Peer Observation as a Job-Embedded Professional Development Tool

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Peer Observation as a Job-Embedded Professional Development Tool

By

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APPROVAL FOR SUCCESSFUL DEFENSE

Daniel J. Breiman has successfully defended and made the required modifications to the text of the doctoral dissertation for the Ed.D. during this Spring Semester 2019.

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ABSTRACT

Teacher professional development is typically provided outside of the workplace, and is therefore disconnected to daily classroom practices. An alternative model of professional development is peer observation, which is contextualized through coaching and collaboration in the classroom. To date, research and investigation into the practice of peer observation is lacking. To fill that gap, this study examined the influence of peer observation on teacher practice, while identifying factors that were most beneficial and challenging about peer observation and its influence on workplace collegiality.

This study used qualitative methods and action research that allowed teachers to be part of the research process. Three teams of teachers participated in the study at a suburban high school. Each team consisted of two teachers, pairing an experienced teacher with an inexperienced teacher. Participants in the study reported how peer observation provided professional development in the context of their workplace. Teachers in each team shared the same instructional content area which, according to findings, made the peer observation process more relevant. Peer observation was also found to build and strengthen collegiality, facilitate an exchange of instructional techniques between teachers, and break down isolating instructional practices. Participants also appreciated receiving feedback from a colleague in a non-threatening way.
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Chapter I: Introduction

Approximately $18 billion is spent annually in the United States on teacher professional development (Boston Consulting Group [BCG], 2014). A teacher typically spends 68 hours in professional learning activities annually. When including teachers’ self-guided professional learning courses and activities, the annual total comes to 89 hours. Of this time, an average of 20 hours per year is spent on workshops. Time spent in workshops accounts for more time than for any other type of professional development (Boston Consulting Group, 2014).

The United States federal government spends a considerable amount of money on teacher professional development. In 2014, financial expenditures on professional development under Title II of the Elementary and Secondary Education Act were budgeted at about $2.3 billion (Boston Consulting Group, 2014). More than $450 million of the Investing in Innovation (i3) grant money spent from 2010 to 2012 went to professional development (Boston Consulting Group, 2014). The Investing in Innovation Fund was established under the American Recovery and Reinvestment Act of 2009 to provide funding for applicants who had records of improving student achievement. Recently, the New Teacher Project (TNTP, 2015) studied three school districts and one charter network and reported that an average of nearly $18,000 was spent per teacher on professional development efforts. One district reportedly spent more on teacher development than transportation, food, and security combined (TNTP, 2015). The largest 50 school districts in the United States devote at least $8 billion to teacher development annually (TNTP, 2015).

Currently, teacher professional development is highly fragmented. Of the $18 billion spent annually on professional development, external providers deliver only about one sixth of
the services (Boston Consulting Group, 2014). The majority of professional development spending represents internal investments by local school districts (Boston Consulting Group, 2014). Professional development thus does not work like a typical market in which the best products and services are well known to the users and gain increasing market share over time (Boston Consulting Group, 2014). The predominance of local decision-making and the large number of districts have resulted in a marketplace in which no single company can exert enough influence to move the industry in any given direction. This creates little transparency, accountability, and quality control over who is chosen to provide professional development (Boston Consulting Group, 2014). Independent consultants are by far the most common external providers (Boston Consulting Group, 2014). The professional development services provided by independent consultants primarily include curriculum implementation assistance, development of teaching skills, and group training of staff members who provide teacher professional development. With the exception of online professional development resources and information technology platforms, independent consultants play an outsized role in providing professional development services to districts.

Despite the considerable amount of public money spent on teacher professional development, research has found that on the whole, it is of limited effectiveness and unsatisfying for teachers (Gulamhussein, 2013). Ultimately, the issue is not that teachers are not provided professional development but rather that typically, the offerings are ineffective at changing teaching practice or student learning (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009). Professional development programs that have been found to impact student achievement are lengthy and intensive (Yoon, Duncan, Lee, Scarloss, & Shapley, 2007). Programs of less than 14 hours, such as the one-time workshops commonly held in schools, have
no effect on student achievement (Yoon et al., 2007). Currently, one-time workshops are the most prevalent model for delivering professional development, yet workshops have an abysmal track record at changing teacher practice and student achievement (Bush, 1984; Gulamhussein, 2013; Darling-Hammond et al., 2009; TNTP, 2015; Yoon et al., 2007).

Despite current professional development efforts, most teachers do not appear to improve substantially from year to year (TNTP, 2015). In research conducted by TNTP (2015), the evaluation ratings of nearly 7 of 10 teachers remained constant or declined over two to three years. Substantial improvement seems especially difficult to achieve after teachers’ first few years in the classroom: the difference in the average performance of first- and fifth-year teachers was more than nine times the difference between the average performance of fifth- and twentieth-year teachers (TNTP, 2015).

Although most evidence has indicated that teacher professional development does not produce demonstrable change or improvement in practice, some promising examples of effective strategies do exist. Two formats and models of professional development that show promise are coaching and collaboration. Instructional coaching is the practice of utilizing on-site professional developers to teach educators how to use proven instructional methods. Instructional coaching has been shown to improve teachers’ ability to adopt and implement new teaching practices (Joyce & Showers, 2002). However, there is little evidence to indicate which coaching model (e.g., technical coaching, team coaching, or peer coaching) is the most effective (Showers & Joyce, 1996). Professional learning communities’ co-creators Rick DuFour, Rebecca DuFour, and Robert Eaker (2009) defined collaboration as the interdependent work of teams of teachers to achieve common goals linked to the purpose of learning for all for which members are held mutually accountable (Dufour, Eaker, & Many, 2007). Collaboration helps build relationship
trust in schools, which enables teachers to more effectively make difficult decisions (Frank, Zhao, & Borman, 2004). Experts have identified several common elements that support effective collaboration (e.g., dedicated time, grade-level teams, sharing of best practices tied to instructional focus, and school leadership that communicates commitment), but there is limited research proving which factors are critical (Frank et al., 2004).

A. Statement of the Problem

Research has suggested that the current model of teacher professional development has minimal effectiveness (e.g., Guskey, 1995; Gordon, 2004; Little, 1999; TNTP, 2015). Most recently, a study conducted by TNTP (2015) found that despite current professional development efforts, most teachers do not appear to improve substantially from year to year. Across the districts studied by TNTP (2015), the evaluation ratings of nearly 7 of 10 teachers remained constant or declined over two or three years (TNTP, 2015). Currently, traditional professional development is provided out of context and is disconnected from instructional practice (Darling-Hammond et al., 2009).

Increasingly, the goal of professional development has been described as the development of highly effective teachers. Federal and state policies on school improvement have brought renewed attention and focus to professional development and its impact on students achievement. The 2011 Common Core State Initiative (CCSI, 2011) calls for effective professional development to build the capacity of educators. The CCSI (2011) standards require that resources and best practices be utilized for ongoing, job-embedded professional development (JEPD). JEPD is professional development contextualized within teachers’ day-to-day instructional practice. JEPD produces results when it is connected to a school curriculum, state standards, and assessment of student learning and is framed to address the particular
instructional needs of a teacher’s given assignment (Blank & de la Alas, 2009; Wei, Darling-Hammond, Andree, Richardson, & Orphanos, 2009). One model of JEPD is peer observation, which is collaborative professional development in which teachers work together towards common goals (DuFour, DuFour, & Eaker, 2009).

The extent to which teachers affect student achievement has been well substantiated (Darling-Hammond, 2000; Marzano, Pickering, & Pollock, 2001; Rockoff, 2002). In one study by Rockoff (2002), a 1-standard-deviation increase in teacher quality raised students’ reading and math test scores by approximately .20 and .24 standard deviations, respectively, on a nationally standardized scale. This study provided evidence of the effectiveness of high-quality teachers (Rockoff, 2002).

High-quality instruction is the ultimate goal of peer observation through the delivery of JEPD. Currently, given the limited professional development models and research on the use of peer observation, further investigation is needed. The purpose of this study was to examine teachers’ experiences in a peer observation model and how they believed it influenced their practice and sense of collegiality at school.

B. Overarching Research Questions

How do teachers involved in peer observation professional development models experience and understand the influence of these models on instructional practice and collegiality among school personnel?

C. Subsidiary Research Questions

1. In what ways, if any, do teachers describe the influence of peer observation on their instructional practice?
Which components of the peer observation process do teachers consider to be the most beneficial?

Which elements of the peer observation process do teachers consider to be the most challenging?

2. In what ways, if any, do teachers think peer observation influences professional relationships and workplace collegiality among participants?

D. Theoretical Framework

Adult learning theory informed the design and analysis of this study. Collis (1991) defined adult learning as the interactive relationship between theory and practice. Adult learning theory provides an understanding of the best learning strategies for adults by combining theory and practice. The application of contextual or real-world experiences creates connections to practice in adult learning theory (Knowles, Holton, & Swanson, 1998). Peer observation provides contextual learning experiences that demonstrate the relationship of theory and practice within the workplace.

Malcolm Knowles is considered to be the founder of adult learning. Knowles’ original studies and writings assume that there exist significant, identifiable differences between adult learners and learners younger than age 18 years. According to Knowles, adult learners are more self-directed, have repertoires of experiences, and are internally motivated to learn subject matter that can be applied immediately—learning that is especially “closely related to the developmental tasks of [their] social role” (Knowles, 1968, p. 272). More than 30 years ago, Knowles (1968) helped popularize the concept of adult learning theory and the term andragogy, or the theory and practice of the education of adults. Andragogy contrasts with pedagogy, which is “the art and science of helping adults learn” (Knowles, 1980, p. 43).
Knowles (1998) summarized the key assumptions of adult learners and andragogy. One assumption is that learners need help to become aware of what they need to know. Another assumption is that when adults undertake learning they deem valuable, they invest considerable resources (Forrest & Peterson, 2006; Kidd, 1973; Knowles, 1984a; 1984b; Knowles et al., 1998; Lindemann, 1926/1989; Ozuah, 2005; Thompson & Deis, 2004). Adult learning theory connects to peer observation as a professional development tool because adults’ control what they learn based on their needs and establish the purpose within the context of their jobs.

In this study, reflective practice provided an additional conceptual frame for analyzing the data collected. This study identified whether there were elements of reflective practice involved and whether and how implementing a peer observation model produced reflective practice. Defined as the capacity to reflect on action in order to engage in a process of continuous learning (Schon, 1983), reflective practice involves “paying critical attention to the practical values and theories which inform everyday actions [and] examining practice reflectively and reflexively” (Bolton, 2010, pg. 33). A key rationale for reflective practice is that experience alone does not necessarily lead to learning; deliberate reflection on experience is essential (Loughran, 2002). This study was aimed at showing if and in what ways adult learning happened through peer observation and if, when, and how reflective practice occurred.

E. Research Plan and Data Collection

A qualitative research design was the most appropriate for this study because its flexibility allowed for change. The research questions called for action research methodologies because they were intended to understand a process in action and, in this case, could determine to what extent, how, and why it responded to an acute issue at the school level. Action research allowed the teachers to be part of the process and work collaboratively within the context of their
current environments (Ferrance, 2000). The issues in practice studied were teachers’ work in isolation and their need to observe each other to develop best teaching practices through authentic professional development. Action research permitted examining teaching practices to develop and test advancements as solutions in real time (Ferrance, 2000).

In this study, the peer observation model was implemented and examined. This study relied on the use of volunteers interested in the process and implementation of peer observation. Pairs of novice teachers (zero to two years of teaching experience) and experienced teachers (at least five years of teaching experience) were recruited with the goal to assemble a sample of three pairs of experienced and new teachers in a suburban secondary school setting. The participants were asked to conduct two 20-minute observations in each other’s classroom over a six-week cycle. The participants took part in pre-peer-observation interviews to identify their previous experiences and perceptions of peer observations. The participating teachers decided when the observations took place and whom they observed. This practice aligned with adult learning theory, which holds that adults want to be part of their learning process and make decisions about what they learn (Knowles et al., 1998; MacKeracher, 2004).

The study examined the impact of peer observation by matching beginning and experienced teachers. Recent research has demonstrated the impacts of years of teacher experience for teachers and students. In a recent study on assessment data from Tennessee, kindergarteners had higher achievement depending on how long their teacher had been in the profession, with gains for every year up to 20 years (Chetty et al., 2011). A study of high-poverty, low-performing schools found an association between higher reading achievement and years of teaching experience at the second-grade level for up to 20 years (Huang & Moon, 2009).
Research on induction programs has demonstrated how experienced teachers can impact new teachers. A review of research on the impact of mentoring and training for new teachers showed that beginning teachers who participated in some kind of induction with experienced teachers had higher job satisfaction, commitment, and retention (Ingersoll & Strong, 2011). The review also found that the students of beginning teachers who participated in some kind of induction had higher scores or gains on academic achievement tests (Ingersoll & Strong, 2011).

In this study, the peer observation process occurred in three stages, as supported by Hammersley-Fletcher and Ormond (2004). Peer observation of teaching is a method that can offer formative feedback to aid the development of teachers’ reflective processes (Hammersley-Fletcher & Ormond, 2004). In the first stage, pre-observation meetings addressed specific areas identified for improvement by both participants. In the second stage, observation (Strucchelli, 2009) consisted of the experienced teacher observing the new teacher and then the new teacher observing the experienced teacher. The participants were provided with training on how to conduct observations. The third stage involved giving constructive feedback in a collaborative model (Hudson, Miller, Salzberg, & Morgan, 1994). The observations were supported by critical reflection by both participants. My role as the researcher was to collect data from teacher observation notes, learning journals, modified post-observation assessment forms, post-peer-observation interviews, and a log of observations of instruction and the post-observation conference.

This model followed a peer coaching modeling, which involves a collegial approach to integrating mastered skills and strategies into a certain curriculum, time span, personal teaching style, and set of instructional goals (Joyce & Showers, 1981). The peer observation pairs collaboratively planned standards-based lessons that clearly defined the expected outcomes for
student learning. The teachers were trained in the peer observation cycle model. The lessons were implemented during the observations, and data pertaining to what the students thought and did throughout the lessons were recorded. The post-observation meetings involved discussion and reflection on the lessons and the student data collected.

F. Limitations of the Study

This study had several limitations, including sample size and researcher bias. The small sample size was small, with three pairs of teachers, which was a limitation. Researcher bias was another limitation as I, the researcher, was a principal who had experience facilitating a peer observation pilot at my campus. Consequently, I had past experience with the subject matter and had biases from facilitating peer observation work.

G. Summary

Approximately $18 billion is spent annually on professional development, while a teacher typically spends an average of 89 hours per year in professional development (Boston Consulting Group, 2014). Even with this amount of time and financial resources spent, most teachers are unsatisfied with their experience with professional development (Boston Consulting Group, 2014). Traditional professional development is provided out of context and is disconnected from instructional practice and consequently leads to no significant changes in the classroom. The attention on teacher professional development, however, has been refocused (Boston Consulting Group, 2014) through federal and state policies on school improvement that require professional development to increase student achievement. With the refreshed focus on teacher professional development, there has been a trend towards JEPD in which contextualized learning occurs within daily practice.
Two formats that have shown promise are coaching and collaboration; however, limited research has supported which model and factors are critical for success. One model that includes contextualized learning, coaching, and collaboration within a culture of continuous learning is peer observation. Given the limited research on the use of peer observation, this study looked at teachers’ experiences of participating in peer observation and its influence on practice and collegiality at school. Considering the positive effects of both coaching and collaboration, this study contributed to the limited base of research literature on peer observation and its implementation in public education.

In chapter two, a comprehensive survey of the relevant general literature is given. The full range of the problem is explained, while previous investigations are assessed to establish the niche of this study on peer observation. What we know about the problem is defined, and gaps in knowledge are identified. Chapter one clarifies how the proposed study fits into previous research and the contributions it makes to the field of education.

H. Definition of Terms

Peer observation: Peer observation of teaching can take many forms (Hammersley-Fletcher & Orsmond, 2004), but in the present context, it refers to a formative process through which teachers observe each other, discuss their experiences, and exchange non-judgmental, constructive feedback. Peer observation and coaching follow the cycle of a pre-observation conference, observation, and post-observation conference, with a focus on providing instructional feedback to the teacher observed (Joyce & Showers, 1981; Zepeda, 2007).

Pre-observation meeting: This teacher meeting before the observation establishes the guidelines for the observation. The observed should brief the observer on the nature of the lesson to be observed (Martin & Double, 1998).
**Post-observation meeting:** After the observation, the observer and the observer meet to reflect on what was seen during the observation. This meeting is designed to be nonjudgmental (Dantonio, 2001; Gosling, 2002).

**Professional development:** The continuing education of teachers should not only be ongoing but also meaningful (Hawley & Rollie, 2003).
Chapter II: Literature Review

This literature review illustrates the ways in which adults learn, retain, and transfer knowledge. The review starts with a brief overview of the historical aspects of teacher professional development and then transitions into a discussion on current practices of professional development. Two central themes provide a narrative arc for the literature review. The first theme in the literature review is learning within context and contextualization of learning within schools. The second central theme is collaborative learning environments and how they can support schools.

To conduct the literature review, I searched for sources using general search terms including but not limited to “peer observation,” “job-embedded professional development,” and “instructional coaching.” I also used more defined search terms to identify details of the history of professional development. After looking through the text *Curriculum Development: Theory Into Practice* (Tanner & Tanner, 1980), I was able to identify narrower search terms that I could use to more closely investigate the history of professional development. Some search terms I used to gain more specificity about professional development included but were not limited to “Teachers Institute,” “Eight-Year Study,” “workshop model,” “A Nation at Risk,” “No Child Left Behind,” “The New Teacher Project,” and “professional learning community.” To investigate theory on peer observation, I also included the search terms “adult learning theory,” “Malcolm Knowles,” and “reflective practice.”

I used a variety of databases and online tools to collect and gather information, including ERIC, Google Scholar, and ProQuest. I also looked at institutes and projects that provided summaries and compiled information, such as the Southwest Educational Development
Laboratory (SEDL) and TNTP. I aimed to capture peer-reviewed studies, data, research articles, and dissertations from the past five years.

A. Types of Professional Development

The U.S. federal government currently spends a considerable amount of financial resources on teacher professional development. TNTP (2015) report *The Mirage* reported that three school districts and one charter network spent an average of nearly $18,000 per teacher on professional development. One district reportedly spent more on teacher development than on transportation, food, and security combined (TNTP, 2015).

A 2007 national report found that teachers who received an average of 49 hours of substantial professional development could boost student achievement by 21 percentile points (Yoon, Duncan, Lee, Scarloss & Shapley, 2007). Professional development programs found to impact student achievement are lengthy and intensive (Yoon et al., 2007). Programs of less than 14 hours, such as the one-time workshops commonly held in schools, have no effect on student achievement (Yoon et al., 2007). Unfortunately, one-time workshops are the most prevalent model for delivering professional development, despite their abysmal track record at changing teacher practice and student achievement (Bush, 1984; Gulamhussein, 2013; TNTP, 2015; Yoon et al., 2007).

Two formats and models that show promise are coaching and collaboration. Instructional coaching is the practice of utilizing on-site professional developers to teach educators how to use proven instructional methods. Instructional coaching has been shown to improve teachers’ ability to adopt and implement new teaching practices (Joyce & Showers, 2002). However, there is little evidence to support which model of coaching (e.g., technical coaching, team coaching, or peer coaching) is the most effective (Showers & Joyce, 1996).
B. History of Professional Development

This section provides a historical overview of teacher professional development, including seminal works, legislation, and landmark policy. Issues of teacher training and professional development arose early in the United States. In 1823, a pamphlet entitled *Suggestions on Education* by Professor James L. Kingsley of Yale University recommended that issues in instruction within public schools be solved through improved teacher training. Specifically, Professor Kingsley recommended forming teacher training schools. These schools were vocational schools for training graduates as teachers, and the typical age of students enrolled ranged from 14 to 17 years old (Angus, 2001; Richey, 1957). As early as the 1900s, Dr. William S. Learned, of Teachers College, Columbia, and Dr. William Bagley, of the Carnegie Foundation, argued that public schools were not providing an appropriate level of instructional quality for the children of America (Learned & Bagley, 1920).

In 1914, Missouri Governor Elliot W. Major obtained support of the Carnegie Foundation, for which Learned and Bagley (1920) were then conducting the study *The Professional Preparation of Teachers for American Public Schools*. They concluded that preparation of teachers should be the “sole purpose and concern” of normal schools (Learned & Bagley, 1920). The report defined teacher education as part of higher education and encouraged schools to embrace greater specialization (Learned & Bagley, 1920). To increase the quality of instruction for teachers, Learned and Bagley (1920) outlined a strategic plan for a state-operated school for teacher preparation. In this plan, a veteran teacher would oversee the methods used by the pre-service teachers and then offer criticism and suggestions in order to ensure that the standards of quality of instruction were met (Learned & Bagley, 1920; Tyack, 1967).
C. Teachers’ Institutes

Around this time, another advancement in the professional development of teachers was the emergence of teachers’ institutes throughout the country at the end of the nineteenth century (Spearman, 2004; Taggart, 2003). Teachers’ institutes arose because public school teachers needed training in grammar, arithmetic, reading, and pedagogy (Richey, 1957; Tyack, 1967). Richey (1957) reported that teachers’ institutes were created to offer regional solutions to meet the demand for professional development. In the 1890s, the classes offered by teachers’ institutes were much like the classes that teachers then taught to their own students. A typical classroom in teachers’ institute employed direct instruction by veteran teachers in grammar, arithmetic, and reading (Tyack, 1967).

The primary focus of teachers’ institutes was to remediate teachers’ deficiencies resulting from the lack of pre-service education (Howey & Vaughan, 1983). Remediation of deficiencies was necessary at this time because unqualified teachers were recruited to fill teaching vacancies. Until about 1930, in-service programs focused on the remediation of skills and introduction of new information rather than development of pedagogical practices (Howey & Vaughan, 1983).

Then, for the first time, the supply of teachers caught up with demand, and in-service education began to change from reactive to more proactive (Harris, 1989). In-service programs, often in a workshop format, ventured into growth rather than remedial mode and were designed to help teachers respond to changing social and political issues forcing schools to expand their missions (Harris, 1989). By this time, the teachers’ pre-service education from schools established since 1823 had improved and surpassed the function of teachers’ institutes. Consequently, the negative connotations surrounding teacher professional development today may have started with teachers’ institutes because their programs did not evolve along with the
dynamics of public education (Guskey, 1986). As early as 1903, John T. McManis, of the University of Chicago, referred to the institute as a “fossil” in “The Problems of the Institute:”

There is scarcely anything less pedagogical than the work of the ordinary institute. Why the lecturer should violate nearly all the canons of modern education is strange, considering the fact that he talks so glib about these same principles. If they can perform the antics of a clown, his listeners are tickled into following him, and they may think they have received a great deal, whether they have or not; if he is dry and tedious, they yawn as he proceeds and cheer when he is through. (Department of Superintendence, N.E.A., 1889, p. 71)

Many of McManis’ (1903) criticisms of teachers’ institutes emphasized the inconsistencies between the lecture style of instruction and the teaching practices illustrated. Teachers’ institutes did not adapt to the demands of teacher development and eventually fell out of favor as productive professional development programs (Angus, 2001; McManis, 1903; Richey, 1957).

D. Eight-Year Study

Two significant factors affected public education in the second decade of the twentieth century. First, the Progressive Education Association (PEA) was organized in 1919 (Angus, 2001; Bullough, 2007; Cesar, 2006). Second, the supply of teachers changed from a shortage in the 1920s to an oversupply in the 1930s and then returned to a shortage in the 1940s as a result of World War II (Angus, 2001; Cesar, 2006). One of the PEA’s greatest achievements was the organization of the Eight-Year Study. Also known as the Thirty-School Study, this study was an experimental project conducted from 1930 to 1942 (Tanner & Tanner, 1980). Thirty high schools redesigned their curricula while initiating innovative practices in student testing, program assessment, student guidance, curriculum design, and staff development (Tanner, 1986). The Eight-Year Study found that one of the most important approaches for helping teachers deal with
curriculum problems was the workshop model, which became the major contribution of the Eight-Year Study (Tanner, 1986).

The original workshop model created through the Eight-Year Study was different from today’s workshops. In the original model of workshops, teachers themselves identified on which problems they wanted to work and which they needed assistance. The first workshop was organized in the summer of 1936 by Ralph Tyler, director of evaluation for the Eight-Year Study, in response to demands from teachers at the 30 participating schools, who felt confused about how to approach the task of developing a curriculum (Tanner & Tanner, 1980). The teachers came to a six-week institute led by Tyler at Ohio State University with definite problems on which they wished to work. The term workshop was then coined (Tanner & Tanner, 2007). The participants received assistance from various faculty members, and the results were so useful that more workshops were organized. As time passed, workshops became a common in-service education approach. Within a generation or two, however, supervisors lost sight of the key factor in the success of the original workshop: teachers themselves identified the problems on which they wanted to work on and needed assistance (Tanner & Tanner, 2007).

Other significant factors also affected the supply of trained, skilled teachers from the 1910s to the 1940s. Angus (2001) reported that a teacher shortage occurred during the First World War as many women left teaching positions to take more desirable jobs in other fields previously held by men who had gone into the armed forces. The shortage of teachers created conditions in which schools had to hire untrained individuals. After the war, teachers’ salaries were increased to recruit qualified individuals to the profession. Three-fourth of states also made it a requirement to have completed at least some college to receive state teaching certificates (Richey, 1957).
E. Teacher Certification

The trend of requiring higher qualifications for teacher certification begun during a period of abundant supply of teaching professionals, which decreased in the early 1940s as the United States entered the Second World War. Men joined the armed forces, and again, women left teaching positions to fill more desirable jobs previously held by men (Angus, 2001). With the teacher shortage at this time, emergency teaching certificates were issued to keep up with teaching needs.

During this shortage, the solution for states that required certificates was to offer emergency certificates, which emerged as an early attempt to address critical teacher shortages. Emergency teacher certification was a process in which states granted temporary teaching certificates to individuals who did not meet the ordinary criteria (Angus, 2001). Emergency teaching certificates could only be granted in cases when no certified teachers could be found to fill positions. During this temporary certification period, teachers could work toward permanent certification through the traditional channels (Angus, 2001).

In the 1940s and 1950s, federal legislation instituted changes in professional development. Legislation provided money for school districts to pay for professional development for teachers. In 1958, the National Defense and Education Act was passed. A growing sense that U.S. scientists were falling behind motivated the desire to increase the country’s technological sophistication and power. The law declared a national educational emergency, and federal expenditures on education more than doubled in the four years after its passage.

In the 1970s, staff developers worked as trainers and coordinators in the delivery of professional development through workshops and conferences (Killion & Harrison, 1997).
Studies were conducted to evaluate the effectiveness of in-service education and determine teachers’ attitudes toward professional development programs (Killion & Harrison, 1997). During the 1970s and 1980s, researchers attempted to develop ideas about effective staff development.

In the 1980s, the focus of professional development work reflected the movement toward organizational development, school improvement, and systemic change (Killion & Harrison, 1997). Staff developers became facilitators of programs as well as trainers. During this time, the 1983 publication of the government report *A Nation at Risk* created concern that U.S. schools were failing (Commission on Excellence in Education, 1983). The report’s recommendations included higher standards for teacher-preparation programs and enacting teacher contracts that allowed more time for professional development. *A Nation at Risk* suggested that improving teacher preparation programs was essential for educational success (Commission on Excellence in Education, 1983). The report provided seven recommendations regarding the improvement of teaching. Recommendation D stated that “school boards should adopt an 11-month contract for teachers” (Commission on Excellence in Education, 1983). This recommendation would ensure time for curriculum and professional development, programs for students with special needs, and more adequate levels of teacher compensation (Commission on Excellence in Education, 1983).

The 1990s saw the introduction of the concepts of the learning organization from Peter Senge’s (1990) *The Fifth Discipline: The Art and Practice of the Learning Organization* and professional learning communities from DuFour and Eaker (1998). During this time, the concept of a professional development program expanded from the one-day workshop presented to all teachers on an institute day into a system-wide strategic plan spanning a number of years with many different strategies (DuFour & Eaker, 1998; Sparks & Loucks-Horsley, 1990). A shift in
the professional development model occurred in the 1990s with the integration of the philosophy and concept of JEPD, or teacher learning grounded in day-to-day practice and designed to enhance teachers’ content-specific instructional practices with the goal of improving student learning (Darling-Hammond & McLaughlin, 1995; Hirsh, 2009). JEPD is primarily school or classroom based and is integrated into the workday as teachers find solutions to authentic, immediate problems of practice in a cycle of continuous improvement (Hawley & Valli, 1999; National Staff Development Council, 2010). JEPD is a shared, ongoing process that is locally rooted and makes a direct connection between learning and application in daily practice, requiring teachers’ involvement in cooperative, inquiry-based work (Hawley & Valli, 1999).

F. No Child Left Behind

In early 2001 came the No Child Left Behind Act (NCLB), which focused on professional development activities to improve student achievement as measured by standardized testing. Under NCLB, professional development activities were utilized to advance teachers’ understanding of effective instructional strategies that “improve[d] student achievement or substantially increase[d] the knowledge and teaching skills of teachers” (NCLB, 2001). NCLB defined “high-quality” professional development activities as those developed through the extensive participation of teachers, principals, parents, and school administrators, with the goal to improve and increase teachers’ knowledge of the academic subjects they taught (NCLB, 2001). Additionally, NCLB (2001) required professional development activities to not be one-day or short-term workshops or conferences but, instead, high quality, sustained, intensive, and classroom-focused in order to have lasting, positive impacts on classroom instruction and teachers’ classroom performance.
Assessment of professional development under NCLB (2001) evaluation was based on the percentage of teachers participating in embedded forms of professional development at least once or twice a month. Other assessments of professional development included the rate of teachers’ participation in professional development activities for more than 24 hours. Additional assessment of professional development occurred by looking at professional development in schools identified as in need of improvement and comparing the professional development of special education teachers and general education teachers. By emphasizing the critical role of professional development, the federal government signaled its belief in the importance of creating quality educators as central to improving student achievement.

G. Race for the Top

In 2009, President Obama’s Race for the Top grant was launched under the American Recovery and Reinvestment Act. In grant applications, states were awarded points for satisfying certain educational policies, such as performance-based evaluations for teachers and principals based on multiple measures of educator effectiveness. These measures included high-quality, targeted professional development and feedback to support the transition to new standards and assessments. The Race for the Top grants funded professional development to help both teachers and principals gather, analyze, and use data, design instructional strategies for improvement, differentiate instruction, and remove barriers to improve learning outcomes for all students.

Along with the Race for the Top grants, the Common Core State Standards Initiative (CCSI, 2011) was created to “provide a consistent clear understanding of what students are expected to learn, so teachers and parents know what they need to do to help them.” States were given incentives to adopt the Common Core standards through the possibility of being awarded the competitive Race to the Top grants. The CCSI (2011) reported that the standards helped
colleges and professional development better prepare teachers. Decisions on how to implement the standards, including the right support, were made at the state and local levels.

H. Job-Embedded Professional Development

Recent regulations from the U.S. Department of Education contain many references to JEPD and contextualized professional development. The School Improvement Fund regulations (U.S. Department of Education, 2010a), the State Fiscal Stabilization Fund guidelines (Means, Padilla, DeBarger, & Bakia, 2009), and the Race to the Top grant applications (U.S. Department of Education, 2010b) all refer to and provide support for JEPD. The executive summary of the Race for the Top Program references JEPD in connection to providing effective support to teachers and principals. The Race for the Top Program asks applicants to “provide effective, data-informed professional development, coaching, induction, and common planning and collaboration time to teachers and principals that are, where appropriate, ongoing and job-embedded” (U.S. Department of Education, 2010a, p. 10).

The JEPD concept also appears in guiding documents on how to use funds from the American Recovery and Reinvestment Act to support the Individuals with Disabilities Education Act (IDEA) Part B. Moreover, Title I indicates support for implementation of JEPD in high-need schools (Chambers et al., 2009; Stullich, Abrams, Eisner, & Lee, 2009). The National Staff Development Council (2010) has also emphasized the importance of school-based learning and job-embedded coaching as necessary components of effective professional development.

In JEPD, teachers primarily draw from the professional knowledge in their own schools and among their colleagues (Wei et al., 2009) that is informed by other professional development opportunities that help teachers learn research-based practices (Killion & Roy, 2009; Lieberman, 2000). JEPD may consist of departmental, cross-departmental, grade-level, “vertical” (i.e., across
grade levels) teams of teachers engaging in “interactive, integrative, practical, and results-oriented” work (Fogarty & Pete, 2009, p. 32). Activities include mentoring, coaching, lesson studies, action research, peer observation, examination of student work, and virtual coaching, which consists of using “virtual, bug-in-ear” technology to receive feedback from coaching teachers during instruction (Rock, Gregg, Gable, & Zigmond, 2009). Professional learning communities, which provide structured time for teachers to come together and discuss issues of teaching practice and student learning, can be forums for JEPD. Benefits can be derived from teachers working together to improve their instructional practice, at a much-reduced financial burden for school districts. Colleagues working together, nurturing, and supporting each other in nonthreatening, non-evaluative ways have been shown to improve thinking and teaching (Eisenberg, 2010).

Despite the trend to promote JEPD approaches, there is an inherent conflict between cost and quality because this type of professional development requires larger financial investment over time than one-time workshops. TNTP (2015) report The Mirage describes the widely held perception among education leaders that educators already know how to help teachers improve, and we could achieve the goal of great teaching in more classrooms if educators only applied what we know more widely. Research, however, has suggested that despite enormous, admirable investments of time and money, we are much further from that goal than acknowledged, and the evidence base for what helps teachers improve is very thin (TNTP, 2015). When TNTP (2015) looked at the resources allocated to help teachers improve, including time and money for training, mentoring, evaluating, and providing ongoing job-embedded experiences, it calculated that the districts studied spent an average of nearly $18,000 per teacher each year—the equivalent of 6%–9% of their annual operating budgets. Based on those estimates, we project
that the 50 largest school districts in the United States likely spend a combined $8 billion every year on teacher development (TNTP, 2015).

This is about providing not only professional development but, moreover, effective professional development. Availability alone is not the issue. In fact, in a recent study, researchers found that 90% of the teachers reported participating in professional development, but most of those teachers also found that the professional development in which they participated was useless (Darling-Hammond et al., 2009). The real issue, therefore, is not that teachers are not provided professional development; rather, the typical offerings are ineffective at changing teaching practice or student learning. In the high-stakes era of higher standards and teacher evaluations partly based on student achievement, professional development has to have a laser-like focus on one thing—student learning. However, at present, many teacher professional development offerings miss the mark. One-time workshops are the most prevalent model for delivering professional development, yet they have an abysmal track record at changing teacher practice and student achievement (Yoon et al., 2007).

One comprehensive study analyzed 1,300 studies representing the entire landscape of professional development research (Yoon et al., 2007). The researchers found that only lengthy and intensive professional development programs affected student achievement. Programs of less than 14 hours, such as the one-time workshops commonly held in schools, had no effect on student achievement. Not only did these workshop programs fail to increase student learning; they did not even change teaching practices. An earlier study on the various models of professional development found that if training merely described a skill to teachers, as traditional workshops do, only 10% of teachers could transfer that skill to practice. The majority of teachers simply left the training completely unchanged (Bush, 1984).
I. Current State of Professional Development

At a teachers’ town hall meeting in 2012, Education Secretary Arne Duncan said that the federal government spent $2.5 billion a year on professional development (Layton, pg. 2, 2015). “As I go out [and] talk to great teachers around the country, when I ask them how much is that money improving their job or development, they either laugh, or they cry. They are not feeling it” (Layton, pg. 2, 2015).

The federal government spends a considerable amount of money on professional development. Financial expenditures on professional development through Title II of the Elementary and Secondary Education Act were budgeted at approximately $2.3 billion in 2014 (Boston Consulting Group, 2014). More than $450 million of i3 grant money spent from 2010 to 2012 went to professional development (Boston Consulting Group, 2014).

Many school districts also make large investments in teacher improvement. Overall, $18 billion is spent annually on teacher professional development (Boston Consulting Group, 2014). On average, a teacher spends approximately 68 hours annually on professional learning activities. When including self-guided professional learning and courses, the annual total comes to 89 hours. Of this time, teachers spend 20 hours per year on workshops. This is more time than any other type of professional development (Boston Consulting Group, 2014). TNTP (2015) surveyed 10,507 teachers who reported spending approximately 19 full school days a year—nearly 10% of a typical year—participating in development activities. After a little more than a decade in the classroom, a teacher will have spent the equivalent of more than a full school year on development (TNTP, 2015).

Recently, a study conducted by TNTP (2015) found that schools districts spent an average of $18,000 per teacher annually on professional development, approximately 6%–9% of
districts’ average annual operating budgets. TNTP (2015) estimated that the 50 largest school districts budget an estimated $8 billion on teacher development. One district in TNTP (2015) study spent more on teacher development than transportation, food, and security combined. The districts studied by TNTP (2015) devoted roughly $73–$181 million to teacher improvement annually.

J. Transitioning from Funding to Areas of Need in Professional Development

Research has found that in several case studies, even experienced teachers struggle with a new instructional technique in the beginning (Ermeling, 2010; Joyce & Showers, 1980). Studies have shown that on average, it takes 20 separate instances of practice before a teacher masters a new skill, and that number increases with the complexity of the skill (Joyce & Showers, 2002). Hence, the area of greatest struggle in teaching is not learning a new skill but implementing it, which is referred to as the implementation dip (Fullan, 2001). Numerous studies have spoken to the challenge’s teachers face when they try to implement newly learned skills in their classrooms. For example, a recent case study examined veteran science teachers’ attempts to implement inquiry learning in their classrooms. The group had worked extensively outside the classroom with experts to learn the theory of inquiry learning. They also observed model lessons and collaboratively wrote their own model lessons. Despite all that groundwork on the logic and research behind the model, the teachers’ first attempts to apply the new method were unsuccessful (Ermeling, 2010). The teachers had to practice inquiry teaching several times, watching video tapes of their efforts in teams and getting feedback about their performance before they were able to master the skill.

This case study was not an outlier. In fact, studies have shown that for a teacher to master a new skill takes, it takes 20 separate instances of practice on average, and that number may
increase if the skill is exceptionally complex (Joyce & Showers, 2002). The implementation dip is further complicated by research showing that teachers change their underlying beliefs about how to teach something only after they see success with students (Guskey, 2002). Researchers have documented this phenomenon since the 1980s (e.g., Huberman, 1981; Guskey, 1984). Indeed, when teachers do not see success, they tend to abandon a practice and revert to business as usual (Gulamhussein, 2013).

K. Characteristics of Effective Professional Development

Professional development longer in duration has greater impacts on advancing teacher practice and, in turn, student learning. Nine experimental research studies on teacher professional development all found that programs of greater duration were positively associated with teacher changes and improvement in student learning (Darling-Hammond et al., 2009). In fact, in a study analyzing the impact of science professional development program on teaching practice, researchers found that teachers with 80 or more hours of professional development were significantly more likely to use the teaching practice they learned than teachers who had less than 80 hours of training (Corcoran, McVay, & Riordan, 2003). These findings corroborated research on teacher learning showing that mastery of a new skill is a time-consuming process for teachers.

Increasing the amount of time teachers spend in professional development, however, is not enough by itself. The time has to be spent wisely, with a significant portion dedicated to supporting teachers during the implementation stage. Support at this stage helps teachers navigate the frustration that comes with using a new instructional method. Studies have found that when teachers are supported during this phase, they change their teaching practices. Truesdale (2003) studied the differences between teachers who only attended a workshop and
teachers who attended a workshop and then were coached through implementation. The study found that the coached teachers transferred the newly learned teaching practices, but the teachers who only had the workshop quickly lost interest in the skill and did not continue to use it in their classrooms (Truesdale, 2003). Likewise, Knight and Cornett (2009) found in a study of 50 teachers that those who had coaching along with an introductory workshop were significantly more likely to use the new teaching practice in their classes than those only exposed to the workshop.

Teachers learn better when they are able to actively participate and make sense of the information presented (French, 1997). Professional development sessions aimed at making teachers aware of a concept have been shown to be more successful when they allow teachers to learn the concept in varied, active ways (Richardson, 1998; Roy, 2005). These activities can include readings, role playing techniques, live modeling, open-ended discussion of the presented topic, and visits to classrooms to observe and discuss the teaching methodology (Black, 1998; Goldberg, 2002; Licklider, 1997; Rice, 2001; Roy, 2005).

While many forms of active learning help teachers decipher concepts, theories, and research-based practices in teaching, modeling—when an expert demonstrates the new practice—has been shown to be especially successful at helping teachers understand and apply a concept and remain open to adopting it (Carpenter, Fennema, Peterson, Chiang, & Loef, 1989; Cohen & Hill, 2001; Desimone, 2002; Garet, Porter, Desimone, Birman, & Yoon, 2001; Penuel, Fishman, Yamaguchi, & Gallagher, 2007; Saxe, Gearhart, & Nasir, 2001; Snow-Renner & Lauer, 2005; Mauyer, & Kahle, 2000). For example, instead of hearing about inquiry learning in science, a master teacher might teach a science class using inquiry methodology while being observed by a teacher learning this skill. In this way, teachers can see how a method is used
successfully in a class of students. Ultimately, teacher professional development is moving away from models disconnected from practice. Newer models stress contextualized collaboration and skill-based learning that focuses on the teacher who learns through experience.

L. Collaborative Learning Environment

Collaborative professional development, such as the professional learning community movement, supports teachers working together towards common goals (DuFour et al., 2008). Yvonne and Roger Goddard, of the University of Michigan, and Megan Tschannen-Moran, of the College of William and Mary, conducted a literature review in 2007 and empirically tested the relationship between a theoretically driven measure of the effect of teacher collaboration on school improvement and student achievement (Goddard, Goddard, & Tschannen-Moran, 2007). The study looked at fourth-grade math and reading scores and found that fourth-grade students had higher achievement when they attended schools with higher levels of teacher collaboration in school improvement. Teacher collaboration was also found to have a significant effect. Schools with a 1-standard deviation increase in teacher collaboration showed a .07–.08 standard deviation increase in fourth-grade test scores (Goddard et al., 2007). In the study, these results held true even when student characteristics such as race, gender, and socioeconomic status were considered (Goddard et al., 2007).

Organizations have also provided support for the work of professional learning communities. The SEDL, particularly Professor Emerita Shirley Hord, has engaged in ongoing exploration of the potential of professional learning communities. As SEDL reported in a publication on the topic:

Professional learning communities offer an infrastructure to create the supportive cultures and conditions necessary for achieving significant gains in teaching and learning.
Professional learning communities provide opportunities for professional staff to look deeply into the teaching and learning process and to learn how to become more effective in their work with students. (Morrissey, 2000, p. 14)

Additional research has provided more support for teacher collaboration. In the study “Does Cooperating Teachers’ Instructional Effectiveness Improve Pre-service Teachers’ Future Performance?,” Brockman, and Campbell (2018) examined thousands of student teachers from 2010 to 2015. The study drew primarily on a statewide data set on pre-service teachers from the Tennessee Department of Education. The data included information on the characteristics of cooperating teachers and field-placement schools for approximately 27,000 pre-service teachers. The methodologies used included correlational analysis and hierarchical linear modeling, and the results supported teacher collaboration between cooperating teachers and pre-service teachers.

The report Teaching Around the World: What Can TALIS Tell Us? (Burns & Darling-Hammond, 2014) offers numerous policy recommendations and guidance that connect to supporting collaboration. The Teaching and Learning International Survey of 2013 (TALIS) investigated the views of teachers and principals around the world and found that teachers commonly view the quality of their relationships with other teachers as important for their feelings of self-efficacy (Organization for Economic and Co-operation and Development [OECD], 2014). Teacher efficacy is defined as teachers’ belief in their own ability to guide their students to success. According to Visible Learning for Teachers: Maximizing Impact on Learning by John Hattie, the collective belief in teacher efficacy in a school has the largest impact on student achievement. The report by Darling-Hammond (Burns & Darling-Hammond, 2014) stressed that teachers’ perceptions of the quality of their relationships are connected to their own ability to help guide their students to success. Despite this research on collaboration,
persistent evidence indicates that teaching unfortunately remains an isolated experience for many educators in the United States compared with teachers in high-achieving OCED (2009) nations, due in part to limited opportunities for collaboration in the U.S. teacher’s typical workday schedule (Wei, Darling-Hammond, & Adamson, 2010).

M. Peer Observation

Peer observation is a model of professional development connected to practice and focused on the individual (Allen & Leblanc, 2005). Peer observation is collaborative and provides contextualized learning (Hargreaves, 2007). Peer observation work takes place in teachers’ own context, involves inquiring, and is reflective (Cochran-Smith, 2006).

A new movement is emerging in which teachers work collaboratively in professional learning communities (DuFour et al., 2008) and a peer observation model that allows for contextual learning. Peer observation is deeply rooted in history, dating to John Dewey (2001), who supported this model as a natural, first-hand experience in context. Adshead, White, and Stephenson (2006) reported results from a survey of general practitioner (GP) teachers of medical undergraduate students from King’s College London School of Medicine and Guy’s, King’s College, and St. Thomas hospitals. The aim of the study was to determine GP teachers’ views on a proposed peer observation program of their teaching (Adshead et al., 2006). In the study, the GP teachers had a broad consensus about the potential benefits of peer observation both for students and teachers. These benefits included identification of clearer learning goals with students, more reflection on teaching, and encouragement to try new teaching methods (Adshead et al., 2006). The majority of teachers (72%) agreed that peer observation provided a way to address problems in their teaching (Adshead et al., 2006). Of all the respondents, 48% (69% of GPs in solo practice) agreed that peer observation decreased their isolation as teachers.
It is important to add that although the United Kingdom’s education system may be different than public education in the United States, teacher isolation is a universal, cross-national phenomenon (Adshead et al., 2006).

Related to this study, Therese A. Huston, director of the Center for Excellence in Teaching and Learning at Seattle University, and Carol L. Weaver, associate professor in adult education at Seattle University’s College of Education performed a three-year peer observation pilot (Huston & Weaver, 2008). Huston and Weaver (2008) found that experienced faculty members benefited from professional development that was both practice and problem centered. They reported that peer coaching typically paired teachers with the same amount of experience, but some faculty members noted that some of their most important insights came from watching their seasoned colleagues teach (Huston & Weaver, 2008). Huston and Weaver (2008, p. 14), therefore, asserted that, “peer coaching has the potential to broaden conversations about pedagogy and content for partnerships that cross disciplinary boundaries and deepen conversations about pedagogy and cogent for partnerships that are discipline specific.”

Other literature has supported that peer observation serves as a vehicle for fostering collegiality and collaboration within schools. Lemlech (1995), author of Becoming a Professional Leader, concluded that collaboration and collegiality can help develop teacher leaders and bolster teaching professionalism, which begins with the premise that knowledge must be thoughtfully shared. In addition, relationship building and collegiality among staff members must be a priority if schools hope to retain teachers (Jarzabkowski, 2003).

One method that can support collaboration and collegiality is peer observation, and examples of its operation can be found in Time for Teachers: Leveraging Expanded Time To Strengthen Instruction and Empower Teachers, published by the National Center on Time and
Learning, which examined a number of schools that implemented peer observation of teaching cycles (Kaplan, Chan, Farbman, & Novoryta, n.d.). With support from a state grant, Silvia Elementary School in Fall River, Massachusetts, added 90 minutes to each day. The expanded schedule allowed teachers to meet in grade-level teams for 45 minutes twice a week to engage in collective lesson-planning, while their students actively learned in art, music, or gym. This time was separate from the weekly schoolwide professional development. During the sessions—one devoted to math, the other to English and language arts—teachers shared instructional strategies, analyzed lesson objectives, and compared student work.

At Preuss Charter High School in La Jolla, California, teachers met once a week for 105 minutes to figure out how to better integrate new curricula aligned with the Common Core standards into their classrooms. Teachers modeled lessons for colleagues, who then offered feedback and discussed how they could incorporate similar teaching strategies into their own subject areas.

Other research and materials for implementing peer observation have also been found. Expectations and guidelines for the post-conversation include teachers gaining new insights into some aspects of teaching, reflecting on ideas, asking unanswered questions that spark more discussion, and continuing with peer observation or other forms of collaborative learning. Participants in peer observation can use the text *Conversations Lead to Further Reflection and Inquiry and Practice*, originally published in 2004 (Tice, 2011), to guide the conversation. The text outlines a self-reflective action model that teachers can use to start inquiring about and reflect on practices with or without the assistance of a peer. After reviewing Tice’s 2011 article, the components can be examined in the context of what can occur after a peer observation cycle.
Other examples of implementing peer observation can be found in *Time for Teachers: Leveraging Expanded Time to Strengthen Instruction and Empower Teachers*, published by the National Center on Time and Learning (Kaplan et al., n.d.). Kaplan et al. (n.d.) discussed Nicholas S. Lacorte-Peterson School No. 3, where teachers completed an exit slip, consisting of a simple account of key takeaways after observing a classroom. On the slip, teachers described three strategies they wanted to incorporate into their own classrooms and something about which they would like to learn more.

N. Negative Reports on the Effectiveness of Peer Observation

Although much of the research literature has demonstrated positive results from peer observation, some studies have spoken to the ineffectiveness of this model (Adshead et al., 2006; Kohut, Burnap, & Yon, 2007). According to an article by Cosh (1999), when the implementation of peer observation was used in the School of Languages at Anglia Polytechnic University, many participants saw the model as threatening and critical. Additionally, participants felt that feedback was not accurate because the observers tried to use “nice” and “non-offensive” language when they gave feedback (p. 23). Cosh (1999) stated that “the danger is that friends could watch each other and be uncritical.”

In 2005, Linda Hammersley-Fletcher and Paul Orsmond, of Staffordshire University Business School in the United Kingdom, published the article “Reflecting on Reflective Practices within Peer Observation.” In the study, peer observation of teaching in higher education was examined as a reflective practice for professional lecturers. Hammersley-Fletcher and Orsmond (2004) found that if peer observations are not focused on clear goals, the process is slow. They also reported that there is not enough research available or training on conducting peer observations. Hammersley-Fletcher and Orsmond also warned against repeating the same
ideas addressed by both the observer and observee. “It is important that PoT [peer observation of teachers] does not stagnate by becoming repetitive. If the observer and observee cover the same issues regarding personal approaches to curriculum, teaching styles and subject understanding, then little development will be forthcoming” (p. 502).

O. Theoretical Framework

The use of peer observation as a form of professional development aligns with adult learning theory, which holds that adults learn best when they are actively involved in their learning, and their past and present experiences are considered in the acquisition of further knowledge (Haslam & Seremet, 2001). Adult learning theory informed the design and analysis of this study. Collis (1991) defined adult learning as the interactive relationship between theory and practice. Adult learning theory provides an understanding of the best learning strategies for adults by combining theory and practice. The application of contextual or real-world experiences creates connections to practice in adult learning theory (Knowles et al., 1998).

Being an effective teacher involves understanding how adults learn. The application of real-world experience is an important motivator in adult learning (Knowles et al., 1998). New knowledge of teaching techniques and curriculum can be cumbersome, so observing peers is necessary to incorporate new learning into daily teaching (Fullan, 2001). According to Knowles et al. (1998), adults want to align their personal goals with what they need to learn, which increases knowledge. Knowles et al. (1998) presented the idea that better learning outcomes occur when adults learn what they need to know rather than what they are told they need to know. Moreover, MacKeracher (2004) illuminated that adults do not live in an academic world, so transferable knowledge emerges in contexts where new information is applied to practical situations. Adult learning theory provides insight into peer observation as a professional
development tool because teachers can control what they learn based on their needs. Peer observation provides contextual learning experiences that demonstrate the relationship of theory and practice within the workplace.

Malcolm Knowles is considered to be the founder of adult learning. Knowles’ original studies and writings assume that there exist significant, identifiable differences between adult learners and learners younger than age 18 years. According to Knowles, adult learners are more self-directed, have repertoires of experiences, and are internally motivated to learn subject matter that can be applied immediately—learning that is especially “closely related to the developmental tasks of [their] social role” (p. 272). More than 30 years ago, Knowles (1968) helped popularize the concept of adult learning theory and the term andragogy, or the theory and practice of the education of adults. Andragogy contrasts with pedagogy, which is “the art and science of helping adults learn” (Knowles, 1980, p. 43).

Knowles (1998) summarized the key assumptions of adult learners and andragogy. One assumption is that learners need help to become aware of what they need to know. Another assumption is that when adults undertake learning they deem valuable, they invest considerable resources (Forrest & Peterson, 2006; Kidd, 1973; Knowles, 1984a; 1984b; Knowles et al., 1998; Lindemann, 1926/1989; Ozuah, 2005; Thompson & Deis, 2004). Adult learning theory connects to peer observation as a professional development tool because adults’ control what they learn based on their needs and establish the purpose within the context of their jobs.

In this study, reflective practice provided an additional conceptual frame for analyzing the data collected. This study identified whether there were elements of reflective practice involved and whether and how implementing a peer observation model produced reflective practice. Defined as the capacity to reflect on action in order to engage in a process of continuous
learning (Schon, 1983), reflective practice involves “paying critical attention to the practical values and theories which inform everyday actions [and] examining practice reflectively and reflexively” (Bolton, 2010). A key rationale for reflective practice is that experience alone does not necessarily lead to learning; deliberate reflection on experience is essential (Loughran, 2002). This study was aimed at showing if and in what ways adult learning happened through peer observation and if, when, and how reflective practice occurred.

In the next chapter, I present the research design and methods of the study. The research questions and plan, including data collection, are discussed. The setting of the study is described. The peer observation process, including the sites and the participants, is outlined. The next chapter presents the pre- and post-peer-observation interviews, which were digitally recorded and coded. The study’s validity and credibility were checked, while all the subjects were protected.
Chapter III: Methodology

Research suggests that the current model of teacher professional development has minimal effectiveness (e.g., Guskey, 1995; Gordon, 2004; Little, 1999, TNTP, 2015). Currently, traditional professional development is provided out of context and is disconnected from instructional practice (Darling-Hammond et al., 2009). Federal and state policies on school improvement have brought renewed attention and focus to professional development and its impacts on student achievement.

The CCSI (2011) calls for effective professional development to build the capacity of educators. The standards require that resources and best practices be utilized for ongoing JEPD (CCSI, 2011). One model of JEPD is peer observation, which is collaborative professional development in which teachers work together toward common goals (DuFour et al., 2008). High-quality instruction is the ultimate goal of peer observation through the delivery of JEPD. With limited professional development models and research on use of peer observation, further investigation is needed. This study examined teachers’ experiences of a peer observation model and how they believed it influenced their practice and sense of collegiality at school.

A. Research Question

The overarching research question motivating this study was as follows:

How do teachers involved in peer observation professional development models experience and understand the influence of these models on their instructional practice and collegiality among school personnel?
B. Subsidiary Research Question

1. In what ways, if any, do teachers describe the influence of peer observation on their instructional practice?
   
a) Which components of the peer observation process do teachers consider to be the most beneficial?

b) Which elements of the peer observation process do teachers consider to be the most challenging?

2. In what ways, if any, do teachers think peer observation influences professional relationships and workplace collegiality among participants?

C. Research Plan and Data Collection

Qualitative research methodologies were the most appropriate for this study because their flexibility allowed for change. More specifically, action research was appropriate because the questions were designed to understand a process in action and to respond to an acute issue at the school level. Action research allowed the teachers to be part of the process and work collaboratively within the context of their current environments (Ferrance, 2000). The issues of practice studied involved teachers’ work in isolation and the need to observe each other to develop best teaching practices through authentic professional development. Action research permitted examining teaching practices to develop and test advancements as solutions in real time (Ferrance, 2000). Action-based research afforded the opportunity to start with a small group and then branch out to break down barriers and fear (Stringer, 2007).

In general, action research is based on the premise that the reflective practice of inquiry informs and changes current practice (Ferrance, 2000). Action research is a collaborative form of
professional development that has emerged as a way of involving teachers in research so that they can better understand their work, solve professional problems of concern to them, and be able to reflect on, refine, and improve their teaching in a timely manner (Glanz, 2005; Glatthorn, 1987; Glickman, 1985; Gordon, 2004; Guskey, 2000; Zepeda, 2007). Additionally, action research is focused on the need to improve instruction, so it is a credible way to foster instructional improvement (Glanz, 2005; Glickman, 1985). Expressly designed with the goals of improving teaching and learning, action research, therefore, was a fitting design for a study on teachers engaging in peer observation (Glanz, 2005).

While action research can take many different forms, most action research in school contexts involves teachers identifying important problems, observing each other, collecting data, giving feedback, and developing workable solutions (Glatthorn, 1987; Zepeda, 2007). All of these actions are accomplished by implementing a four-step cycle: (1) selecting a focus for the study; (2) collecting data; (3) analyzing and interpreting data; and (4) taking action (Glanz, 2005). This process ensures that good decisions are data based, and the best decisions are made after collecting and examining data, reflecting on alternatives, and getting feedback from another person (Zepeda, 2012a).

Currently, much of the professional development given to teachers is decontextualized. Educators are removed from the context and sent back to their classrooms to make sense of the learned material individually (Argyris & Schön, 1974; Hargreaves, 2007; Reeves, 2004). Action research can provide contextualized information about how teachers involved in peer observation experience and understand the influence of these on instructional practice and collegiality. Action research helps give real-time insights into the benefits and challenges of peer observations when implemented in a specific, bounded, school context. Action-based research
establishes credibility and ownership among colleagues. More resources (teachers) are part of the process, so the rewards can be greater (DuFour et al., 2008).

The development of action research is credited to Lewin (1947), who founded the Research Center for Group Dynamics at the Massachusetts Institute of Technology. Lewin emphasized the need for collaboration and group inquiry to collect information about social issues in order to develop action plans to solve them. In education, researchers use a systemic process to solve problems and make improvements. The goal of action research is to understand what is happening in the context of the school or the classroom and to determine what can be done to improve things in this particular context (Tomal, 2010).

D. Settings

The setting of the study was Joy High School, a suburban school district in upstate-central New York. It should be noted that the Joy City School District and Joy High School were fictional names created to protect the privacy of the research site. The total enrollment of Joy High School was 1,352 students, of whom 66% were white, 11% African American, 13% Asian, 5% Hispanic, 43% of two or more racial groups. Joy High School reported that 26% of its students received free and reduced lunch. Typically, about 70% of students matriculated at four-year colleges and 20% at two-year colleges after graduation. The school traditionally sent very large numbers of graduates to nearby Cold University, and from 2000 to 2004, an average of 37.6 students per class (slightly less than 10%) matriculated at Cold immediately after graduation.

Joy High School had 140 professional staff members, including about 120 classroom teachers. At Joy High School, 5% of the teachers had fewer than three years of experience, and 95% had more than three years of experience. In addition, 19% of the Joy High School teaching
staff had a doctorate or a master degree requiring at least 30 hours of courses. The turnover rate was 26% for teachers with fewer than five years of experience and 19% for all teachers.

**Table 1 Summary of Joy High School Statistics**

<table>
<thead>
<tr>
<th>Degrees</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masters of at least 30 hours/doctorate</td>
<td>19%</td>
</tr>
<tr>
<td>Bachelor’s</td>
<td>81%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teachers’ Years of Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than three years</td>
</tr>
<tr>
<td>Fewer than three years</td>
</tr>
<tr>
<td>Turnover rate of all teachers</td>
</tr>
<tr>
<td>Turnover rate of teachers with fewer than five years of experience</td>
</tr>
</tbody>
</table>

Joy High School piloted peer collaboration work by teachers and staff during the 2011–2013 school years. During faculty meetings, time was allocated to allow teachers to volunteer to discuss visiting each other’s classrooms. Some staff at Joy High School agreed to participate in visiting other classrooms to observe their peers, but after a two-year pilot test, the program was discontinued due to contractual issues. There were mixed responses from teachers when the pilot was discontinued. Three potential participants in this proposed study took part in the Joy High School peer observation study. They enjoyed participating in the pilot but unanimously felt that their peer observation work needed a stronger focus.

In this study, the peer observation model was implemented and examined. This study relied on the use of volunteers interested in the process and willing to implement a peer
observation model of professional development. The participant groups included three peer observation pairs at the high school. Each pair consisted of an experienced teacher and a novice teacher. I recruited interested participants with the goal of assembling pairs of novice and experienced teachers.

The participants recruited from Joy High School were asked to conduct two 20-minute observations in another teacher’s classroom over a six-week cycle. In the 20-minute observation, the focus area included one of the following: a perceived need to improve in a specific area, follow-up on professional development, and areas where the teacher was trying a new technique (Zepeda, 2013). In collaboration with the novice teacher, the experienced teacher helped determine the focus of the observation.

The pairs consisted of experienced teachers with newer teachers matched by either grade level or subject matter taught based on the following research. In findings from Tennessee, kindergarten students had higher achievement depending on how long their teachers had been in the profession, with gains for every year up to 20 years (Chetty et al., 2011). This research supported the finding that teachers with more teaching experience tend to generate higher gains in student achievement (Chetty et al., 2011). A review of research on the impact of mentoring and training for new teachers showed that beginning teachers who participated in some kind of induction with experienced teachers had higher job satisfaction, commitment, and job retention, and their students benefitted with higher gains on academic achievement tests (Ingersoll & Strong, 2011).

E. Peer Observation

In this study, the peer observation process occurred in three stages, in line with the work of Hammersley-Fletcher and Orsmond (2004). Peer observation of teaching is a method that can
offer formative feedback to assist in the development of teachers’ reflective processes (Hammersley-Fletcher & Orsmond, 2004). The process began with a pre-observation conversation between the novice teacher who was observed and the experienced teacher who conducted the observations. A pre-observation conversation opens the door to the teacher’s world (Zepeda, 2013), so a peer can get ready to observe the teacher’s classroom. In this study, the pre-observation conversation took place in the physical location where the observation occurred. The pre-observation conversation helped define a clear focus for the observation, with the teacher whose class was being observed taking the lead to identify potential areas of focus or needs for support. This conversation gave the teachers the opportunity to talk through teaching, painting the context of the classroom and providing a snapshot of the characteristics of the students (Zepeda, 2013). The focus area could be a perceived need to improve in a specific area, follow-up on professional development, and areas where the teacher was trying a new technique (Zepeda, 2013).

I was a non-participant observer in all of the pre-observation meetings, during which I took notes and digitally recorded the pre-observation meeting with permission of the other participants. The four questions asked in the pre-observation meeting were recorded. These questions were adapted from Zepeda’s (2013) classic text on JEPD approaches. The main topics covered included the participants’ proudest moment, topics on what they wanted feedback, and whether the observer should focus on specific students.

The second stage was the observation (Strucchelli, 2009). During the observation, the experienced teacher had two tools from which to choose to collect information. The first tool was electronic, anecdotal, scripted notes formatted based on time and a T-Chart of teachers’ stimuli and students’ responses. This chart was used to record teachers’ actions, directions, physical
proximity, and specific students’ responses, including the time. This tool helped the peer observation team collect usable data that matched the focus area on which the teacher wanted data collected during the observation. This tool was used only if the focus of the observation was related to the T-chart. A second tool was also offered for the participants to select. This tool was a chart for anecdotal, scripted notes using time. The observer wrote down the time and then notes chronicling the focus identified by the teacher in 5-minute increments. This tool was used when the focus of the observation did not relate to the first observation tool and was more open ended.

The question used during the post-observation meetings were developed from Zepeda’s “Job-Embedded Professional Development: Support, Collaboration, and Learning in Schools.” The general topics and foci of the post-observation meetings included how the lesson went in relation to the focus, whether things went as planned, if any teachable moments occurred, and whether any new insights were gained.

F. Site and Participants

In May 2016, I met with the principal of Joy High School in the Joy City School District. With permission from the principal, recruitment occurred via email invitations. Research has supported that peer observation should be an embedded practice in teaching, so this study relied on the use of volunteers interested in the process. Recruitment included inviting all teachers in ninth through twelfth grade in order to generate a sample of interested teachers who wanted to learn in context by observing other classrooms. Candidates were selected if they were either experienced or novice teachers. Once three pairs were selected based on the order in which candidates applied for spaces, the study was filled, and other participants were not recruited. The pairs were matched based on their levels of experience and either their grade level or their
subject area. Once all the spaces were filled, the study was closed, and no additional candidates were taken.

The data collection consisted of each team conducting two complete peer observation cycles. Each peer observation cycle included a pre-observation meeting, observation, and a post-observation meeting. I was present during both pre-observation meetings, two observations, and both post-observation conferences for each team. I took notes and digitally record the pre-observation meetings, observations, and post-observation meetings.

**Table II**

<table>
<thead>
<tr>
<th>Name</th>
<th>Category</th>
<th>Years of Teaching Experience</th>
<th>Subject</th>
<th>Leadership Roles</th>
<th>Prior Mentorship experiences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peter</td>
<td>Experienced teacher</td>
<td>More than 20 years</td>
<td>ELA/social Studies</td>
<td>Department chair</td>
<td>Participated in mentoring novice teachers for the past five years</td>
</tr>
<tr>
<td>Kris</td>
<td>Novice teacher</td>
<td>Three years</td>
<td>ELA/social Studies</td>
<td>N/A</td>
<td>Participated in mentoring for one year</td>
</tr>
<tr>
<td>Carlene</td>
<td>Experienced teacher</td>
<td>More than 10 years</td>
<td>STEM</td>
<td>Department chair</td>
<td>N/A</td>
</tr>
<tr>
<td>Michael</td>
<td>Novice teacher</td>
<td>Third year</td>
<td>STEM</td>
<td>N/A</td>
<td>Participated in mentoring for one year</td>
</tr>
<tr>
<td>Kathleen</td>
<td>Experienced teacher</td>
<td>10 years in the English department</td>
<td>ELA/social Studies</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Anne</td>
<td>Novice Teacher</td>
<td>Second year</td>
<td>ELA/social Studies</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Table III**

Observation Content

<table>
<thead>
<tr>
<th>Observation</th>
<th>Topics/Content of Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Studies Team</td>
<td></td>
</tr>
<tr>
<td>Observation of Kris (novice teacher)</td>
<td>• The students worked collaboratively in teams to provide</td>
</tr>
</tbody>
</table>
three reasons, substantiated with contextual evidence, why the United States declared war against Spain.

- To support their reasons, the students had access to and were guided by the text of the open-door policy and the Roosevelt corollary.

| Observation of Peter (experienced teacher) | • The lesson included defining and understanding the republic and the Republican Party.
• Other topics included healthcare and a debate on who has rights to healthcare.
• The discussion included quotations from Franklin D. Roosevelt and selections from the Declaration of Independence. |

<table>
<thead>
<tr>
<th>Science Team</th>
</tr>
</thead>
</table>

| Observation of Michael (novice teacher) | • The observation included utilizing the concepts of claim, evidence, and reasoning.
• The observation included watching student-led presentations that looked at concepts, including momentum, kinetic energy, Einstein’s equations, reclaiming energy, and renewable energy. |

| Observation of Carlene (experienced teacher) | • The observation included discussion and conversations on the function and form of plant structures.
• Other topics included plant adaptations that helped create the trees and flowers we see today. |

<table>
<thead>
<tr>
<th>English Team</th>
</tr>
</thead>
</table>

| Observation of Anne (novice teacher) | • During the observation, the students started with a journal activity in which they were tasked with identifying the components of the identities of the characters in a text.
• The students were then specifically asked to discuss how the characters’ identities and their components were formed. |
Finally, the students used a Venn diagram to compare and contrast the similarities and differences of characters in the text.

Observation of Kathleen (experienced teacher)

- The lesson included identifying lines and passages the students found especially powerful and inspiring.
- Once the students identified the lines and passages they found inspiring and powerful, they were asked to read those lines out loud.

Note: All the participants names in the research study have been changed to protect all study participants

G. Interviews

One direct source of data was two separate, open-ended interviews conducted before and after the study with each study participant. During the interviews, the participants answered questions about their experience with peer observations and as observers. I, the researcher, conducted all the interviews in a comfortable setting chosen by each participant.

As the researcher, I collected the data and conducted the interviews in this study. Data collection took place after internal review board (IRB) approval was gained. I explained the nature and purpose of the study to the participants. I advised them of their confidentiality rights and assured them that the information they shared would remain confidential and that their names would not be associated with their comments. I informed the participants that no physical harm would occur from participating in the study.

The participants were told that they could choose to withdraw from the study without repercussions at any time. I spoke to them individually to help them not feel hesitant to share their own ideas. Following the interview protocol, I reviewed their responses. I took notes during the interviews even though they were also audio taped and transcribed. The interview protocol followed guidelines from Kvale (1996), who described interviews as conversations with a
distinct structure and purpose controlled by the researcher. The basic subject matter in qualitative research consists of interpreting meaningful relationships (Kvale, 1996).

H. Pre-Peer-Observation Cycle Interviews

The focus of the pre-observation interviews conducted prior to the observations was learning about the participants’ familiarity with peer observation as a mode of professional development. In the interviews, I asked specifically about the participants’ thoughts about peer observation as a professional development model and what influence they believed the models had on the participants’ sense of collegiality and their instructional practice as teachers.

I. Post-Peer-Observation Cycle Interviews

I asked the same questions of all the study participants in the post-observation interviews, particularly asked about their experience participating in the peer observation model and whether and in what ways they felt that peer observations had impacted their instruction and collegiality with their colleagues. A digital recorder was used to capture my conversations with the teachers.

J. Transcription of Digitally Recorded Interviews

I digitally recorded the interviews and used the digital recordings to make verbatim transcripts for all the interviews. Each transcript was read carefully and then transferred into a qualitative computer software program. The files were ordered chronologically beginning with the pre-observation interviews. At this point, the “data ha[d] no intrinsic organizational structure or meaning by which to explain the events under study,” so I, therefore, had the responsibility to “create a structure and impose it on the data” (LeCompte, 1990, p. 147). This goal was accomplished through inductive analysis (Corbin, 1986; LeCompte).
K. Categories and Coding

I used the constant comparative method to develop concepts from the data by coding and analyzing the data simultaneously (Taylor & Bogdan, 1998). The constant comparative method “combine[d] systematic data collection, coding, and analysis with theoretical sampling in order to generate theory that [was] integrated, close to the data, and expressed in a form clear enough for further testing” (Conrad, Neumann, Haworth, & Scott, 1993, p. 280). The benefit of using this method was that the research began with raw data, and through constant comparisons, a substantive theory emerged (Glaser & Strauss, 1967). In this grounded theory approach, the steps of reducing the data into manageable units and coding information were integral parts of the analysis process (Miles & Huberman, 1994).

Strauss and Corbin (1998) also referred to the process of analyzing data as coding. In this study, coding was performed at three levels of analyses (open coding, axial coding, and selective coding) to gather a complete picture of the information obtained during the data collection process (Strauss & Corbin, 2008). During the first phase of the coding process, I compared data and continually asked questions about what was and was not understood while also applying inductive codes. In the next step of the axial coding, data were pieced together in new ways, allowing for connections between categories. Strauss and Corbin (2008) defined the final stage of coding as selective coding, or the process of identifying and choosing a core category, systematically connecting it to other categories, validating those similarities and relationships, and then completing the categories, refining and developing them as needed.
L. Open Coding

Following Corbin and Strauss (2008), open coding was part of the analysis in which the phenomena found in the text were identified, named, categorized, and described. I read each line, sentence, and paragraph in search of the answers to the repeated questions “What is this about? What is being referenced here?” As the codes were developed, I wrote memos, known as code notes, to discuss the codes (Corbin & Strauss, 2008). As I read the data, I also wrote paraphrases, phrases, headings, and labels describing what was seen in particular passages. Using a memo, I also chunked or quoted the most important ideas and wrote a description of the codes.

M. Axial Coding

Axial coding was the process of relating codes (categories and properties) to each other through a combination of inductive and deductive thinking. This approach emphasized involved identifying causal relationships and fitting ideas into a basic frame of generic relationships (Corbin & Strauss, 2008). Using a copy of the coded data, sections were created based on the labels on the transcripts. Data were sorted and placed in piles that had the same or closely related labels. Each pile was labeled with a word or phrase capturing its main idea. This process helped to identify the main themes of the data. In axial coding, I identified the relationships among the open codes and the connections among the codes.

N. Selective Coding

Selective coding was the process of choosing one category as the umbrella category to which all other categories were related. The essential idea was to develop a single focal point around which everything else was arranged. It has been argued that such a central concept always exists (Corbin & Strauss, 2008). In this step, I developed a conceptual schema to tie the data together and answer the research questions. I looked at the themes to identify major and
minor themes. To accomplish selective coding, I identified the core variable that encompassed all of the data. Next, I reread the transcripts and selectively coded any data related to the core variable identified.

O. Developing a Report Framework

Reporting consisted of creating a framework to present the research outcomes to the relevant stakeholders. Once the conceptual schema was developed, an analysis driven by the schema was reported. Using theory and the literature, ideas from the schema were supported. MAXQDA, software designed to facilitate thematic coding across several transcripts, was used to organize the data. I entered all the data from the interviews, observations, and documents into electronic form. MAXQDA stored, sorted, and retrieved the data, which helped me identify and develop specific categories and themes to highlight. MAXQDA printed out paragraphs with specific codes from all the documents, providing the opportunity to look at specific characteristics across a range of documents in an expeditious, efficient manner. In qualitative research, the use of technology allows for greater immediate access to multiple points of data, increasing the researcher’s ability to make connections (Weitzman & Miles, 1995).

All the meetings were recorded and then transcribed. All the meeting questions and prompts are included in the following (pre-observation, observation, and post-observation focus areas). The participants were given a choice of two observation tools, presented in Appendix A. The pre- and post-study and pre- and post-observation meetings ranged from 10 to 14 minutes long. Once the audio from the meetings was transcribed into text, it was uploaded to MAXQDA. The coding scheme, including axial, open, and selective coding, generated more than 300 codes. The items coded included sentences, thoughts, and ideas that feel like they matched a construct. To provide organization, all the codes were separated into a number of categories, including but
not limited to negatives and challenges in peer observation, student participation, content, sharing of ideas and feedback, and building of collegiality. Through this coding, patterns and commonalities that helped provide interpretations of the data emerged.

Once the interview transcripts were coded using all 300 codes, all the coded excerpts were reviewed for potential themes. This review helped identify the themes most commonly reported by the participants. The information was then examined for any commonalities and similarities across all three peer observation teams of experienced and novice teachers. If themes containing similar thinking were reported by all three observation teams, then this information was reviewed to see if it could be considered to be a finding.

P. Validity and Credibility

Study validity refers to whether an investigation measures what it is intended to measure (Maxwell, 2005). In qualitative research, people are the primary instrument of data collection and analysis. Maxwell (2005) suggested that when the subjects’ reality is accessed through the qualitative research process of observations and interviews, study validity is strengthened. The participants’ involvement in this study was confidential. The data collection methods assumed that the participants provided honest, complete responses. Data collected in the research log were used to verify the information reported by the participants.

In action research, rigor is based on checks to ensure trustworthiness, including creditably, transferability, dependability, and confirmability (Stringer, 2007). To ensure the trustworthiness and credibility of the proposed study, I used multiple data sources. Pre-observation interviews established the participants’ prior experience and perceptions of peer observation. Prolonged engagement included a continuous, weekly observation cycle with interviews to capture challenges and successes. Moreover, the participants kept learning journals
to reflect on their individual learning during the process. The observations provided the participants with the opportunity to use learning journals to recall their learning rather than recalling information from memory.

Action research outcomes apply to the particular people and places studied, creating limitations. This study involved a small sample from Joy High School in Joy, New York, with ninth- through twelfth-grade teachers and myself, the researcher, as participants. This affected the potential transferability of this study. For findings to be transferable to other contexts and populations, the study procedures need to be carefully designed to allow for the possibility of similar outcomes in different contexts with different participants (Stringer, 2007). All the instruments used to collect data, including the pre-observation interview questions, post-interview questions, and the participants’ responses to these instruments were available as an audit trail to confirm the study’s veracity and trustworthiness.

Researchers must develop the habit of writing memos while conducting research: “Qualitative analysis involves complex and cumulative thinking that would be very difficult to keep track of without the use of memos” (Corbin & Strauss, 2008, p. 119). In addition to a log of field notes, I wrote memos (Corbin & Strauss, 2008) to record my analyses and store information collected during the study. These memos were created weekly after observations were conducted and were kept electronically on my personal computer for reference. As suggested by Corbin and Strauss (2008), each memo was dated with a heading and a reference on why it was created (i.e., as a field note, interview, strength, or insight form). A short phrase or quote was added to each memo. I kept a list of concepts and identified codes and phrases that began to sound similar. These memos provided an audit trail for a review of the entire project. The auditors were not
familiar with the research or the project, so the memos provided information for the auditors to make an objective assessment of the project (Lincoln & Guba, 1985).

Q. Role of the Researcher

I, the researcher, was an elementary school principal who believed that using a process of peer observation could positively impact my school’s ability to learn and sustain its viability through change. I believed strongly in the need for the system to have a way to learn from itself in order to maximize their professional development and knowledge in a climate of increasing demands and accountability. Implementing a peer observation pilot study on my campus led me to believe that peer observation had positive impacts on instruction. In the pilot, teachers were able to quickly implement a new teaching technique and see increased student engagement from using it. Through implementation of a number of shared instructional techniques, student engagement increased, as evidenced by informal observations I conducted in my role as principal.

In the past, I, as a principal, piloted and was part peer observation work at my campus. I encouraged participants, facilitated discussions, and helped design the structure and process of peer observation. My personal experience was of mixed success. For the most part, the teachers and staff were excited to participate in the pilot, but long-term sustainability was an issue. The teachers and staff had difficulty finding time in their schedules for pre-observation meetings, observations, and post-observation meetings. The issues we encountered involved working through the logistics and finding time. I learned that time had to be built into and embedded into schools’ existing schedules for peer observation to be successful. I also learned that building and sustaining momentum for peer observation required a structured process working in short bursts
over six to eight weeks. Through the peer observation pilot at my campus, I found that peer observation worked in these ideal conditions.

From my perspective, I worked to ensure that I was open to seeing through collecting and analyzing data that indicated contrary findings. This study used pre-existing planning time to ensure that there was sufficient time scheduled for observation and pre- and post-observation meetings. This arrangement helped remove barriers and create built-in, embedded time.

R. Protection of Human Subjects

Creswell, Fetters, Plano Clark, and Morales (2009) described Israel and Hay’s (2006) idea that “researchers need to protect their research participants; develop a trust with them; promote the integrity of research; guard against misconduct and impropriety that might reflect on their organizations or institutions; and cope with new, challenging problems” (p. 87). Before collecting any data, I passed the Seton Hall IRB’s proficiency test for researchers. All the IRB’s guidelines for research projects involving human subjects were followed. All the study participants signed letters of consent, and their identities were kept anonymous. The audiotapes and all the research materials were stored in my home office and password-protected computer. All the audiotapes were destroyed upon conclusion of the study, and the participant-generated data were returned to the participants or destroyed upon their request.

S. Limitations

The limitations of this study included that some participants had participated in a past peer observation at JoyHigh School. Including participants who had previously participated in peer observation could have been a source of sampling bias. What we learned about the successes and challenges could be related to the participants’ prior experience and high interest in this model of professional development.
T. Conclusion

Educational organizations are rapidly changing. Teachers are not receiving the professional development from in-house experts necessary to enhance their teaching practice. A system of peer observation and coaching does not exist in most schools but could prove to be a useful activity to advance educators in the profession and create a constant flow of feedback. Based on a comprehensive literature review, many experts concur that these changes are rapid and believe that multiple leaders in an organization are necessary to keep up with change. To develop leaders and learn, we must work collaboratively within our contexts, and we must receive constant feedback to move forward. Using a qualitative research design, I analyzed and explored teachers’ perceptions of their involvement in peer observations to determine whether this program created collaboration, collegiality, and teacher leaders and improved teaching practice.
Chapter IV: Findings

The primary focus of this research was to examine the ways in which the teachers described the influence of peer observation on their instructional practice, professional relationships, and workplace collegiality. High-quality instruction is the ultimate goal of peer observation through the delivery of JEPD. The purpose of this study was to examine teachers’ experiences in a peer observation model and how they believed it influenced their practice and sense of collegiality at school. In the first section of this chapter, I present findings from the interviews and observations on what the novice and experienced teachers identified as positive aspects of participating in peer observation. These benefits included exposure to different instructional pedagogies, access to real-time feedback, pairing of inexperienced teachers with experienced teachers, and contextualized learning.

A. Benefits of Peer Observation

Both experienced and novice teachers reported learning new instructional techniques, methods, and tools through engaging in peer observation. The experienced teachers found that being paired with the novice teachers helped provide inspiration and examples of creative instructional practice. The experienced teachers also reported that working in this format with the novice teachers gave them new energy and enthusiasm around instruction. Finally, the experienced teachers reported benefiting from being able to see how their novice colleagues used technology contextually in instruction.

When Carlene, a Science Technology Engineering & Math (STEM) Teacher with approximately 12 years of teaching experience, observed Michael, a novice teacher, the students were solving a problem using a specific strategy called claim, evidence, and reasoning. The students used Google Forms to record their reflections and feedback during the presentation. In
the post-study interview, Carlene shared that Michael “builds most of his assessments online. It makes his life significantly easier.” She was impressed with how Michael used the information he gathered from online assessments to inform his teaching and see if his instruction was successful. More specifically, Carlene commented on Michael’s use of the online assessment information to help identify whether the students had mastered the skills and objectives taught and to adjust his teaching practice accordingly. Michael utilized the feedback he collected from the students using Google Sheets to create a lesson in which the students had to present on topics. These topics were ultimately selected based on the feedback he received from the Google Sheets assessment on the topics and areas that clearly needed to be covered in greater depth for the students to master.

Carlene was also impressed by how fluidly Michael incorporated technology into his teaching practice: “He is good at running his class through Chrome Books and running his class using technology and using technology to drive presentations. … Seeing how he leverages technology is powerful.” Overall, Carlene found Michael’s effective use of digital tools to increase collaboration and feedback to be a positive part of his teaching strategies. She also commended his use of feedback to adjust his teaching practice. He was effective at having the students use technology in meaningful ways, according to Carlene, who described the example of the students using Google slides to share with the class their teams’ uses of claim and evidence reasoning about kinetic energy. At the end of the lesson, the students also used Google Forms to provide reflections and thoughts about each team’s presentation.

Seeing Michael’s teaching in action, Carlene was inspired to utilize digital tools in her classroom and teaching practice. She saw how using such tools could potentially increase digital collaboration among small groups presenting information and delivering content to classmates.
She also shared that she wanted to use Google Forms to collect assessment information at the beginning and end of units of study. The data could provide a baseline to assess student learning by comparing what they knew at the beginning of the unit to how they did at the end of the unit.

**B. Exchange of Instructional Ideas**

The exchange of instructional ideas among peers occurred in a variety of ways. One of the ways in which peer mentoring pairs shared ideas was through exchanging instructional techniques. Kris, an ELA/social studies teacher with three years of experience, told her peer observation partner Peter about a new instructional technique she had learned through a professional development session. Through this new technique, Kris learned to read like an historian and to model doing so for her class. The technique was to set up an activity with inquiry questions and then provide a number of documents the students could use to explore the inquiry questions. The goal was to spark debate and spur questions about these various topics.

The conversation between the two teachers involved discussing historical documents with the students during a social studies lesson. The approach one teacher used to help her students think like historians was developed by the Stanford History Education Group. In this approach, the students read like historians to investigate historical questions by employing reading strategies, such as sourcing, contextualizing, corroborating, and close reading. Instead of memorizing historical facts, the students evaluated the trustworthiness of multiple perspectives on historical issues and learned to make historical claims backed by documentary evidence.

Another exchange of instructional techniques occurred when Michael shared a deeper instructional belief with Carlene during the post-observation meeting. He provided specific details about how he explicitly taught study skills. In his conversation with Carlene about his teaching approaches, Michael explained that when he led students through lessons, he worked to
embed study skills because he felt that learning them was invaluable for the students and would prepare them to be college students. Michael told that the students were not explicitly taught study skills, such as reading for content, taking notes, and utilizing notes to assist in learning beyond simple recall. Listening to Michael recount his perspective, Carlene agreed that there should be more explicit instruction on study skills in lessons, and she stated that she wanted to think about ways to better incorporate study skills into her own lessons. Their exchange illustrates how instructional conversations between teachers can produce fruitful sharing of instructional ideas.

C. Sharing Instructional Ideas

The novice teachers emphasized the benefits of being able to almost immediately use new instructional ideas gathered from peer observation in the classroom. For example, a novice teacher reported that watching an experienced teacher use a particular management technique gave her confidence to test it in her classroom. During an observation of Kathleen, a 14-year teaching veteran, Anne, a novice teacher, commented on Kathleen’s effective use of wait time:

One of the things I thought [that] was really interesting [was that] she will ask the question, and then she waits. She doesn’t call on people right away. She waits and sees how many different hands she gets in the air, and then picks somebody to call on. And that seems like such a small thing, but it really diversifies the responses that you’re going to get, and I thought that was really interesting.

By observing the experienced teacher employ an instructional practice in action and watching its results with the students, the novice teacher had more actionable information about how and when to use it in her own classroom. Anne reflected on this in her post-observation survey:
When I observed Kathleen for example, I thought, “You know what? I really need to wait longer before I call on students instead of just calling on the first hand that I see. I need to wait and see if I can get more participation.”

This perspective shows Anne’s engagement in reflective practice after observing her senior colleague, an activity defined as the capacity to reflect on action while engaging in a process of continuous learning (Schon, 1983). Anne watched, thought about, and then expressed interest in practicing using wait time with students. She thus engaged in continuous learning as a result of the opportunity to observe her colleague in action.

D. Pairing Experienced Teachers with Inexperienced Teachers

Other feedback from the study participants involved the benefits of pairing experienced teachers with inexperienced teachers for supporting mentoring and building of collegiality. Kris, a novice teacher, articulated this perspective:

I think there’s an advantage to having an older ... a more experienced teacher observe a brand-new teacher. And I do think the mentorship, particularly in things like how do you like—there’s just so many things that you have to figure out when you become a teacher.

Kathleen, an experienced teacher in the English department, described her school’s peer observation practice:

Well, I know we do very little. We need to do more where we get experienced teachers together with inexperienced teachers. I really think that there should be a system in place where the most experienced teachers’ mentor inexperienced teachers. I think we should have a period off, a prep period, if you will, where they go around and mentor and observe and talk with the newest teachers.
In the post-study interview after completing the observation cycles, Kathleen described in depth the range of benefits she experienced as a result of participating in a peer mentoring exchange:

I think you get so much out of it [senior teachers mentoring novice teachers]. It’s not a one-way thing. I enjoyed getting new ideas about teaching again, and I just always value that. I enjoyed getting to know Anne more. It really created a collegiality between us that we had not felt before. Again, it was the same subject that we watched, so again, [we] learn[ed] some new ideas for the same curriculum that we do. That makes it really relevant. The times when I’ve observed science teachers or math teachers, it—honestly ...

I don’t get anything out of it.

In this statement, Kathleen identified two primary benefits she associated with the opportunity to mentor and learn from novice teachers in her school. First, it helped strengthen collegiality, and second, it offered a chance to share content-relevant ideas to improve instruction and delivery.

The study participants expressed widespread approval of pairing veteran teachers with their newer colleagues. The teachers emphasized the potential impacts on improved staff relationships in particular. Peter, a veteran social studies teacher and department chair, highlighted this idea:

Peer observation creates a sense of collegiality. It can create a forum in which you have a kind of collegial, non-threatening feedback. I think it’s a great running environment for new teachers to get feedback from their senior colleagues and vice versa, [for] senior colleagues to get re-energized from seeing new people and new ideas.

A veteran teacher shared how matching veteran teachers with newer teachers helped create a safe, non-threatening environment to get feedback and see instructional techniques in the classroom context.
The following sections examines the elements of the peer observation process that the teachers considered to be the most challenging. Both inexperienced and experienced teachers identified a feeling of discomfort about being observed by another teacher as one of the most difficult aspects of participating in the process. The teachers also reported that scheduling and time issues were challenges when attempting to implement peer observation.

E. Discomfort

There was widespread agreement among the teachers participating in this study that observing and being observed by fellow teachers could cause some discomfort. Carlene, an experienced social studies teacher, specifically pointed to the fact that it could lead teachers to compare their classrooms, students, materials, and technology, creating a source of discomfort. Carlene stated in her post-study interview that “you could go into somebody else’s room and say their students are smarter than mine or better behaved, or this won’t work in my room.” Carlene also warned about the possible feelings of resentment peer observation could foster if “teachers go and compare class sizes, or they compare, you know, the amount of materials one classroom has over another or the spatial arrangement or the amount of technology.” Carlene provided an important point that the teachers sometimes felt that they could not transfer what they learned during observation to their own classrooms because they felt that they did not have the same resources or similar students as the observed teacher.

The teachers not only had difficulty understanding how to transfer what they learned but also found it hard to not judge when observing another teacher. Carlene reported:

I also do think it’s hard not to judge, and I see that as a potential drawback for this process. We are humans, and we judge naturally, and it’s hard to come out of someone’s room without thinking to yourself, That worked well or didn’t work, or that needed some
improvement in this area. Even if you are not trained in that area, you still have a natural tendency to think about those things. It’s hard to have a Planet Fitness model of a judgment-free zone.

Other reasons the participants found peer observation uncomfortable arose from having someone watch them closely and feeling like an intruder in another’s classroom. Kathleen, an experienced teacher in the English department, explained how peer observation could provoke feelings of resentment among colleagues. She shared that peer observation “can make some people feel awkward, and you know, I don’t want anyone watching me. Why would I want to intrude on someone else’s classroom?” The teachers sometimes felt that when they were being observed and taking part in peer observation, an instructional practice or technique was being imposed on them. Kathleen stated that “someone’s trying to insist that I teach in this particular way. And if it doesn’t match with my natural teaching style, then I feel kind of like I’m being forced by it, and it doesn’t work. I don’t actually come away with something I can use.” This helped show that teachers might have felt uncomfortable if they thought it was a top-down approach as the observer might have had an agenda or a specific way of teaching that did not fit the teachers’ instructional model.

The next section describes inexperienced and experienced teachers’ perceptions of how peer observation could influence professional relationships and workplace collegiality. Overall, the teachers in the study reported that peer observation stimulated positive interactions among colleagues that, in turn, enhanced collegiality and the workplace environment.

One way in which the teachers understood the benefits of peer observation related to collegiality was that peer observation built connections among people who did not otherwise interact. In the study, the teachers shared that peer observation helped build collegiality as a
school and brought teachers out of their silos to meet and discuss instruction with colleagues to whom they had not had opportunities to talk. An experienced English teacher shared that when she did peer observation, “I really valued it and got a lot out of it. It also really built collegiality. I met people and talked with people that I had never had a chance to talk with, and that was also beneficial.”

The study participants also felt that the practice of peer observation reduced the teachers’ sense of isolation by building collegiality. Peter, an experienced social studies teacher, shared that peer observation built “a sense of collegiality and community. And an enormous benefit of peer observation is it’s really easy for teachers to, kind of, get isolated in your own little boxes and to feel isolated, and I think that’s especially problematic for new teachers.” Peter described that peer observation encouraged collegiality through building relationships very beneficial for new teachers.

The participants also identified some practices in peer observation whose use they felt should be expanded. One study participant pointed to a need for teachers to talk about instruction with their colleagues, which did not typically occur in schools. Carlene, an experienced science teacher, emphasized the importance of professional development and expressed that she would “like these small group such as we are currently in for peer observation, where teachers are able to talk to teachers, in many cases, for the first time.”

Teachers across different levels of experience pointed to learning from colleagues as an opportunity to enhance their professional relationships and improve workplace collegiality. Peter, an experienced social studies teacher, discussed his work with his novice partner Kris: “She’s going to be bringing a different set of ideas and a different skill set that I can certainly look forward to learning from. I hope my age and gray hairs give me enough experience to offer
her some beneficial things.” Peter identified some perceived benefits of matching inexperienced teachers with experienced teachers to generate reciprocal learning useful for both.

Carlene, an experienced teacher, shared how collective work could provide connections throughout a school by helping teachers identify and connect their instructional strengths with others. Carlene reported that the “most helpful thing that I do to improve my practice is talk with more experienced teachers.” She shared that she had a lot of colleagues who made her feel very comfortable talking about difficulties she was having. She also reported that she felt comfortable with her colleagues because they knew the specific students with whom she was working. In addition, talking and sharing ideas with other teachers benefitted the school as a whole. Talking to colleagues and feeling comfortable sharing difficulties in the classroom showed that the relationship building ultimately improved collegiality and workplace relationships.

Another benefit of the practice of peer observation, according to Carlene, was that it fostered stronger connections among people in the school. She described that peer observation “creates this pathway of neural connections through a very large building that is really beneficial.” When the school has made these connections, Carlene thought:

You know who your power players are in questioning, and you know who your power players are in lesson design. Once you know where the strengths are in your school, you can team them up or talk [them] up to each other so that they know that they both have strengths and then hopefully build those connections.

Carlene’s interview provided insights into the teachers’ perspectives on the strength or power of the group collectively participating in peer observation.

Kathleen shared that observing strong instructional techniques and practices helped her exchange instructional ideas with colleagues. She discussed conversations and idea-sharing that
occurred only after seeing colleagues teach: “Have you seen in Jordan’s government class how they do this debate?” In addition, Kathleen provided examples of how once a teacher expert was identified, other colleagues could watch that teacher’s practice in action and then share it with others. She emphasized that seeing teaching in action was a powerful way to provide real-time professional development for teachers.

F. Professional Development in the Classroom Context

Both experienced and novice teachers reported that their experience with peer observation provided professional development within the context of their workplaces. Professional development in context helped them share and model instructional practices in real time with students in natural workplaces. An additional benefit of real-time professional development through peer observation was having a colleague watch one in action and give immediate feedback.

Kris, a novice teacher, shared that the benefits of how peer observation could serve as JEPD. She stated that there are “lots of benefits, and I think one of them is just the opportunity to talk with someone who’s watched something that you watched play out or participated in playing out.” She also stressed how helpful it was to have a colleague present: “It’s impossible to remember every detail or to watch all the things that are occurring, so I [like] being able to have someone who’s there to watch play by play and track your attention or specific things that you said or did, they worked or didn’t work.” Working with a colleague could also allow “strategiz[ing] with that person about what worked and didn’t work out [and] how [it could] be improved. [It] actually was just a really beneficial exercise.” The teachers shared how helpful it was to work collaboratively and be reflective in the classroom.
The teachers also described how they learned in the classroom. Carlene shared that peer observation “is the primary way that teachers can grow and the primary way that teachers can see new instructional methods work in the classroom. Without peer observation, I think most professional development does not have context.” Additionally, Carlene thought that “one of the primary ways that professional development is effective [is] it’s contextual and relevant to the people involved in it and some of the best techniques that I have developed.” An experienced teacher, Kathleen stated that “someone’s just standing up, telling us this is something you can do in your classroom, but it’s so not effective unless we’re in it, doing it, which says a lot about our teaching too.”

Similarly, the novice teachers highlighted the value of professional development due to the contextualization of peer observation. Michael, a novice teacher, reported that “the best way for a teacher to learn is to be in the classroom, and the second-best way for a teacher to learn is by watching other people teach.” Michael also shared that “I think on-site learning is something that teachers’ value in general.” Anne, a novice teacher, reported that “it’s helpful when it actually matches well with my teaching style, and I can take something from it and immediately apply it to my classroom.”

In summary, both experienced and inexperienced teachers benefited from peer observation that provided professional development in the context of their workplaces. The teachers shared that they preferred the context of the classroom over a lecture format. It was clear that the teachers wanted to see in action instructional practices that they could use in their classrooms the next day.
Chapter V: Discussion of the Research Findings

A. Summary of the Problem

Research has suggested that the current model of teacher professional development is not effective (e.g., Guskey, 1995; Gordon, 2004; Little, 1999, TNTP, 2015). A teacher spends an average of 68 hours on professional learning activities annually. Despite current professional development efforts, most teachers do not improve from year to year. Traditional forms of teacher professional development are provided out of context and are disconnected from instructional practice (Darling-Hammond et al., 2009).

Professional development programs that have been found to affect student achievement are lengthy and intensive (Yoon et al., 2007). Programs of less than 14 hours, such as the one-time workshops commonly held in schools, have no effect on student achievement (Yoon et al., 2007). Ultimately, the issue is not that teachers are not provided professional development but, rather, that the typical offerings are ineffective at changing teaching practice or student learning (Darling-Hammond et al., 2009).

Federal and state policies on school improvement have brought renewed attention and focus to professional development and its impact on student achievement. The CCSI (2011) calls for effective professional development to build the capacity of educators. The CCSI (2011) requires that resources and best practices be utilized for ongoing JEPD, or professional development contextualized in teachers’ day-to-day instructional practice. JEPD produces results when it is connected to a school curriculum, state standards, and assessment of student learning and is framed to address the particular instructional needs of a teacher’s given assignment (Blank & de la Alas, 2009; Wei et al., 2009).
One JEPD model is peer observation, or collaborative professional development in which teachers work together toward common goals (DuFour et al., 2008). JEPD is a model that shows promise. Teachers primarily draw from the professional knowledge existing in their own schools and among their colleagues (Wei et al., 2009). Activities include mentoring, coaching, lesson studies, action research, peer observation, examination of student work, and virtual coaching, which consists of using “virtual, bug-in-ear” technology to receive feedback from coaching teachers during instruction (Rock et al., 2009).

Professional learning communities, which provide structured time for teachers to come together and discuss issues of teaching practice and student learning, can be forums for JEPD. Benefits can be derived from teachers working together to improve their instructional practice, at a much-reduced financial burden on school districts. Colleagues working together, nurturing, and supporting each other in nonthreatening, non-evaluative ways have been shown to improve thinking and teaching (Eisenberg, 2010).

High-quality instruction is the ultimate goal of peer observation through the delivery of JEPD. Two JEPD models that show promise are coaching and collaboration. Instructional coaching is the practice of utilizing on-site professional developers to teach educators how to use proven instructional methods. Instructional coaching has been shown to improve teachers’ ability to adopt and implement new teaching practices (Joyce & Showers, 2002). However, there is little evidence to indicate which model of coaching (e.g., technical coaching, team coaching, or peer coaching) is the most effective (Showers & Joyce, 1996). More knowledge is needed to about what happens in the context of this form of professional development that produces positive results, particularly in terms of teachers’ experience.
A growing body of evidence has revealed that teachers’ satisfaction and career pathways are affected more by the workplace environment, including their ability to collaborate with peers, than by student characteristics (Kraft et al., 2015; Johnson, Kraft, & Papay, 2012; Ladd, 2011; Simon & Johnson, 2015). Schools that provide appropriate, deliberate, coherent types of teacher support—such as regular opportunities for collaboration—are far more likely to attract, develop, and retain effective teachers, thus ensuring that all students regularly benefit from skilled, committed instruction (Ingersoll & Kralik, 2004).

The purpose of this study was to examine teachers’ experiences in a peer observation model and how they believed it influenced their practice and sense of collegiality. This study looked at two models that included instructional coaching and collaboration. The findings stressed the benefits of the exchange of instructional ideas through the pairing of inexperienced and experienced teachers to provide professional development with the context of the classroom.

B. Review of the Methodology

Action research was used in this study on peer observation as a form of JEPD. Action research allowed the teachers to be part of the process and work collaboratively, and the study took place within the context of their current environment (Ferrance, 2000). The issues of practice studied were the teachers’ work in isolation and the need to observe each other to develop best teaching practices through authentic professional development. Action research permitted examining teaching practices to develop and test advancements as solutions in real time (Ferrance, 2000).

This study relied on the use of volunteers interested in the process and willing to implement a peer observation model of professional development. The participants consisted of three peer observation pairs consisting of an experienced teacher and a novice teacher.
Consistent with the research literature, the novice teachers in this peer observation study had zero to years of experience, while the experienced teachers had five years of teaching experience (Gatbonton, 1999; Martin, Yin, & Mayall, 2006; Richards, Li, & Tang, 1998; Tsui, 2003; 2005).

Data were collected from each team, which conducted two complete peer observation cycles. Each peer observation cycle included a pre-observation meeting, observation, and a post-observation meeting. I was present during each team’s pre-observation meeting, two observations, and post-observation meeting.

C. Implications for Theory

One study finding was the benefits of a mentoring model of peer observation that paired experienced and novice teachers. The participants reported benefitting from observing colleagues who demonstrated instructional practices in action that they could then use in their classrooms. The novice teachers stressed the benefits of being able to use immediately new instructional ideas gathered through observation in their classrooms.

In the study “Does Cooperating Teachers’ Instructional Effectiveness Improve Pre-service Teachers’ Future Performance?” Ronfeldt, Brockman, and Campbell (2018) examined thousands of student teachers from 2010 to 2015. The study drew primarily on a statewide data set on pre-service teachers from the Tennessee Department of Education. The data included information on the characteristics of cooperating teachers and field-placement schools for approximately 27,000 pre-service teachers. To assess the relationship between the cooperating teachers’ and the pre-service teachers’ instructional effectiveness, the study used four-level multilevel models. The methodologies used included correlational analysis and hierarchical linear modeling.
The results from the above study suggested that effective mentor teachers pass on certain specific skills to their student teachers. However, Ronfeldt et al. (2018) did not investigate the benefits of a mentoring model for peer observation pairing experienced and novice teachers. In the peer observation study, the novice teachers reported learning instructional strategies from experienced teachers that they could use in their classrooms. This finding connects to the research finding that effective mentor teachers pass on skills to student teachers and novice teachers.

Prior research has established that high-quality mentor teachers can positively influence the instructional practices of student teachers. In the study “Cooperating Teachers as Model and Coach: What Leads to Student Teachers’ Perceptions of Preparedness,” Kapadia et al. (2018) found that pre-service teachers felt better prepared to teach when they saw their cooperating teachers model effective instruction and coaching, which included providing more instructional support, frequent and adequate feedback, collaborative activities, job-search support, and a balance of autonomy and encouragement. Overall, the study illustrates the benefits of mentor teachers working with student teachers to impart specific skills. The study also highlights that effective teachers can be powerful mentors for student teachers, demonstrating that student teachers learn when paired, especially with effective teachers. These findings connect to my study and support the benefits of matching veteran teachers with novice teachers.

Additionally, recent studies have offered evidence that good teaching skills can be passed down from a mentor teacher to a student teacher. In several cases, it was found that student teachers’ performance in their full-time classrooms corresponded to the quality of the teachers under whom they trained (Ronfeldt et al., 2018). These findings indicate a common-sense prescription: invest in finding the most effective possible teachers to supervise trainees.
D. Mentoring/Coaching

A review of the research on the impact of mentoring and training for new teachers showed that beginning teachers who participated in instruction with experienced teachers had higher job satisfaction, commitment, and retention, while their students had higher gains on academic achievement tests (Ingersoll & Strong, 2011). Huston and Weaver (2008) reported that peer coaching typically paired teachers with the same amount of experience, but some faculty members noted that some of their most important insights came from watching their seasoned colleague teach. In my study on JEPD, I found that the participating teachers enjoyed pairing novice and veteran teachers. This insight contributes to understanding that matching teachers in a mentoring model may be beneficial for both notice and veteran teachers.

Additionally, this study was beneficial to the participants because those working in the same content areas were matched with each other. This was another important contribution from the findings on the benefits of matching veteran and novice teachers within the same content area. The study participants shared that peer observation increased positive interactions among their colleagues, which enhanced their collegiality and the workplace environment.

In addition to the benefits of pairing teachers, the study participants told how such pairing supported the overall mentoring and building of collegiality. A growing body of evidence has revealed that teacher satisfaction and career pathways are affected more by the workplace environment, including the ability to collaborate with peers, than by student characteristics (Johnson et al., 2012; Kraft et al., 2015; Ladd, 2011; Simon & Johnson, 2015). Schools that provide appropriate, deliberate, coherent types of teacher support—such as regular opportunities for collaboration—are far more likely to attract, develop, and retain effective teachers, thus ensuring that all students regularly benefit from skilled, committed instruction (Ingersoll &
Kralik, 2004). Furthermore, teacher collaboration fosters a sense of collective efficacy, which is positively associated with student achievement outcomes, particularly in mathematics (Goddard et al., 2007; Louis, Dretzke, & Wahlstrom, 2010; Moller et al., 2013; Ronfeldt et al., 2018).

Other feedback from this study on peer observation of teaching included the benefits of pairing experienced and inexperienced teachers to support mentorship and build collegiality. The study participants expressed widespread approval of pairing veteran teachers with their newer colleagues. This finding shows that creating mentoring relationships can enhance collegiality.

Maureen Bell, of the University of Wollongong, Australia, highlighted the benefits of collegiality in a study on peer observation in higher education. In the study, participants commented on how collegial relationship developed among them and contributed to more collaborative teaching environments in their departments. The participants supported peer observation of teaching as an effective means to develop a sense of collegiality and an environment valuing the sharing of teaching experiences and discourse and supporting skills development.

Other literature has supported that peer observation serves as a vehicle for fostering collegiality and collaboration within schools. Lemlech (1995), author of Becoming a Professional Leader, concluded that collaboration and collegiality can help develop teacher leaders and bolster teaching professionalism, which begins with the premise that knowledge must be thoughtfully shared. In addition, relationship building and collegiality among staff members must be a priority if schools hope to retain teachers (Jarzabkowski, 2003).

Overall, the evidence supports that peer observation can build collegiality and strengthen relationships. In this peer observation study, the teachers emphasized the potential impact on improved staff relationships. Peter, a veteran social studies teacher and department chair, shared
that peer observation created a sense of collegiality by establishing a forum where the teachers received non-threatening feedback. He also reported that peer observation helped new teachers get feedback from experienced teachers and re-energized both as they saw new ideas. The teachers understood that the benefits of peer observation and its connections to collegiality came from building connections among people with whom they did not normally interact.

Collegiality in the workplace has also been found to be influential on attracting, developing, and retaining effective teachers. Recent research has highlighted that teacher satisfaction is more affected by the workplace environment, including the ability to collaborate with peers, than by student characteristics (Kraft et al., 2015; Johnson et al., 2012; Ladd, 2011; Simon & Johnson, 2015). Schools that provide appropriate, deliberate, coherent types of teacher support—such as regular opportunities for collaboration—are far more likely to attract, develop, and retain effective teachers, thus ensuring that all students regularly benefit from skilled, committed instruction (Ingersoll & Kralik, 2004). Furthermore, teacher collaboration encourages teachers’ sense of collective efficacy, which is positively associated with student achievement outcomes, particularly in mathematics (Goddard et al., 2007; Louis et al., 2010; Moller et al., 2013; Ronfeldt et al., 2018).

In summary, increased collegiality derived from more developed relationships also occurred in the school studied. The participants built greater collegiality through participating in two peer observation cycles in pairs of experienced and novice colleagues in the same content areas. The teachers in the study increased collaboration with others in their content areas, which helped build relationship trust. The participants built greater collegiality through JEPD. These findings connect to this study’s research questions on what teachers consider to be the most beneficial components of peer observation. One of the most beneficial components they found in
peer observation was building greater collegiality and collaboration between mentor and novice teachers in the same content area. Additionally, the study findings answered the research question on how peer observation influences professional relationships and workplace collegiality. The participants shared that peer observation strengthened relationships and workplace collegiality through both the pairing of experienced and novice teachers and the sharing of instructional practices.

E. Challenges of Peer Observation

The study participants also identified the elements of peer observation process that they considered to be the most challenging. The teachers reported that scheduling and time issues were challenges when they attempted to participate in peer observation cycles. The participants noted a variety of issues related to time. Most experienced difficulty finding time within their schedules to participate in peer observations cycles with colleagues. One participant stated that if peer observation of teaching were implemented on larger scale in his school, it would be easier to find solutions for scheduling and participation. These findings connect to the research question on which elements of the peer observation process the teachers considered to be the most challenging. Clearly, one of the elements that the teachers found to be the most challenging was scheduling the time to participate in the cycle.

A recent national survey of teachers and principals reported nearly universal agreement with the notion that teacher collaboration can support student success, regardless of school characteristics (Markow & Pieters, 2010). However, there exists persistent evidence that teaching remains an isolated experience for many educators in the United States compared with teachers in high-achieving OCED (2009) nations, due in part to limited opportunities for collaboration in U.S. teachers’ typical workday schedule (Wei et al., 2010).
In addition to the benefits and barriers of implementing JEPD, the findings support that teachers benefit from mentoring relationships between experienced and novice teachers, along with exchanging instructional ideas, reducing isolation, and growing collective instructional strategies and expertise. Considering what has been learned about the benefits and barriers of implementing JEPD, it can be suggested that teachers should engage in peer observation cycles of teaching based on mentoring relationships between experienced and novice teachers.

F. Recommendations for Policy

Although collaboration appears to be an important component of instructional improvement for teachers, it is not happening universally among educators in the United States. A likely solution for state and local educational agencies, along with school leaders, is to work to provide more opportunities for greater collaboration among peers. It is important for scholars and policymakers to explore the specific obstacles that hinder teacher collaboration and the practices effective at improving teacher capacity. The obstacles reported by the teachers that hindered collaboration included scheduling adequate time for collaborative activities. In the following sections, those obstacles are addressed, and recommendations are provided.

The report Teaching Around the World: What Can TALIS Tell Us? (Burns & Darling-Hammond) offers numerous policy recommendations and guidance that connect to supporting collaboration. The TALIS 2013 investigated the views of teachers and principals around the world and found that teachers commonly view the quality of their relationships with other teachers as important for their feelings of self-efficacy (Organization for Economic Co-operation and Development, 2014). Teacher efficacy is defined as teachers’ belief in their own ability to guide their students to success. According to Visible Learning for Teachers: Maximizing Impact on Learning by John Hattie, the collective belief in teacher efficacy in a school has the largest
impact on student achievement. In the TALIS study, teachers who engaged in collaborative activities five or more times a year had greater levels of self-efficacy than teachers who did not participate in collaborative activities (OECD, 2014). Teacher self-efficacy was also positively associated with teaching jointly in the same classroom, observing other teachers’ classes, providing feedback, and engaging in joint activities across different classes and ages (OECD, 2014). Ultimately, relationship building and fostering collaborative practices in schools, whether through collaborative professional development activities, peer feedback systems, or collaborative teaching activities, are highly beneficial to both teachers’ self-efficacy and job satisfaction (OECD, 2014).

Looking even closer at the TALIS study, among these different models, participation in collaborative professional learning supported the largest number of statistically significant and positive relationships and was associated with greater self-efficacy and teacher job satisfaction. These findings suggest that when teachers are engaged in collaborative practices that enhance their individual and collective teaching capabilities, they feel more confident in their ability to teach, engage students, and manage class behavior and find greater enjoyment in their work.

These findings support additional policy recommendations, including the need for schools to provide sufficient time for teacher collaboration and professional learning. A lack of scheduled time is the most commonly reported barrier to professional learning, and a lack of time for collaboration impedes teachers doing joint planning, observing, and receiving feedback from peers—which all improve instructional practices, enhance self-efficacy, and increase student achievement.

*Time for Teachers: Leveraging Expanded Time to Strengthen Instruction and Empower Teachers*, published by the National Center on Time and Learning, examined four schools that
implemented peer observation of teaching cycles (Kaplan et al., n.d.). Several schools benefitted from having the resources and autonomy to adjust teachers’ schedules, which allowed them to designate more time for professional development than typically available in U.S. schools. The schools also had weekly after-school professional development sessions, which contributed to well-developed systems for job-embedded professional learning by teachers.

With support from a state grant, Silvia Elementary School in Fall River, Massachusetts, added 90 minutes to each day. The expanded schedule allowed teachers to meet in grade-level teams for 45 minutes twice a week to engage in collective lesson-planning, while their students actively learned in art, music, or gym. This time was separate from the weekly schoolwide professional development. During the sessions—one devoted to math, the other to English and language arts—teachers shared instructional strategies, analyzed lesson objectives, and compared student work.

At Preuss Charter High School in La Jolla, California, teachers met once a week for 105 minutes to figure out how to better integrate new curricula aligned with the Common Core standards into their classrooms. Teachers modeled lessons for colleagues, who then offered feedback and discussed how they could incorporate similar teaching strategies into their own subject areas.

Looking closely shows that districts differ in the extent to which they encourage and provide collaborative planning time. Some simply encourage teachers to collaborate during their individual planning time, and others designate blocks of time and even prescribe agendas and tasks for that time. Looking globally, teachers in Shanghai have much more planning time than U.S. teachers (Kraemer, 2016). They regularly meet with colleagues to design, enact, and reflect
on effective lesson ideas and have a lot of autonomy over how they use their individual and common planning time.

Late arrival and early release times can provide teachers with common planning time for professional learning communities. For example, the Mason Public Schools district in Michigan follows a late-start Wednesday schedule allowing teachers to meet in their professional learning communities for an hour before students arrive. Parents have the option to register for free before-school care on Wednesday mornings in which students can participate in computer activities, independent reading, math games, and homework help supervised by paraprofessionals who work at the schools.

School leaders have been able to create an expanded school day and school year schedules. The NCTL has identified at least 1,500 schools nationwide that have an expanded school day or year. To implement expanded schedules, these schools use federal funding (e.g., Title I allocations, 21st-Century Community Learning Center funds, and School Improvement Grants), state and district funding (e.g., budget line items that directly support expanded learning time in schools), and budget and operating autonomy.

It is important for school leaders to provide support systems for peer observation within schools. A first step is to increase the time available for teachers to participate in collaborative activities, such as peer observation and common planning time. However, support for increased collaboration time likely will not be enough, and evidence has suggested that increased common planning time does not correspond with more teacher collaboration (Wei et al., 2010). Schools and districts, therefore, should consider providing protocols to guide collaboration and provide scaffolding for meaningful, ongoing follow-through. A study conducted by Hammersley-Fletcher and Orsmond (2004) documented some challenges to scheduling time for peer
observation; for example, teachers reported that it was hard to find time to schedule peer observation cycle. In this peer observation study, the teachers echoed many similar sentiments.

Regarding the implications for policy and practice, there are many considerations, including potential barriers to participating in peer observation of teaching. These may include union contracts, school boards, and other resistance. It is important to work with local unions to make sure that peer observation complies with local contracts and bargaining agreements. Practical challenges may include ensuring that teachers have ample time to leave their classrooms to participate in peer observation of teaching cycles.

One policy recommendation is to include peer observation in teacher contract negotiations as one model of teacher observations teachers may choose. This measure would allow teachers to engage in peer observation reflections in which they could set goals. The contract language could include that when funding permits, and an administrator grants prior approval, the district will pay for a substitute to allow the teacher to observe a particular colleague. Additionally, the participating teachers could fill out peer observation reflection forms to be included in the discussion at the final evaluation conferences. Including peer observation in teacher contracts as an option for observation with goals, possible support, and reflection could help drive a significant policy shift in many school districts.

G. Recommendation for Practice

This study examined the potential to use peer observation as a tool for meaningful professional development. While collaboration appears to be an important component in instructional improvement for teachers, it does not seem to be universally offered to educators in the United States. A likely solution for state and local education agencies, along with school leaders, is to work to provide more opportunities for greater collaboration among peers.
Case studies have suggested that districts may be able to restructure spending to facilitate effective professional development without spending significantly more. In a well-known model of restructuring from the 1990s, District 2 in New York City revamped its professional development approach to improve student achievement, with great success. The district hired coaches for teachers and created professional learning labs where teachers could observe excellent instruction. The district also eliminated isolated, one-time workshops. This program did not require millions in extra spending but, instead, restructuring of funds to pay for teachers’ time and hire coaching staff. The district was able to hold professional development spending to 3%, a figure within the range of pre-recession spending by districts to support effective programs aimed at improving student achievement (Elmore & Burney, 1997).

Other models to increase teacher collaboration include workdays embedded within the school year, such as full days set aside for individual and collaborative work that allow teachers to catch up, rejuvenate, and think ahead. There is wide variability in the number of teacher workdays provided for teachers, from two to 18, with an average of nine days per district (National Council on Teacher Quality, 2013). Other ways to increase collaboration time include increasing staffing so that during the school day, students can attend more electives and instructional activities with specialists. Giving teachers more planning within the regular school day requires planning productive activities with skilled professionals for students.

Schools and districts should consider providing protocols to guide collaboration and provide scaffolding for meaningful, ongoing follow-through. The National School Reform Faculty provides examples, including one protocol entitled Observer as Learner. Here, the primary learner is the observer, whose only purpose is to learn how to improve practice by
observing someone else. Other examples provide a structure for conducting peer observation that includes pre-observation, observation, and post-observation guidance and questions.

Examples of implementing peer observation can be found in Time for Teachers: Leveraging Expanded Time to Strengthen Instruction and Empower Teachers, published by the National Center on Time and Learning (Kaplan et al., n.d.). Kaplan et al. (n.d.) discussed LaCorte-Peterstown, where teachers completed an exit slip, consisting of a simple account of key takeaways after observing a classroom. On the slip, teachers described three strategies they wanted to incorporate into their own classrooms and something about which they would like to learn more. After the slips were filled out, the observing teachers shared them with the principal, who briefly connected with each observer to see how to offer further support.

It is important that protocols and structure exist to guide collaboration. From the field of instructional supervision (Nolan & Hoover, 2011; Sullivan & Glanz, 2013; Zepeda, 2012b; 2012c; 2013), the basic phases of the clinical supervisory model have been integrated into the peer observation POP cycle, which has three phases: a pre-observation conversation, an observation, and a post-observation conversation (Zepeda, 2012b; 2013). The pre-observation conversation helps decide a focus area, which could be a perceived need to improve in a specific area, follow-up on professional development, and areas where the teacher was trying a new technique (Zepeda, 2013). There are many tools available to assist peer observers and any other school personnel who conduct classroom observations. The tools include anecdotal, scripted notes based on time and T-charts of teacher stimulus and student responses (Zepeda, 2012c).

Expectations and guidelines for the post-conversation include teachers gaining new insights into some aspects of teaching, having ideas to reflect on, asking unanswered questions that spark more discussion, and continuing with peer observation or other forms of collaborative
learning. Participants in peer observation can use the text *Conversations Lead to Further Reflection and Inquiry and Practice*, originally published in 2004 (Tice, 2011), to guide the conversation. The text is a self-reflective action model that teachers can use to inquire about and reflect on practices with or without the assistance of a peer. After reviewing Tice’s article (Tice, 2011), the components are examined in the context of what can occur after a peer observation cycle.

One recent finding supports that increased frequency of collaborative feedback is related to increased perceptions of helpfulness among teachers. A focus on developing stronger, evidence-based collaboration practices and support structures, therefore, may be especially helpful for teachers. This will require buy-in from principals, who should see supporting teacher collaboration as part of their role as instructional leaders. This likely will be especially important for teachers in schools that have a variety of reform and school improvement mandates (Louis et al., 2010; Valli & Buese, 2007). It will be important for scholars and policymakers to explore the specific obstacles that hinder teacher collaboration and the practices seen to be especially effective at improving teacher capacity.

**H. Future Research**

Additional research is needed to further understand peer observation as a professional development tool useful for multiple grade levels and subject areas at both the elementary and the secondary school levels. More work on the long-term use of peer observation and overall standardization of peer observation processes is also needed. Other topics that should be investigated include the use of a mentoring model for peer observation, the effectiveness of content-area and non-content-area observations, and the use of technology to facilitate observations. Ultimately, it will be important to see what these studies can tell us to help increase
the impacts of peer observation in the future. This action research study has provided new insights into the use of peer observation as a contextual form of professional development but has only a topical application to the deeper understanding of how this process can be utilized further. The suggestions for future research can guide more in-depth examinations by researchers in the field of professional development.

A final focus for future research is related to the practical implications of peer observation. The likelihood of normalizing peer observation within the school environment and the challenges administrators would face while doing so should be examined. Questions to address include: What incentives or steps should be taken to promote the risk-taking involved in peer observation? What systemic or board-wide support is required to sustain the use of peer observation on a school-wide basis? Studies should be conducted to identify obstacles to implementing these incentives and support for peer observation. Moreover, what do school leaders think? What obstacles might they face? What do other teachers think, and how eager are they to participate? Under what conditions are school personnel open to peer observation?
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Appendix A

Tool #1—Anecdotal Scripted Notes Using Time

**Directions:** Use the following chart to take notes chronicling the focus identified by the teacher in 5-minute increments.

<table>
<thead>
<tr>
<th>Time</th>
<th>Notes</th>
</tr>
</thead>
</table>

*Source: Zepeda (2012c)*
Appendix B

Tool #2—T-Chart of Teacher Stimulus and Student Responses

**Directions:** Make a t-chart, and record the teachers’ actions, directions, physical proximity, etc., and specific student responses, including their time.

<table>
<thead>
<tr>
<th>Time</th>
<th>Teachers’ Actions/Directions</th>
<th>Students’ Responses</th>
</tr>
</thead>
</table>

*Source: Zepeda (2012c)*
## PEER OBSERVATION STUDY QUESTIONS

### Pre-Observation Questions
- Tell me about your proudest moment in your classroom with students.
- On what (e.g., instruction, assessment, and classroom management) would you like feedback?
- What else would you like me to know about regarding your classroom or your approach to teaching before I visit?
- Please share any experience you have had with peer observation.
- Tell me about your experience with professional development.
- What do you find to be the most helpful thing you do to improve your practice?

### Observation Focus Areas (Please select one focus area.)
- A perceived need to improve in (name a specific area)
- Follow-up on professional development
- An area where you the teacher are trying a new technique

### Post Observation Questions
- Tell me about the lesson you did for the observation.
- How do you think the lesson went?
- What was it like having [person’s name] observe you?
- Did things go as you had planned? Explain.
- Did you gain any new insights about the area of focus?
January 12, 2017

Dear Mr. Breiman,

The Seton Hall University Institutional Review Board has reviewed the information you have submitted addressing the concerns for your proposal entitled “Peer Observation as a Job-Embedded Professional Development Tool”. Your research protocol is hereby approved as revised through expedited review. The IRB reserves the right to recall the proposal at any time for full review.

Enclosed for your records are the signed Request for Approval form, the stamped Recruitment Flyer, and the stamped original Consent Form. Make copies only of these stamped forms.

The Institutional Review Board approval of your research is valid for a one-year period from the date of this letter. During this time, any changes to the research protocol must be reviewed and approved by the IRB prior to their implementation.

According to federal regulations, continuing review of already approved research is mandated to take place at least 12 months after this initial approval. You will receive communication from the IRB Office for this several months before the anniversary date of your initial approval.

Thank you for your cooperation.

In harmony with federal regulations, none of the investigators or research staff involved in the study took part in the final decision.

Sincerely,

Mary F. Ruzicka, Ph.D.
Professor
Director, Institutional Review Board

cc: Dr. Carolyn Sattin-Bajaj

Office of Institutional Review Board
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