decrease in the Frequency of Explained/Modeled Behavior

The frequency of the teaching behavior *explained and/or modeled how pupil can discover an answer or solve a problem* significantly decreased from the pre- to post-observation. Several factors could have affected the decrease in the observance of the behavior. First, the length of the scored segment limited the behaviors that could be observed by the scorers. Only the first 5-min of each 15-min tutoring segment were scored. Several participants began their tutoring sessions with a review of content from previous sessions, with some administering 1-min math fact

assessments. This reduced the opportunity to engage in explaining a new concept by at least 20%. The scorers discussed that many times the 5 min timer signaled the end of scoring just as the participant was transitioning to explain a new learning strategy. The study analyzed “real-time” instruction, meaning unscripted, interactive, responsive instruction that responded to pupil needs and questions during content presentation and activities. The real-time observations were not highly controlled for specific behaviors. The participants were not told how to structure their tutoring sessions. The lack of observance of the *explained/modeled* behavior could be due to the length of the scored tutoring sessions and organic nature of the tutoring sessions.

A second factor that could have affected the observance of the *explained/modeled* behavior in the post-intervention tutoring sessions was the differences in the participants’ relationships with the pupils. The pre-intervention video was recorded during second tutoring sessions. The participants were developing rapport with the pupils. Additionally, the participants were explaining strategies and methods to address pupil-learning deficits. The post-video was recorded after three or four weeks of working with the pupils. Several participants began the post-video by stating a learning objective, but followed the objective by stating “we are going to work on this goal like we did last time.” Norms for pupil practice had been established, and the participants did not use the time to explain what was already understood. The scoring method did not take into account these established norms of real-time instruction.

A third factor that could have affected the lack of observation of *explained/modeled* in the post-intervention videos was scorer application of the operational definition for the behavior. Achieving an acceptable ratio of inter-rater reliability for *explained/modeled* was the most challenging for the scorers. A recheck of inter-rater agreement on 5 post-intervention videos at the beginning of scoring the post-videos was 33%. The scorers met to discuss the discrepancy in

agreement and the operational definition was reviewed and adherence to the definition was stressed. The final inter-rater agreement for the scoring of the post-intervention videos for *explained/modeled* was 77%. Although the operational definition was specific, the interpretation of the definition for real-time instruction was difficult to apply due to the precise wording of the definition. The participants were not expert teachers, but education students at the beginning of developing instructional skills. Although several observed behaviors exhibited good foundational skills toward effective instructional methods, the verbal behavior of the novices did not meet the requirements of the definition. The subtle differences of the observed behavior and the explicit operational definition could have contributed to the variations in scoring the *explained/modeled* behavior.

Reinforcement of Teaching Behaviors

The purpose of the implementation of peer coaching was to provide feedback and reinforcement for the development of effective teaching behaviors. The procedure of peer coaching included the completion of the *Targeted Teaching Behaviors Checklist* and the Praise-Question-Polish forms by the observing peer to be used to guide feedback discussions during conferences immediately following tutoring sessions. Thirty of the thirty-two participants completed the Peer Coaching Questionnaire (Neubert & McAllister, 1993) providing information regarding their participation in peer coaching. Five of the 30 (17%) peer coaches who completed feedback questionnaires reported they rarely or sometimes used the Praise-Question-Polish feedback protocol. Comments included “We rarely used it because we were always on the same page during each others lessons,” and “Each lesson was performed the same way so once I corrected her once she corrected it and then it was pointless to continue to say the same thing.” Nine of the thirty (30%) reported low to medium levels of professional companionship that

included discussion of problems and successes. Comments included “My partner was not an active participant in the collaboration process. She rarely had time to discuss techniques and strategies,” and “Though we discussed our session often, I never felt like I was given positive feedback or info. that was constructive.” Eight of the 30 (27%) stated they never or rarely received assistance from their peer coach regarding positive assistance in trying new teaching strategies. Comments included “We didn’t interact as much as I feel was intended. She was always very busy,” and “My peer coach was not aware that I used new strategies.” Ten of the thirty peer coaches (30%) rated the overall peer coaching experience 3 (i.e. “it was okay”). Comments included “I did not feel like teaching with someone that I did not know was a useful strategy,” “I think one-on-one tutoring is better for both the student and the tutor,” “I enjoyed our students, but not our partnership,” and “It was nice to have someone and know you weren’t alone, but overall my partner wasn’t great. Given a better partner I would have felt better about the experience.” The intended reinforcement of peer coaching was not positive for 30% of the participants. The lack of reinforcement provided by peer coaching partners for some participants could have affected the frequency of observed targeted teaching behaviors, impacting the results of the statistical analyses. Further, additional instruction in specific skills for working with peers might have improved the perceived effectiveness of the peer coaching procedures.

Adjustments in the implementation of peer coaching procedures could have increased feedback. Performance feedback components of graphing and charting would have provided visual reinforcement for the *Targeted Teaching Behaviors Checklist* observational data for each tutoring session. Requiring the coaching pairs to provide documentation of their post-tutoring sessions on a weekly basis instead of at the conclusion of the intervention would have insured participants adhered to the prescribed procedures. Although the researcher was available to

participants throughout the study to answer questions and provide information, not one participant contacted the researcher regarding concerns about a peer coaching partner. Explicit procedures regarding how to report challenges with a peer coach could have been in place, along with frequent reminders of the procedures, to address some of the concerns with the coaching partnerships.

The increase of observed *specific academic or behavior specific praise statements* was 91%. However, this only represents 37 total specific praise statements post-intervention (18 treatment group, 19 control group). Seventy-eight percent of the participants were not observed giving specific praise statements in the post-intervention videos. The inclusion of graphing of this behavior by each participant could have increased awareness and the frequency of the behavior (Duhon et al., 2009; Noell et al, 1997; Sanetti et al., 2007). Additionally, peer coaches could have provided feedback on missed opportunities to praise, thereby increasing awareness and impacting future rates of specific praise statements.

Operational Definitions for Scoring

The training for the targeted effective teaching behaviors was designed to be accessible to education students with no prior pedagogic instruction. One of the purposes of the study was to provide foundational training in effective teaching practice to students enrolled in an introductory special education course that included a field experience. Although information regarding evidence-based practices was included in course materials, direct instruction on implementation of effective teaching behaviors was not included in the course objectives. Students in the course where the study was implemented were required to complete 11 hours of tutoring, but feedback on effective instruction during tutoring sessions was not typically a component of the assessment process for the field experience. The discrepancy between the

specificity of introductory training to the operational definitions for scoring could account for examples of “good teaching” not being recognized by the scoring procedures. Several participants engaged with pupils using effective teaching strategies, but the observed behavior did not meet criterion of the operational definition for scoring. For example, the operational definition for *explained/modeled* was to “Give verbal step-by-step explanation on how to solve equations/problems. The verbal explanation must include procedures for solving equations/problems.” A directive to engage in a task was not considered “explaining.” The scorers observed several tutors working with pupils, prompting the pupil to the next step in solving a problem by using questions or actively discussing how to solve a mathematical problem. The observed behaviors were better examples of guided practice that takes place after *explained/modeled* during instruction (Echevarria et al., 2008; Hunter, 1982). The participants were engaging in effective teaching practices, but the *Targeted Teaching Behaviors Checklist* and the scoring procedures were not sensitive enough to identify guided practice behaviors.

The students participating in the study had limited experience working with pupils in an academic setting. Although 31% stated they had taken previous methods courses, 28% had no prior experience working with children. The scorers discussed that some of the behaviors observed appeared to have demonstrated the “intent” of the behavior, but did not meet the criterion of the operational definition. For example, the operational definition for *established student learning objective prior to beginning an activity* included “The learning objective must be stated prior to the beginning of the pupil engaging in the activity. The activity the pupil is to engage in must be clear and include a targeted outcome. The stated objective should provide a clear goal for the pupil.” The participants would often state an objective but not explicitly include an outcome measure. The participant appeared to exhibit the “intent” of stating a

learning objective for the activity, but did not include how the student would know if they were successful on the activity. The participants exhibited awareness of establishing objectives prior to the activity, but did not meet the criterion of the operational definition for scoring purposes. Both the treatment and control groups increased their frequency of stating learning objectives (i.e. treatment 42%, control 38%). However, no significant statistical difference was found for the treatment group.

Study Design and Analyses

The method of scoring the video data could have impacted the lack of statistically significant findings. The decision to make three of the effective teaching behaviors dichotomous variables was due to the challenge of establishing inter-rater agreement. Even though the operational definitions were specific and training resulted in 93% inter-rater agreement, scoring real-time tutoring sessions proved challenging. The behavioral nuances of each participant due to the beginning phases of skill development called operational definitions into question. The scorers discussed how difficult it was to focus strictly on the operational definitions when the observed behavior was so close to meeting the standards of the definitions. However, broader more inclusive operational definitions may not have achieved more accurate analyses of measured behaviors.

Implementation in Existing Program

The study was implemented in three sections of a required course for elementary education majors. The field experience component took place in four local elementary schools as part of an ongoing tutoring program. The researcher sought to create a study to provide training and feedback support to the participants in their tutoring experience with minimal changes to the existing program. The training on the *Targeted Teaching Behaviors Checklist* took place outside

of class-time due to time constraints of semester scheduling. There was no method for the researcher to document definitively that all participants watched and/or paid attention to the training video. The researcher planned to attend the sections weekly to provide support to participants, but was assigned to teach another course that met at the same time as one of the study's sections of the course two weeks prior to the implementation of the study. Attending some but not all of the course sections would have introduced violations of internal validity by varying the treatment of the peer-coaching and control conditions. Additional time in the classes could have led to interventions with coaching pairs who were willing to challenge each other during follow-up sessions.

Teacher Self-Efficacy

The second research question sought to determine if participating in peer coaching in an early field experience would have an effect on the teacher self-efficacy of education students. A comparison of the scores for treatment and control groups on the four subscales of the *Ohio State Teacher Efficacy Scale* indicated no statistical differences between groups. Due to the error of the administering the short version of the scale pre-intervention, an analysis of change with-in groups was not available. The expectation of a possible effect of the intervention on teacher self-efficacy may not have been appropriate for the relatively short duration of the study. Future research in the area of self-efficacy with education majors should follow growth over time. A measure of self-efficacy taken prior to students beginning education coursework and administered at the end of each semester would provide information to instructors and students regarding areas of low confidence. The information gained could be used to address student deficits prior to final field placements. Addressing pre-service teacher concerns and deficits during coursework could affect long-term teacher success and retention.

Social Validity

Peer Coaching

Sixty-seven percent of the participants in the treatment group who completed the post-intervention questionnaire selected 4 (I liked it very much) or 5 (I “loved” it) regarding their overall experience with peer coaching. Comments included “It gave me insight to what I needed to improve,” “My partner gave me constructive criticism as well as praise that helped me to improve my tutoring/teaching skills,” and “I learned a lot of teaching strategies from my partner that I will take to my future classroom.” Peer coaches became informed regarding their own teaching practice. Comments included “I learned how to be more flexible,” “I learned that it looks a lot easier to teach than it actually is,” and “I learned that I had to use multiple methods of teaching the same concept.” Seventy percent of peer coaches reported high levels of professional companionship. Comments regarding professional companionship focused on feedback and friendship. Comments included “I really liked having someone there to observe me and help me by giving me some tips on being a better tutor,” “It was helpful because if I messed up or didn’t do something correctly we would talk about solutions to improve it for the next time,” “My partner and I were friends already, but this experience has [led] us to build a more professional relationship,” and “[My partner] and I got along and worked so incredibly well with each other. Throughout the semester, we were not only peer tutoring coaches to each other, but we also became very good friends, which [made] the tutoring relationship even better.”

“Targeted Teaching Behaviors Checklist”

Fifty-seven control group participants completed a questionnaire on the use of the *Targeted Teaching Behaviors Checklist* (TTB). Students reported that the training on the TTB was adequate and considered the training effective. Comments included “It was beneficial for us

to watch the videos and see what was expected of us,” “I thought it was definitely adequate. The video demonstrating the do’s and don’t’s helped too. I’m a visual person so lists and videos helped me a lot,” and “I liked having the video as a visual so that I could see what was considered right or wrong. When I was tutoring, I thought about it a lot.” Students reported the TTB was most helpful during tutoring sessions as a reminder and guide. Comments included “It makes your overall tutoring session more understandable and effective,” and “I wasn’t sure what I was actually supposed to do on my first session. After having the TTB checklist, it helped me make sure I knew how to show the students what they needed to do and make sure my instructions were thorough and helpful.” Several students reported the use of the checklist helped them develop positive interactions with pupils. Comments included “I found the checklist very helpful and I found myself using it every time. Sometimes I wouldn’t realize I was doing something negative when I was, so I would catch myself, correct the mistake, and start fresh,” “I was way more aware of my praise to punishment rate and felt inclined to be able to check off every positive part while tutoring,” and “I had to think first before telling a student something along the lines of ‘we just did a problem like this, why can’t you do it now?’” When asked if the TTB should be used to train future tutors, 96% responded “yes.” Comments for future inclusion of the TTB in tutor training included “I found it very helpful because I am new to teaching so I used it as a guideline,” “I feel that it improved my outlook on being an effective tutor,” and “If teachers can start good habits and teachings early, they will make for great and wonderful teachers!”

School Personnel

Three of the four tutoring coordinators at the four elementary schools where the study was implemented completed a feedback questionnaire and participated in face-to-face interviews

with the researcher. All three coordinators were complementary of the study participants, stating they were “more professional and dedicated,” “conscientious and focused” than tutors assigned to the program previously. The tutor coordinator at the treatment site expressed that participants benefitted from the tutoring partnership because “[p]eer coaching kept them accountable and I feel like they worked harder to help the students.” The treatment site coordinator also stated that the “peer coaching model helped with confidence” and “the students benefitted from multiple personalities and experiences.” The two coordinators from control group sites expressed benefit to the participants who received training on the *Targeted Tutoring Behaviors Checklist*.

Coordinator 1: I believe that there is a great benefit to the tutoring program from training on the Targeted Teaching Behavior checklist. These participants knew in advance what was expected during their tutoring experience. Our school personnel benefited by the pre-service teacher’s attention to the best practices when working with the elementary students.

Coordinator 2: I feel that this is an effective strategy to use with the pre-service teachers as it gets them accustomed to best practices and just what “good teaching” looks like. It also gives them an opportunity to critique themselves according to a standard established by the professor.

Conclusion and Future Research

The statistical results of the study were insignificant for all five research questions. However, the researcher designed and implemented procedures that were novel in teacher education. The participants used their personal devices to video record and submit pre- and-post-video data. The challenges of multiple software platforms, encryption requirements, and data security were all addressed. One student in the control group stated on the feedback questionnaire, “At first I thought the filming would be a hassle, but it turned out to be easy. I think I was just overwhelmed at first.” Another participant from the control group stated, “I was quite nervous about recording myself and not being able to watch. However, the videos, strategies, techniques, and TTB that were provided for us to improve tutoring helped me out a

lot.” Although statistically significant results were not found between groups, both the treatment and control groups increased their frequency of 3 of the 4 targeted behaviors from pre- to post-intervention, indicating that the implementation of a 15-minute video training increased the frequency of *established learning objectives*, *checking for understanding*, and *specific praise statement*. The behavior that did not increase, *explained/modeled*, has been discussed above. Students reported feeling better prepared to work with pupils in tutoring session from previous semesters after engaging in training on effective teaching behaviors that required limited use of resources to implement. The minimal training was a great improvement to the previous lack of pedagogical instruction that had been typical practice for the required early field experience.

The independent variable for the study was peer coaching. The purpose of peer coaching was to increase feedback on the development of effective teaching behaviors in an early field experience. Although peer coaching was the independent variable in the study, providing all participants with training in effective teaching behaviors for the required early field experience was more than what was typically provided. The minimal training on the *Targeted Teaching Behaviors Checklist* provided foundational guidelines for the development of teaching practices that are expected of inservice teachers. The participants in the control group “believed” they were the experimental group. Feedback comments from the control group included “I think the study was great. It was good for me because each time I wanted the session to be better than my last for the final video,” “I used what I learned several times during my tutoring and plan to continue using it in my future,” and “The training video helped to show me what was expected of me.” The tutoring coordinators at the elementary schools agreed the participants in the study, both treatment and control groups, were more focused and professional than previous students assigned to the tutoring program. The training in effective teaching behaviors provided a

framework for the tutoring exchange. The field experience became more than going to schools and playing math games with pupils. The students understood the goal of the sessions were to not only work with pupils on mathematic concepts, but to develop their own teaching effectiveness. Student comments included “I wasn’t sure what I was actually supposed to do on my first session. After having the TTB checklist, it helped me make sure I knew how to show the students what they needed to do and make sure my instructions were thorough and helpful,” and “it made me realize how I could change my way of teaching.”

These results suggest several opportunities for future research. The *Targeted Teaching Behaviors Checklist* and training method could be implemented in a study that utilized video self-analysis and performance feedback as the intervention for increasing effective teaching behaviors of education students in an early field experience. The development of effective teaching behaviors with education majors who engaged in video self-analysis throughout their preparation could be compared to the effective teaching behaviors of graduating education majors who did not engage in video self-analysis. The effectiveness of peer coaching on the development of classroom behavior management techniques could be explored with first-year in-service teachers and senior education majors.

Additional purposes for video recording in early field placements should be explored in research studies and program reviews. First, video recording allows teacher educators the opportunity to observe education students interactions with pupils early in students’ coursework and can address concerns. For example, if students are engaging in negative discourse with pupils, the instructor can counsel the student regarding appropriate student/pupil interactions. Second, video recording holds students accountable for their interactions with pupils in early field experiences. Video recording adds an element of importance to the tutoring experience.

Third, video recording could be used as a component of self-analysis for the students. Students could analyze their own tutoring sessions for appropriate behaviors and set personal goals for improvement.

As previously discussed, the research design may not have been sensitive enough to measure the developmental stage of preservice teachers in an early field experience. Participants and school personnel indicated peer coaching and training in effective teaching behaviors impacted the professionalism and teaching behaviors of both treatment and control groups. The social validity for the intervention and training on targeted teaching behaviors appeared to be in contrast to the statistical analyses. However, Wolf (1978) posited a lack of appropriate measurement could be a factor in the discrepancy between social validation of an intervention and the quantitative analyses of a study.

The information gathered in this study goes beyond the statistical analyses. Education students valued the information they received from the online training regarding teaching behaviors. Students expressed that “my way of tutoring improved” after watching the training video on targeted teaching behaviors. Students also suggested to “show the video before the 1st session” and “start before the first video session recorded. That way the students [tutors] have a better grasp on what they are doing.” Students wanted to “go into more depth” and learn more about pedagogy and effective teaching. The development of effective teaching practices is a process that takes 3 to 5 years (Hall & Hord, 2001). Participants in both the treatment and control groups were provided instruction on effective teaching practices a semester to a year earlier than is typical for the teacher preparation program where the study was implemented. The study successfully provided instruction in effective teaching practices and increased feedback to education students in an early field experience without additional cost or staff. The intervention

of peer coaching along with efficient training in targeted teaching behaviors should be explored further to quantify their effects on the development of effective teaching behaviors in an early field experience.

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Appendix A Targeted Teaching Behaviors Checklist

Tutor _____
Coach _____
Date _____

Targeted Teaching Behaviors Checklist
Rice Study 2015

Effective Teaching Behaviors	Number of observations
Established student-learning objective prior to beginning activity.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Explained and/or modeled how pupil can discover answer or solve a problem.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Checked for understanding by asking content-related questions or asked pupil to verbally explain/demonstrate answer/concept.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Academic or behavior specific praise statement .	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Ineffective Teaching Behaviors	Number of Observations
Began activity without stating student-learning objective .	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Ask binomial content-related question without follow-up probe . Includes yes/no or provided answer choices.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Negative comment/feedback considered derogatory.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Appendix B

Ohio State Teacher Efficacy Scale Long Form

Teacher Beliefs Directions: This questionnaire is designed to help us gain a better understanding of the kinds of things that create difficulties for teachers in their school activities. Please indicate your opinion about each of the statements below. Your answers are confidential.	How much can you do?								
	Nothing	Very Little	Some Influence	Quite a Bit	A Great Deal				
1. How much can you do to get through to the most difficult students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2. How much can you do to help your students think critically?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
3. How much can you do to control disruptive behavior in the classroom?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
4. How much can you do to motivate students who show low interest in school work?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
5. To what extent can you make your expectations clear about student behavior?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
6. How much can you do to get students to believe they can do well in school work?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
7. How well can you respond to difficulty questions from your students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
8. How well can you establish routines to keep activities running smoothly?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
9. How much can you do to help your students value learning?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
10. How much can you gauge student comprehension of what you have taught?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
11. To what extent can you craft good questions for your students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
12. How much can you do to foster student creativity?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
13. How much can you do to get children to follow classroom rules?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
14. How much can you do to improve the understanding of a student who is failing?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
15. How much can you do to calm a student who is disruptive or noisy?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
16. How well can you establish a classroom management system with each group of students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
17. How much can you do to adjust your lessons to the proper level for individual students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
18. How much can you use a variety of assessment strategies?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
19. How well can you keep a problem student from ruining an entire lesson?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
20. To what extent can you provide an alternative explanation or example when students are confused?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
21. How well can you respond to defiant students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
22. How much can you assist families in helping their children do well in school?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
23. How well can you implement alternative strategies in your classroom?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
24. How well can you provide appropriate challenges for very capable students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

Appendix C
Peer Coaching Feedback Form

Peer Coaching Feedback Form
PQP Spring 2015

Date
Name of Tutor
Name of Peer Coach
Number of pupils in group

Session Feedback

Praise
Question
Polish

Appendix D
Peer Coaching Questionnaire

Peer Coaching Questionnaire
Rice Study 2015

Please answer the following questions below about your peer coaching experience.

<p>What did you learn about your teaching (or teaching in general) through peer coaching? (Please be specific)</p>
<p>What difficulties did you encounter in using peer coaching?</p>
<p>Would you make any adaptations in this peer coaching assignment for future preservice students in order to make it more effective?</p>
<p>What extent did you and your partner use "PQP" in responding to each other's lessons? 1 (never) 2 (rarely) 3 (sometimes) 4 (usually) 5 (always)</p> <p>If you rated this 1,2, or 3, please explain why you did not use PQP regularly, and what system did you use).</p>
<p>How successful was the coaching process in providing you professional companionship (sharing problems, discussing problems, successes)? 1 (low) 2 3 4 5 (high) Please comment.</p>
<p>How much assistance did you get from your coaching partner in helping you feel good about yourself as you tried new teachings strategies? 1 (low) 2 3 4 5 (high) Please comment.</p>
<p>What was your overall reaction to the coaching process?</p> <p>1 (disliked) 2 (did not care for it particularly) 3 (it was okay) 4 (I liked it very much) 5 (I "loved" it)</p> <p>Please comment.</p>

Appendix E
Control Group Feedback Questionnaire

Participant Feedback
Rice Study 2015

Thank you for participating in the study. Please provide feedback on your experience. The information you provide will provide important information for future research studies. Your answers are anonymous. Please use the writing instrument provided. Use the back of the paper if you need more room to write your responses.

What was your overall perception of the study?
Was the training on the use of the Targeted Teaching Behavior (TTB) checklist adequate? What was good about the training? How could the training be improved?
Did you find the TTB helpful in your tutoring sessions and reflective writing? If yes, please provide specific details of how the checklist was helpful to you. If you did not find the TTB helpful, what needed to be different? Please be specific.
What changes would you make to the TTB? Please be specific.
Should the TTB checklist be used to train future tutors? Explain your answer.

Appendix F
LSU IRB Approval

ACTION ON EXEMPTION APPROVAL REQUEST

TO: Deanna Rice Education

FROM: Dennis Landin Chair, Institutional Review Board

DATE: December 15, 2014

RE: IRB# E9117

TITLE: Peer Coaching Effects on Targeted Teaching Behaviors and Teacher Self-efficacy in an Early Field Experience

New Protocol/Modification/Continuation: New Protocol **Review Date:** 12/12/2014 **Approved X**
Disapproved_____ **Approval Date:** 12/12/2014 **Approval Expiration Date:** 12/11/2017
Exemption Category/Paragraph: 1, 2b, 3

Signed Consent Waived?: No **Re-review frequency:** (three years unless otherwise stated) **LSU Proposal Number** (if applicable): **Protocol Matches Scope of Work in Grant proposal:** (if applicable)
By: Dennis Landin, Chairman

PRINCIPAL INVESTIGATOR: PLEASE READ THE FOLLOWING – Continuing approval is CONDITIONAL on:

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends. 5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent. 6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study. 7. Notification of the IRB of a serious compliance failure. **8. SPECIAL NOTE:** **All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at <http://www.lsu.edu/irb>*

Vita

Deanna Kay Rice, a graduate of Ouachita Parish High School in Monroe, Louisiana, earned her bachelor's degree in Marketing from Southern Nazarene University in 1984. After a 15-year career in retail management, Deanna completed an alternate certification program and began her education career as a special education teacher for Belleville Area Services Cooperative in Belleville, Illinois. She served students with autism spectrum disorder, learning disabilities, and social emotional disorders in Illinois, Arizona, and Arkansas. Deanna earned a master's of science degree in education from the University of Central Arkansas in 2010. While pursuing her terminal degree in curriculum and instruction at Louisiana State University, Deanna earned a master's of arts degree in education with a specialization in applied research measurement and evaluation in 2014. Deanna was selected as a trainee for Leadership Education in Neurodevelopmental and Related Disabilities (LEND) at Louisiana State University Health Science Center New Orleans for 2013-2014. Deanna is a candidate and hopes to earn her doctorate of philosophy degree in August 2015.