Examining the Factors that Influence High School Teachers' Implementation of Professional Development

by Ellen Gianakis

Dissertation Committee

Manuel Gonzalez, Ph.D.
Danielle Edwards, Ph.D.
Paul Garton, Ph.D.

Submitted in partial fulfillment of the requirements for the degree
Doctor of Education

Department of Education Leadership, Management and Policy
Seton Hall University
South Orange, NJ
2023

College of Education and Human Services
Department of Education Leadership, Management, and Policy

APPROVAL FOR SUCCESSFUL DEFENSE

Ellen Gianakis has successfully defended and made the required modifications to the text of the doctoral dissertation for the Ed.D. during this Spring 2023 Semester.

DISSERTATION COMMITTEE

Manuel Gonzalez, Ph.D.	May 11, 2023
Mentor	Date
Danielle Edwards, Ph.D.	May 11, 2023
Committee Member	Date
Paul Garton, Ph.D.	May 11, 2023
Committee Member	Date

ABSTRACT

This quantitative study investigates the aspects of professional development that have the greatest impact on teachers' perception of and implementation of professional learning. This study explores the extent to which release time and financial compensation influence teachers' perceptions of the resources available to support their professional growth as well as the extent to which the format and focus of professional development impacts teachers' perceptions of professional development relevancy. This archival study examines teacher-level data from the 2017-2018 National Teacher and Principal Survey conducted by the U.S. Department of Education. Data collected from 14,460 teachers across the nation was used for the purposes of this study.

A correlational analysis was used to investigate the relations between release time as well as financial compensation and high school teachers' perception of professional development resource sufficiency; professional development focus areas as well as types of activities and high school teachers' perception of professional development relevance; and teachers' perceptions of resource sufficiency as well as relevancy and teacher incorporation of professional development within their respective classrooms. The results indicate that higher levels of release time and financial compensation result in greater teacher resource satisfaction. Likewise, the results indicate that collaborative professional learning opportunities as well as content area professional development result in higher levels of perceived PD relevancy. Finally, the results indicate that there is a positive relationship between teachers' resource satisfaction and incorporation of professional development as well as teachers' perception of professional development relevancy and incorporation of professional development.

Keywords: professional development, release time, financial compensation, focus, format, implementation

ACKNOWLEDGMENTS

I would like to express my deepest gratitude to the following individuals whose unwavering support, sage advice, and continuous encouragement made the completion of this dissertation possible.

First and foremost, I would like to express my sincere appreciation to my mentor, Dr. Gonzalez. Your expertise, dedication, and invaluable insights have been instrumental in shaping and refining this dissertation. Your patience and positivity kept me motivated throughout this journey and I will be forever grateful for your mentorship. I would also like to extend my heartfelt gratitude to my committee member and statistics professor, Dr. Edwards. Your extensive knowledge and willingness to go above and beyond to assist me with my statistical analyses has been invaluable. Thank you for instilling in me a deeper understanding and appreciation of mathematics. Furthermore, I would like to express my thanks to Dr. Garton for all the time he dedicated to helping me refine my research questions and create a viable study that I would be passionate about. Thank you for sharing your knowledge and always pushing me to strive for the highest standards.

I would also like to acknowledge the contributions and support of my previous and current professors, colleagues, and mentors. Each of you has played a significant role in shaping my academic journey. Your dedication to teaching and passion for your respective fields have deeply influenced my growth as both an individual and a student. I am grateful for the knowledge and skills that I acquired under your tutelage, and I am honored to have had the opportunity to work with you.

To my friends, whose unwavering support, encouragement, and understanding have been a constant source of strength throughout this process, I extend my deepest appreciation. Your

presence in my life has provided the necessary balance, laughter, and support to persevere through the challenges of this dissertation. Your belief in my abilities and your constant words of encouragement have meant more to me than words can express.

Finally, I would like to express my utmost gratitude to my family. The sacrifices that you have made as well as your unconditional love and endless support have provided me with the necessary foundation to pursue my dreams. I am eternally grateful for your presence in my life that the countless ways that you have supported me on this challenging yet rewarding journey.

To all those mentioned above and to those whose names may not be written here, I am indebted to you. This dissertation would not have been possible with your presence in my life, and I thank you for being an integral part of this endeavor.

Table of Contents

LIST OF TABLES

LIST OF FIGURES

CHAPTER I: INTRODUCTION

Context of the Problem

Throughout our nation's history, there has been countless legislation aimed at improving education for students across the country. In 1965, the Elementary and Secondary Education Act (ESEA) was signed into law by President Lyndon B. Johnson, in hopes of closing student achievement gaps. With the passage of this act, K-12 federal support for professional development was strengthened as funds were authorized specifically for teacher professional development. Years later, a study conducted by Sanders and Rivers (1996) identified that teachers have a direct and lasting impact on student achievement. In fact, they found that teacher quality is one of the most significant predictors of future student success. Researchers have identified several factors that are related to teacher quality including, but not limited to, teacher behaviors, beliefs, and practices; content knowledge; pedagogical knowledge; credentials; level of education; and experience in the classroom (Darling-Hammond, 2000; Darling-Hammond & Youngs, 2002; Jacob & McGovern, 2015; Moyer-Packenham et al., 2008). Because teacher quality is inextricably linked to student success, an investment in high quality professional development opportunities for educators is a direct investment in teacher quality.

Recognizing this, the United States endeavored to improve teacher quality by reauthorizing ESEA with the passage of the No Child Left Behind Act (NCLB) in 2002. After all, as former Secretary of Education Margaret Spellings (2005) made clear, NCLB "recognizes that teacher quality is one of the most important factors in improving student achievement and eliminating achievement gaps" (para. 1). Thus, additional federal funding was made available to create and implement quality, research-based professional development programs for teachers. States were also required to evaluate teacher quality by ensuring staff not only held a bachelor's

degree and full certification, but also demonstrated strong content knowledge in each core subject area they taught. While this act was a significant step forward in ensuring the success of all students across the nation, its requirements were highly prescriptive as it did not provide states the flexibility and autonomy to set their own goals for student achievement, but rather put forward universal goals that *every* student, even those who had a disability or were learning English as a second language should be proficient in both reading and mathematics. Moreover, it did not allow states to evaluate schools on measures other than academic achievement such as high school graduation rates, school climate and safety, and student absenteeism rates, which are also factors integral to school quality (Booher-Jennings & Beveridge, 2008; Schul, 2011; Sunderman et al., 2005). Thus, in 2015 the Every Student Succeeds Act (ESSA) was passed, replacing the No Child Left Behind Act and reauthorizing the Elementary and Secondary Education Act of 1965. The ESSA provided states greater agency in determining the standards that their students are held to, while also shifting the focus of previous legislation from evaluating teacher quality to cultivating highly qualified teachers through professional development. Specifically, while NCLB focused primarily on evaluating teacher content knowledge, ESSA looked to empower teachers to build innovative assessments, strengthen their pedagogical knowledge, and facilitate personalized learning for students (Birman et al., 2007).

Consequently, professional development has become a high priority for educational leaders across the nation and a central focus of school reform initiatives. As Desimone (2009) emphasizes, "Research increasingly has identified the continuing development and learning of teachers as one of the keys to improving the quality of U.S. schools" (p. 181). In fact, teacher quality has consistently been identified as the most significant school-based factor for predicting student outcomes (Coleman, 1966; Garet et al., 2000; Mizell, 2010) including, but not limited to

mathematics and reading achievement (Darling-Hammond, 2000; Gupta & Guang-Lee, 2020), procedural knowledge (Desimone et al., 2005), and reasoning and problem-solving skills (Holland, 2005). Because of the apparent importance of teacher quality, billions of dollars are allocated yearly to support the professional development of teachers and ensure that local, state, and federal mandates are appropriately satisfied.

Each year, extensive resources are dedicated to professional development, both at the national and local levels. Title II, Part A of the Elementary and Secondary Education Act of 1964, which was amended by ESSA in 2015, provides that "funds may be used to support a mentoring and induction program by providing early release time for mentoring, compensation for mentors, and evidence-based professional development for novice educators and mentors" (U.S. Department of Education, 2016, p. 10). Moreover, countless states have implemented professional development requirements for teachers. For example, the New York State Education Department requires teachers who hold their Professional certification to complete 175 hours of professional development every five years, and the New Jersey Department of Education requires teachers to complete 20 hours every year. These are just two of many state requirements. Given the time and extensive resources that are currently being allocated to professional development efforts, it is imperative to determine the extent to which teachers find these opportunities relevant and feel that they have the resources necessary to incorporate their learning into their practice.

Problem Statement

Though many educational experts identify that professional development plays a pivotal role in teacher growth, they also recognize that not all professional development is created equally. As such, many have endeavored to answer the elusive question: what are the

components of "effective" professional development for teachers? The National Staff Development Council (2001) identifies 12 standards for professional learning which they organize into three overarching categories: context, process, and content. In later years, after the passage of the Common Core State Standards, which aimed to create consistent educational standards for students across the nation, Learning Forward (2013) collaborated with other professional organizations to further refine NSDC's standards and ultimately "distilled the conditions, processes, and practices of effective professional learning into seven standards: Learning Communities, Leadership, Resources, Data, Learning Design, Implementation, and Outcomes" (p. v). Likewise, in their 2017 study, Darling-Hammond, Hyler, and Gardner identify that professional growth opportunities for teachers should: be content focused, incorporate active learning, support collaboration, use curricular models or models of effective instruction, provide coaching and/or expert support, offer feedback and reflection opportunities, and be of sustained duration.

Though the research of educational professionals offers some intriguing insight to the characteristics of quality professional development (Darling-Hammond et al., 2017; Learning Forward, 2013; NSDC, 2001), ultimately, if teachers do not perceive the learning opportunities to be sufficient or relevant, or if they do not feel that they have satisfactory resources at their disposal, then they may fail to implement it within their classrooms (Wei et al., 2009). Thus, it is imperative to distinguish between professional development quality and teachers' perceived relevance of professional development. While the research indicates characteristics of strong professional development (Darling-Hammond et al., 2017; Linder, 2011; Rice, 2017), we have little knowledge of how professional development focus areas and types of activities impact teachers' perceptions of its relevancy. Today, more than ever before, educators have access to an

immense amount of professional development opportunities offered in countless formats: co-planning, professional learning communities, mentoring, instructional coaching, web-based professional development, workshops, and conferences (Calvert, 2016; Croft et al., 2010; Green & Allen, 2015; Guskey & Yoon, 2009; Hill et al., 2017; Jaquith, 2010; Kennedy, 2016; Linder, 2011; Rice, 2017; Villegas-Reimers, 2003). Moreover, there are a plethora of options when it comes to the focus area of professional development opportunities as teachers can engage in learning related to their content area, technology integration, integrating STEM into the classroom (even in non-STEM classes), classroom management, special education, differentiated instruction, standardized testing, or data analysis (U.S. Department of Education, 2017). While research has been done on the characteristics of strong professional development, the literature has failed to identify what types of professional development opportunities are generally perceived as relevant, and, in turn, are more likely to be implemented in the classroom.

Though understanding the factors that contribute to teachers' perceptions of professional development relevancy is important, we must also understand how to best leverage the resources available at both the national and local level so that teachers feel supported in their work and equipped to implement their learning in their classrooms. Research indicates that teachers who leave the profession after three years, which is up to 30% of teachers, articulate that they were dissatisfied with the resources and supports available to them (DeAngelis, 2012). Moreover, a study by Smith and Ingersoll (2004) identified that those teachers who took place in support programs were more likely to stay in the profession, when compared to those who did not participate in such programs. Since support and resources impact teacher retention, it is important to examine what factors best predict teacher resource satisfaction. After all, if teachers leave the profession due to lack of resources and support, they will not be able to make a

meaningful impact on student learning, regardless of the quality of the professional development that they receive. To date, there is limited research to determine the extent to which resources and support – such as release time and financial compensation – impact teacher implementation of professional development. After all, if teachers need to sacrifice their planning time or do not have the funds to gain access to quality professional development, they may be less inclined to make use of their learning within the context of their classroom.

While this evolution and influx in teacher professional learning offerings is beneficial in many ways, it is now more difficult than ever for school leaders to discern what types of professional learning initiatives are worth the investment of both their teachers' time as well as their fiscal resources. Thus, further research is necessary to identify what types of resources help teachers feel most supported, what types of professional development teachers perceive to be most relevant, and what influences teachers' incorporation of professional development within the context of their classrooms. Past research finds that "teachers who receive substantial professional development...can boost their students' achievement by about 21 percentile points" (Yoon et al., 2007, p. 1). However, these findings hinge on the presumption that teachers are implementing what they learned in professional development.

In a 2009 study by Wei et al., "only 59% of teachers found content-related learning opportunities useful or very useful, and fewer than half found the professional development they received in other areas useful, including areas where they would like more opportunities to learn" (p. 34). Thus, research is needed to determine what professional development offerings teachers find most relevant and useful. After all, it stands to reason that if teachers find little value in the professional learning experiences they are engaging in, they may be less likely to implement this professional development in their respective classrooms. Recent research

suggests that the current structure and focus of professional development is minimally effective (Ermeling, 2010; Gordon, 2004; Jacob & McGovern, 2015; Joyce & Showers, 2002; Little, 1999). For example, Jacob and McGovern (2015) identified that despite teachers' participation in professional development, there was minimal improvement in their teaching. In their research, a mere three out of every 10 teachers engaged in professional development improved their performance, as measured by their summative evaluation scores. Moreover, of the remaining seven teachers, five showed no change in performance, and two showed substantial declines in their performance (Jacob & McGovern, 2015, p. 13). Thus, research must identify what changes can be made so that professional development opportunities can be more useful in fostering substantial improvement in teacher performance, and, in turn, student performance.

Purpose of the Study

In this study, I aim to determine what aspects of professional development have the greatest impact on teachers' perception of and implementation of professional learning. Moreover, I hope to identify the extent to which release time and financial compensation influence teachers' perception of the resources available to support their professional growth, and, in turn, their implementation of their professional development. Currently, an exorbitant amount of funding is allocated to teacher professional development (Jacob & McGovern, 2015; Killeen et al., 2002; Layton, 2015). Unless this money is utilized in purposeful ways, teachers may not make any meaningful changes to their instructional practices, even after spending countless hours in professional development. In this study, I aim to examine what professional development focus areas and professional development activities teachers find to be most relevant. Further, I aim to examine what factors most influence teacher's incorporation of professional development within their respective classrooms.

Significance of Study

At a 2012 teachers town hall meeting, United States Secretary of Education Arne Duncan stated, "At the federal level, we spend $2.5 billion a year on professional development," and he noted that as he engaged with educators around the nation, "when [he asks] them how much is that money improving their job or development, they either laugh or cry. They are not feeling it" (Layton, 2015, p. 2). This study is important to carry out as it will unearth what types of professional development is most relevant to teachers as well as what professional development opportunities lead teachers to make changes to their classroom instruction. In understanding what professional learning resources help teachers improve their job or development, administrators, policy makers, and school leaders can work to allocate resources more effectively, which stands to benefit not only school teachers, but also students across the nation. Currently, much of the available research centers on what constitutes quality professional development (Darling Hammond et al., 2017; Learning Forward, 2013; NSDC, 2001) and the ways that professional development, once implemented, can positively impact student achievement (Darling-Hammond, 2000; Garet et al., 2000; Gupta & Guang-Lee, 2020; Mizell, 2010; Yoon et al., 2007). However, there is limited research on the factors that impact teacher implementation of their professional learning. The results of this study will offer insight to the characteristics of professional development opportunities that lead to changes in educators' practices in the classroom, and thus will serve to inform important decisions regarding teacher professional development at the district, state, and national level.

Theoretical Framework

In this study, I draw on David Kolb's (1984) experiential learning theory. Experiential learning as defined by Keeton and Tate (1978) is situational learning that immerses learners in

"the realities being studied" (p. 3) rather than simply reading, listening, talking, or writing about them. Kolb (1984) argues that learning is most effective when an individual engages in a cycle consisting of the following four stages: a concrete experience, reflective observations of the experience, abstract conceptualization, and active experimentation.

Stage One: Concrete Experiences

Concrete experiences refer to new experiences that individuals encounter, and for the purposes of this study, center around the professional learning opportunities that teachers engage in. Concrete experiences such as professional development serve as a catalyst for changes to instruction because they provide teachers' new strategies, supports, and knowledge that they can implement upon returning to the classroom. Because supports, more specifically time and financial compensation are integral to providing these "concrete" professional development experiences to teachers, it is important to examine the extent to which these factors impact teachers' professional development resource satisfaction. After all, if teachers do not have sufficient supports to access concrete experiences, such as professional development, they will be less likely to make changes to their classroom instruction and engage in the latter stages of Kolb's model, such as active experimentation. For this reason, I chose to examine whether both release time and compensation to engage in professional development predict teachers' professional development resource satisfaction.

Stage Two and Three: Reflective Observation and Abstract Conceptualization

With that said, if teachers lack sufficient resources to engage in "concrete" experiences, they may fail to engage in the latter stages of Kolb's model (Darling-Hammond et al., 2017). This is problematic for as Boud et al. (1993) identify, "learning can only occur if the experience

of the learner is engaged, at least at some level" (p. 8). The second and third stages of Kolb's model are reflective observations of the experience and abstract conceptualization, which refer to reflecting on one's learning experiences and formulating ideas for implementation, respectively. Ultimately, if teachers do not find professional development relevant to their day-to-day responsibilities or needs within the classroom, they are unlikely to spend time reflecting on their professional learning experiences and how they might be of use in the classroom (Wei et al., 2009). As such, it is important to determine what factors impact teachers' perceptions of professional development relevancy. Therefore, I chose to examine whether the focus and format of professional development predict teachers' perceptions of its relevancy. Thus, I will be able to determine what factors impact teachers' perception of professional learning relevancy and thereby teachers' willingness to engage in the reflective observation and abstract conceptualization which, as Kolb argues, predicates active experimentation.

Stage Four: Active Experimentation

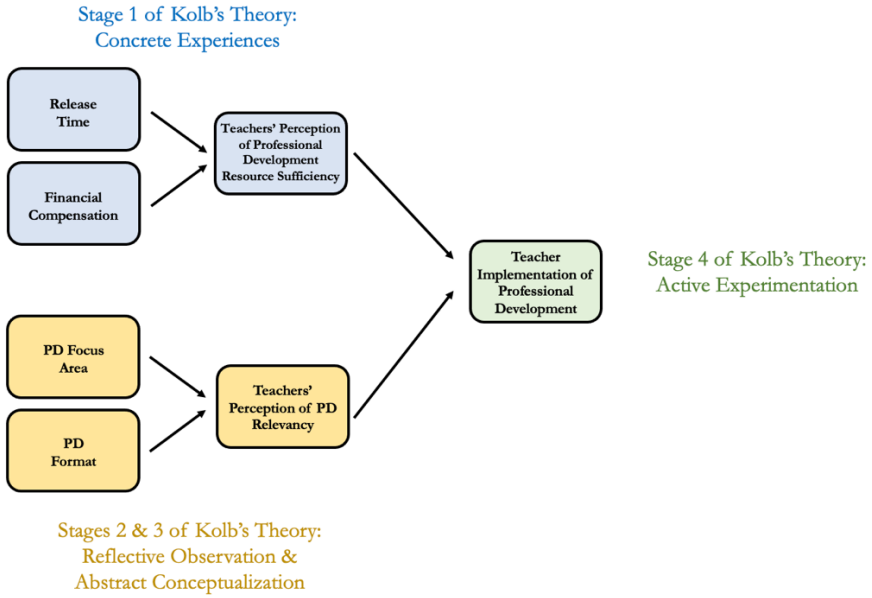
If teachers remain merely passive recipients of professional development who reflect on, but do not engage in Kolb's final stage, "active experimentation" – in which they implement their learning into the classroom – then they are not engaging in truly effective learning (Boud et al., 1993). For this reason, it is imperative to analyze the factors that may predict teacher incorporation of professional learning, in this case, teachers' resource satisfaction and perceptions of professional development relevancy. In doing so, I will be able to examine what factors lead teachers to engage in the fourth and final step of Kolb's theory: active experimentation, or, in this case, teacher implementation of PD.

Kolb's (1984) experiential learning theory offers a meaningful lens for unpacking teachers' professional learning experiences and the factors which lead them to incorporate

professional development in their respective classrooms. Kolb's (1984) theory identifies that concrete experiences predicate any *true* learning and for this reason, in this study I examine several predictors that enable teachers to have access to professional development opportunities: release time and financial compensation. Ultimately, if teachers do not have these fundamental supports and do not feel that they have sufficient resources, it is unlikely that they will be able to engage in later stages of experiential learning such as active experimentation. Additionally, I investigate PD focus areas and types of PD activities because these both may influence teachers' perceptions of the professional learning's relevance as they engage in "reflective observation" and "abstract conceptualization" (Kolb, 1984). After all, if the area is unrelated to their content area or is facilitated in a manner that they do not find engaging, this may impact their perception of the relevance of these "concrete experiences" and therefore their implementation of this professional development (Roumell, 2018). Research indicates that when adult learners are disengaged in the learning process, they do not transfer what they learn to a relevant context, but rather simply engage in educational banking (Freire, 1970), collecting information rather than connecting it to their experiences in the classroom (Roumell, 2018; Weber, 2014). Thus, with Kolb's (1984) model in mind, I examine how factors such as teachers' resource satisfaction and perceptions of PD relevancy ultimately culminate in a teacher's "active experimentation" and implementation of professional learning within the context of the classroom. The four tenets of Kolb's (1984) theory serve to guide the selection of the predictors examined in this study in order to ascertain what impacts teacher implementation of professional development (see Figure 1). In looking at Kolb's theory, it is clear that there is a temporal element to the process of experiential learning. Though the current study is cross-sectional and retrospective, this framework is fitting because over the course of a school year, teachers consistently go through

these stages as they engage in professional learning during faculty meetings or even daily professional learning communities. Due to state requirements, teachers often participate in upwards of 20 hours of professional development in any given year and thus can engage in all four stages several times throughout the study time frame.

Figure 1. Factors that Impact Teacher Implementation of PD



Research Design

Through a quantitative research design, in this archival study, I investigate high school teachers' perceptions of the resources available for their professional growth, the relevance of the professional development they currently receive, and the factors that impact their implementation of what they learn through professional development. I will examine teacher-level data from the 2017-2018 National Teacher and Principal Survey conducted by the U.S. Department of Education. While the original survey consisted of six questionnaires, only data collected from the Teacher Questionnaire was used to answer the research questions of the current study.

Using a correlational analysis, in this study I investigate the relationships between release time as well as financial compensation and high school teachers' perception of professional development resource sufficiency; professional development focus areas as well as types of activities and high school teachers' perception of professional development relevance; and teachers' perceptions of resource sufficiency as well as relevancy and teacher incorporation of professional development within their respective classrooms. The data gathered from the 2017-2018 National Teacher and Principal Survey Teacher Questionnaire was used to run multiple regression models to examine the relationships between the aforementioned variables and examine which variables best predict teachers' use of professional learning experiences.

Research Questions

To better understand how release time, financial compensation, professional development focus area, and type of professional development impact teacher incorporation of professional development in the classroom, three questions guide this study:

1. To what extent does release time and financial compensation predict whether high school teachers perceive to have sufficient resources for their professional growth?

2. To what extent does PD focus area and PD format predict whether high school teachers perceive PD to be relevant?
3. To what extent do high school teachers' perceptions of whether they have sufficient resources for their professional growth and high school teachers' perceptions of PD relevancy predict high school teacher incorporation of professional development in the classroom?

Limitations

While the large sample size of this study will allow for confidence in the reliability of my findings, there are several limitations of this study. First and foremost, the data collected are limited only to those teachers who responded to the 2017-2018 National Teacher and Principal Survey, only 67% of public-school teachers sampled and only 53.9% of private school teachers sampled. Moreover, because this study only includes high school teachers in its sample, conclusions cannot be generalized to elementary and middle school teachers. Nonetheless, due to the rigorous sampling approach used to ensure the sample is reflective of the diversity of the population at large, this increases the generalizability of the results.

Second, this study does not examine several variables that may influence teacher perception and utilization of professional development including whether they engaged in professional development by choice or because it was mandated; whether the professional development was offered in or outside of the district; or the level of funding that they received, if any, for their professional development activities. Because I am unable to control for these variables, there may be other sources of random error that I was not able to account for. Despite this, I will control for several other variables that were available in the data obtained from the

National Center for Education Statistics such as teachers' years of experience, subject area, level of education, salary, gender, and race.

Lastly, because certain factors were not measured in the 2017-2018 National Teacher and Principal study, such as teacher evaluation scores, I am unable to determine whether the professional development that teachers implemented within the context of their classrooms had any impact on their actual teaching performance. For example, I am unable to examine whether there was a difference in the teaching evaluation scores of those teachers who reported using what they learned from PD and those who did not over time. With that said, given the available literature centered around teacher performance and evaluation (Arens et al., 2012; Ermeling, 2010; Garet et al., 2008; Joyce & Showers, 2002), there is reason to infer that predicting implementation will also give insight to predicting performance.

Organization of the Paper

This dissertation consists of five chapters, each with a unique focus. Chapter 1 has introduced the research topic, determining whether there is a significant relationship between teachers' perceptions of professional growth resources and PD relevancy and teachers' incorporation of professional development in their respective classrooms. Moreover, Chapter 1 has identified the research questions grounding this study and provided clarification of key terms that will be essential to understanding its findings. In Chapter 2, I will offer a systematic review of past and current research related to teachers' professional development and identify gaps in the current literature to more fully illustrate the importance of this study. Chapter 3 will detail the research design and the methods that will be used to answer each research question. Moreover, in this chapter, I will provide detail on the participants and sampling as well as the validity and limitations of this study. Thereafter, in Chapter 4, I will present and interpret the results for each

respective research question, and in Chapter 5, I will conclude by synthesizing the findings of this study, discussing the implications of the results, and making recommendations for future research and practice.

CHAPTER II: REVIEW OF LITERATURE

This chapter begins with a brief historical background of key legislation that has shaped professional development requirements and offerings in schools across the nation. The chapter then proceeds to analyze the purpose of professional development, to positively impact student achievement and teacher performance, before examining the components of high-quality professional development. Subsequently, this chapter discusses the gaps in the current literature: the factors that affect teacher implementation of professional development in this classroom. It then moves into a discussion of the resources made available to teachers to support their professional learning as well as standard formats and focus areas of professional development. Following this, literature regarding teachers' perceptions of professional development will be discussed.

History of Professional Development in U.S. Schools

Over the years, there has been countless legislation aimed at improving teacher quality, and thereby student achievement. One of the first, which is often considered the most influential education law passed in the United States (Islas, 2010), is the Elementary and Secondary Education Act of 1965, a key component of Lyndon B. Johnson's “War on Poverty” (McLaughlin, 1975). The ESEA sought to bring education to the forefront of national concern by committing to provide equal access to quality education to all U.S. citizens (Jeffrey, 1978). Moreover, two of the ESEA's programs, Title I and Title II, authorized the use of federal funds for professional development in hopes that improving teacher quality would directly impact students' academic achievement (Webster, 2019). Years later, in 1983, “A Nation at Risk” was released, calling attention to the failing school system of the U.S. and offering recommendations for ameliorating student performance gaps. In addition to suggesting that more time be spent on

core content areas such as English, science, mathematics, and history, the report also emphasized the need for additional professional development time to ensure that teachers have the knowledge and skills necessary to support those students most at risk (Goldberg & Harvey, 1983).

Following this, the ESEA was reauthorized several times, with each iteration placing significant emphasis on improving teacher quality through professional development (Islas, 2010). The Improving America's Schools Act of 1994 opens with a focus on professional learning in Title I, which states: “Intensive and sustained professional development for teachers and other school staff, focused on teaching and learning and on helping children attain high standards is too often not provided” (IASA, 1994, p. 4). Moreover, the law goes on to state that a central purpose of its enactment is to improve the quality of instruction by providing teachers and other educational support staff “substantial opportunities for professional development” (IASA, 1994, p. 5). Title I's provisions made it evident that Congress had a strong understanding of the merits of professional development, and this became further apparent in Title II of IASA, which encouraged states and districts to craft thorough, long-term professional development plans to better support teachers and, in turn, students (Islas, 2010). As former U.S. Secretary of Education Richard Riley articulated, the goal of this legislation was “to encourage professional development that is sustained, intensive, and high-quality, and will lead to changes in classroom instruction and student learning” (Riley, 1993, para. 7). While IASA sought to increase quality professional development, there is minimal research on whether teachers used this professional development and whether it genuinely led to “changes in classroom instruction” (Riley, 1993, para. 7).

Thus, in 2001, the No Child Left Behind Act was passed, yet again advocating for higher standards for teacher professional development (Islas, 2010). However, this time, the NCLB Act provided a formal definition, delineating critical elements of professional learning (NCLB, 2001) including, but not limited to: "Linking professional development to schoolwide and districtwide improvement plans, requiring experiences that are sustained, intensive, and classroom-focused, and prohibiting one-day or short-term workshops or conferences" (Islas, 2010, p. 12). Nonetheless, while the NCLB act established that professional development should be sustained to be truly effective, it did not provide provisions for how this professional learning should be formatted, what it should be focused on, or how it should be made available to teachers (Borko, 2004)[1]. Thus, while Title II, Part A of NCLB allocated over $3 billion annually to efforts to improve teacher quality, states and local districts had little guidance as to how to utilize this funding most effectively (Guskey, 2009; Jaquith et al., 2010). Moreover, they had little flexibility to set their own goals for students, as NCLB established universal goals that all students were required to meet, even those students with disabilities or limited English proficiency.

In addition, while the Department of Education's continued to emphasize professional development, its efforts were narrow in their scope. They continued to allow student achievement accountability measures to take precedence over cultivating meaningful teacher quality initiatives (Islas, 2010; Robelen, 2005). Focusing on standardized test scores alone to determine school effectiveness, as NCLB did, diminishes the importance of hiring, retaining, and growing quality teachers. Teacher quality, which research shows is impacted by professional

[1] While some of the participants in the study may have had sustained professional development experiences such as those described by Borko (2004) and Islas (2010), the data collected from the 2017-2018 Teacher and Principal Survey did not measure whether any given professional development opportunity was sustained or conducted as an isolated event.

development (Darling-Hammond et al., 2009; Wei et al., 2010), has been shown to have a direct impact on student achievement (Hattie, 2003; Rice, 2003). Because NCLB overlooked the importance of strong teacher quality initiatives, particularly with regard to professional development, more progressive legislation was needed.

To address some of the shortcomings of the No Child Left Behind Act, in 2015, the Every Student Succeeds Act (ESSA) was passed, yet another reauthorization of the Elementary and Secondary Education Act of 1965. The ESSA expanded on the No Child Left Behind Act's definition of professional development, noting that not only should professional learning activities be sustained, but they should also be "intensive, collaborative, job-embedded, data-driven, and classroom-focused" (U.S. Department of Education, 2016, para. 2). Under Title I and Title II of the ESSA, local school districts may access funding to support the professional growth of teachers and paraprofessionals alike to bolster student achievement (National Education Association, 2020; U.S. Department of Education, 2016). However, as Darling-Hammond et al. (2016) make clear, not all professional development is created equally. Therefore, it is important to ensure that the funds allocated to professional learning opportunities for teachers are being used as strategically as possible. Otherwise, they will have minimal impact on teacher quality and student achievement.

Elements of Quality Professional Development

Policymakers have recognized the importance of professional development, as evidenced by their passage of legislation such as the Every Student Succeeds Act. Thus, researchers have endeavored to examine the components of high-quality professional development opportunities. The National Staff Development Council (2001) formulated 12 standards of quality professional development that they broke down into three core categories: context, process, and content.

These categories underpin much of the subsequent research on professional development (Darling-Hammond, 2017; Hunzicker, 2010; Learning Forward, 2013). In fact, they are evidenced in the standards that Learning Forward (2013) created in collaboration with several other professional organizations, distilling the original 12 standards of the NSDC into seven: "Learning Communities, Leadership, Resources, Data, Learning Design, Implementation, and Outcomes" (p. v). While slight differences emerge in how researchers title and group the components they identify as characteristics of quality professional development, the literature continues to identify context, process, and content as critical considerations (Darling-Hammond et al., 2017; Hunzicker, 2010).

Context speaks to where the professional learning occurs and the resources available to support the implementation of any professional development offerings (Darling-Hammond, 2016; NSDC, 2001; NSDC, 2009). Much of the research shows that it is of the utmost importance for professional development opportunities to be job-embedded so that educators can clearly see how their learning relates to their classroom needs and responsibilities (Flores, 2005; Guskey, 1995; Tate, 2009). Context matters, and as Quick et al. (2009) identify, when professional development occurs within the school itself, it can foster greater implementation. Likewise, if learning occurs during the school day, it can lead to more authentic learning by promoting reflection and abstract conceptualization (Fullan, 1995), both of which are key to Kolb's (1984) experiential learning theory. However, it is important to note that more recent research indicates that programs can be effective, regardless of whether they are job-embedded or time-intensive, if the time is used in purposeful ways that prioritize high-quality learning experiences for teachers (Hill et al., 2022). Because professional development can take many forms and exist in many contexts, it is important to understand what types of professional

learning teachers perceive to be most relevant and what resources, specifically time and money, are needed to support the implementation of these professional learning opportunities. In doing so, school leaders can increase the likelihood that teachers will implement their professional learning within their respective classrooms.

Though context matters, *process* is also an integral consideration as quality professional development is data-driven, research-based, intentionally designed and evaluated, collaborative, and influenced by learning theory. In other words, process refers to how professional development is facilitated. The format of professional development can impact teacher engagement, and research has shown that when professional learning engages teachers physically, cognitively, and emotionally, it is often more effective (Knowles, 1983; Lieberman & Pointer Mace, 2008; Tate, 2009). In fact, research suggests that when teachers are engaged in the process of learning and perceive professional development to be relevant to their teaching assignment, teachers will remember approximately 90% of what they learned in professional development (Tate, 2009). Teachers find value in collaborative learning opportunities such as co-planning, mentoring, and peer observations, and thus are more likely to engage in higher-order learning (Lieberman & Pointer Mace, 2008; Mundry 2005; Quick et al., 2009). Moreover, the literature shows that when teachers are engaged in ongoing professional development, their teaching practice is more likely to improve (Darling-Hammond et al., 2016; Hunzicker, 2010; NSDC, 2001; NSDC, 2009; Porter et al., 2003; Quick et al., 2009). This is primarily because it takes time for teachers to transition from reflecting on their professional learning experiences, to conceptualizing how they can implement their learning, to ultimately engaging in active experimentation within their classrooms (Kolb, 1984; Loucks-Horsley & Stiegelbauer, 1991). Thus, districts must select professional learning opportunities with intention to ensure that

resources are utilized for professional development that will be perceived as relevant to teachers, and, in turn, may lead to implementation within the classroom.

In addition to context and process, another key consideration is the *content* of professional development, which refers to what is taught during teachers' professional learning experiences. Research has shown that professional learning is most effective when it addresses both teachers' subject area content and reviews instructional strategies that can help them in the classroom (Lambert et al., 2007; Lieberman & Pointer Mace, 2008; Mundry, 2005; NSDC, 2001; NSDC, 2009). While there is substantial research on professional development, minimal attention has been given to the content of professional development and the efficacy of professional learning that focuses on "different types of knowledge, skills, and teaching practices" (Garet et al., 2001, p. 923). It is important to note that professional development can vary greatly in its focus as it can be centered around a wide range of topics including, but not limited to, content knowledge, technology use, classroom management strategies, supporting students with IEPs and 504s, differentiated instruction, annual assessments, and data analysis (Shulman, 1987; U.S. Department of Education, 2018). Garet et al. (2001) identify that while some professional learning activities are aimed at improving teachers' content knowledge, others are geared towards improving their teaching practices and general pedagogy. Because research has shown that teachers find professional development most relevant when it addresses their needs (Guskey, 1995) and is connected to their daily responsibilities (Flores, 2005; Tate, 2009), it is important to examine how the focus of professional development impacts teacher perception, and, in turn, teacher utilization of their professional development.

Ultimately, it becomes clear that quality professional learning hinges on its context, process, and content (NSDC, 2001) and as research has shown, "no improvement effort has ever

succeeded in the absence of thoughtfully planned and well implemented professional development" (Guskey & Yoon, 2009, p. 497). Thus, there is a need to further explore what aspects of professional development most impact teacher's perceptions of its relevance as well as teacher implementation of their professional learning.

Professional Development Impact on Student Achievement

Research has shown that teachers have a direct impact on student achievement (Hattie, 2003; Rice, 2003; Sanders & Rivers, 1996). In fact, according to Opper (2019), "when it comes to student performance on reading and math tests, teachers are estimated to have two to three times the effect of any other school factor, including services, facilities, and even leadership" (p. 1) Teachers' classroom practices and content knowledge as well as their relationships with learners can impact students' self-efficacy, grit, and motivation to learn (Blazar & Kraft, 2016). After all, teachers function as role models in their classrooms and are responsible for designing students' daily learning experiences and assessments. As such, it comes as little surprise that so much emphasis has been put on professional development, both at the state and federal level. Indeed, studies have shown that teacher professional development plays a vital role in improving student achievement (Corcoran, 1995; Desimone et al., 2005; Guskey, 1994; Holland, 2005; Joyce & Showers, 2002; Kennedy, 2016; Sanders & Rivers, 1996; Yoon et al., 2007).

However, simply because teachers partake in professional development does not guarantee that student achievement will increase; teachers need to implement their professional learning for it to have an impact on learners. A study by Saunders et al. (2009) examined the impact of professional development on student achievement and found that when strategies from teachers' professional learning were implemented in the classroom, students outperformed their peers on standardized achievement tests. However, when teachers engage in professional

development, but do not implement it within the context of their classrooms, it has little effect on student achievement (Darling-Hammond et al., 2009; Wei et al., 2010). Therefore, it is important to understand the factors that lead to teacher implementation of professional development if we wish to use professional development as a vehicle for improving student achievement.

With that said, not all professional development has an equal effect on student achievement. A study by Johnson and Fargo (2014) found that the students of teachers who engaged in professional development that was ongoing and collaborative demonstrated significantly larger improvements in their achievement over time compared to those students of teachers who engaged in isolated professional development workshops. This comes as little surprise, for when professional development incorporates active learning and provide educators opportunities for collaboration, teachers are more likely to make use of their learning (Darling-Hammond et al., 2017). Thus, it is evident that the structure of professional development can have a profound effect on not only teacher implementation, but also student achievement.

However, the amount of time that teachers spend on professional learning over the course of a given year can also determine the efficacy of professional development. A study by Murray et al. (2009) identified that when teachers participated in short stints of professional development, even if they perceived the information to be useful, it had minimal effects on students' achievement when compared to the control group. As Darling-Hammond et al. (2017) make clear, professional development must be of sustained duration in order to make a meaningful impact. This does not mean that each professional learning opportunity that a teacher participates in needs to be many hours in length, but rather, that teachers should be engaged in ongoing professional learning over time. In fact, a report by Yoon et al. (2007) indicated that

"teachers who receive substantial professional development- an average of 49 hours in the nine studies- can boost their students' achievement by about 21 percentile points" (p. iii).

While professional development that fosters collaboration is often deemed as the most effective type of professional learning (Porter et al., 2003), more traditional forms of professional development have been seen to have a positive impact on educators' teaching and student achievement so long as teachers engage in them for a sustained duration (Quick et al., 2009). Research has shown that teachers who engage in professional development that is recursive and occurs over time (Darling-Hammond et al., 2009; Fullan, 1995; King & Newmann, 2004; Yoon et al., 2007) are more likely to make changes to their instructional practices compared to those teachers who engage in professional development for shorter durations (Darling-Hammond et al., 2009; Quick et al., 2009; Yoon et al., 2007). Thus, in addition to exploring the format of professional development, it is important to also consider the resources provided to teachers, particularly with regard to time, to support their professional learning.

Professional Development Impact on Teacher Performance

Each year, billions of dollars are allocated towards teacher professional development (Jacob & McGovern, 2015; Layton, 2015). However, a 2015 study by The New Teacher Project surveyed 10,000 teachers and over 100 administrators to examine what distinguished teachers whose performance had improved from those teachers whose performance had remained stagnant (Jacob & McGovern, 2015). While they expected to unearth evidence that teachers' improved performance was linked to shared experiences or mindsets, they unearthed that it was not so simple; they found no commonalities that distinguished those who demonstrated improvement from those who did not. In fact, they found that while "we bombard teachers with help...most of it is not helpful-to teachers or to schools seeking better instruction" (Jacob &

McGovern, 2015, p. 2). While research shows that student achievement is impacted by teachers (Hattie, 2003; Rice, 2003; Sanders & Rivers, 1996), that does not necessitate that all teachers are effective and therefore positively affect student performance. If a teacher is ineffective, they can make little to no impact on students, so it is imperative that schools have strong professional development systems in place to ensure teachers can hone and strengthen their craft. However, much of the current literature indicates that the existing structure and focus of professional learning opportunities for teachers is marginally effective (Arens et al. 2012, Bos et al., 2012; Ermeling, 2010; Garet et al., 2008; Garet et al., 2010; Jacob & McGovern, 2015; Joyce & Showers, 2002). Nonetheless, as Jacob and McGovern (2015) make clear, "the notion persists that we know how to help teachers improve and could achieve our goal of great teaching in far more classrooms if we just applied that knowledge more widely" (p. 3). While it is possible to promote teacher growth and learning, we cannot continue to push forward assuming that our current system of professional development is effective. After all, research has shown that even those teachers who participate in professional development showed minimal, if any, improvement in their teaching performance, as quantified by their overall evaluation scores (Jacob & McGovern, 2015).

Though teachers may be participating in professional development, if they are not making use of their learning and moving into the later stages of Kolb's (1984) experiential learning theory – reflective observation, abstract conceptualization, and active experimentation – their performance is not likely to change. However, to engage educators in reflective observation and abstract conceptualization, they must first view the experiences as relevant (Kolb, 1984). Only after teachers engage in these two steps of Kolb's cycle, can transfer and apply their professional learning experiences (Roumell, 2019) through "active experimentation" and truly

learn and grow (Boud et al., 1993). Thus, it is important to determine what types of professional learning activities are perceived to be most relevant to teachers and are most likely to lead to implementation so that meaningful changes can be made to our current model of professional development in U.S. schools.

Gaps in the Literature

Research has established that if professional development is perceived as relevant to teachers, it can have a profound effect on their teaching practices (Garet et al., 2008; Garet et al., 2010) and, in turn, student achievement (Hattie, 2003; Rice, 2003; Sanders & Rivers, 1996). However, there is a lack of research regarding what professional development focus areas and types of professional development activities impact teachers' perceptions of professional learning opportunities (Bill & Melinda Gates Foundation, 2014; Jacob & McGovern, 2015). Moreover, the literature suggests that when teachers feel they have insufficient resources available to them for their professional growth, they are less likely to make changes to their classroom practices. However, there is little research to suggest what shapes teachers' resource satisfaction (Adey, 2004; Darling-Hammond et al., 2017; Garcia & Weiss, 2019; Jacob & McGovern, 2015; Learning Forward, 2013; Learning Forward, 2019).

This dissertation seeks to contribute to the current literature by providing insight to the ways in which time and financial compensation relate to teachers' resource satisfaction and examining how the focus and format of professional development impact teachers' perceptions of professional development relevance. In addition, it seeks to address the current gaps in the literature by examining what factors most impact teacher incorporation of professional development learning in the context of their classrooms. In doing so, it provides valuable insight that can assist administrators, policy makers, and school leaders in making informed decisions

with regard to the allocation of professional development funding, policies, and practices not only at the district level, but also at the state level and beyond.

Next, I will begin building the rationale for my predictions given the current research on teacher implementation of professional development. After presenting an overview of the available literature related to each variable of focus for this study, I will present hypotheses for each of my research questions.

Resources to Support Professional Development

To effectively facilitate quality professional development, school districts must ensure that time and money are appropriately allocated to best meet the needs of their teaching staff. However, research shows that many stakeholders including, but not limited to, teachers, researchers, and policy makers, consistently indicate that one of the largest challenges facing K-12 schools who seek to implement effective professional development is a lack of time for teachers' to both attend and reflect on professional development (Abdal-Haqq, 1996). In order for professional learning to have an impact on student learning or teacher performance, teachers need time to engage in active reflection so they can conceptualize how they can best implement new approaches within the context of their classrooms (Cambone, 1995; Corcoran, 1995; Darling-Hammond et al., 2009; Troen & Bolles, 1994; Watts & Castel, 1993; Yoon et al., 2007). Because of the stringent nature of school schedules (National Education Commission on Time and Learning, 1994), professional development and teacher collaboration often takes place outside the confines of the school day, thus imposing on educators' personal time (Abdal-Haqq, 1996). Because time for professional development is often not prioritized within the context of the school day, teachers often are unable to engage in the critical reflection which is necessary to the implementation of their professional learning (Abdal-Haqq, 1996).

Bredeson (2000) identifies how important it is for districts to prioritize professional development rather than viewing it simply as an ancillary component of teacher's responsibilities. After all, those staff who spend substantial time in professional development were more likely to use their learning in the context of their classrooms (Guskey & Yoon, 2009; National Science Foundation, 2010; Yoon et al., 2007). Nonetheless, Bredeson's (2000) study revealed that while many districts allocate large sums of money to professional development efforts for teachers, over half the study's participants indicated that their district did not provide them release time for professional learning. For the purposes of this study, release time is defined as time when teachers are "released from traditional classroom responsibilities to engage in their work as teacher leaders" (National Science Foundation, 2010, para. 1), or, in this case, professional development. What's more, nearly 60% of study participants indicated that they had no scheduled professional development time at work, meaning they needed to make use of their personal time to engage in professional learning (Bredeson, 2000).

The literature suggests that release time greatly benefits teachers' ability to adapt to new curriculum initiatives, plan for increasingly diverse learners, and process and implement professional development learning (Merritt, 2016; Rentner et al., 2016). A study by Yoon et al. (2007) indicated that when teachers engaged in 14 or more hours of professional development, this had a positive, significant effect on their students' test scores, whereas when staff engaged in minimal professional development, it had no statistically significant impact on their students' achievement. Similarly, Guskey and Yoon (2009) identified that to see positive effects on student achievement and teacher practices, teachers needed to participate in 30 or more hours of professional development. In the same vein, Bredeson's (2000) study identified that teachers who

spend 32 hours or more on professional development indicated that their learning had a greater impact on their teaching practices.

Nonetheless, time alone does not necessitate improved student outcomes (Kennedy, 1998) or teacher effectiveness because "doing ineffective things longer does not make them any better" (Guskey & Yoon, 2009, p. 497). Thus, it is important to ensure that schools are not only offering professional development that is effective, but that they are also providing release time. After all, effective professional development requires that time is purposefully directed, structured, and well organized (Birman et al., 2000; Bredeson, 2000; Garet et al., 20001; Guskey, 1999; Guskey & Yoon, 2009).

In addition to effectively allocating time for the purposes of professional development, schools should also ensure that they are appropriately compensating teachers for the expenses that they incur for their professional learning. Each year, schools spend an exorbitant amount of money on professional development (Jacob & McGovern, 2015; NCES, 2008; Wei et al., 2010), and thus it is important to ensure that this money is well-spent (Christie, 2009). In a 2014 survey by the Bill and Melinda Gates Foundation, an overwhelming number of teachers identified that they were most satisfied with two particular professional development formats: courses and conferences (p. 5). Unfortunately, these are the two formats of professional development that are associated with the greatest out-of-pocket expenses for teachers: college tuition and conference registration fees.

Research has shown that there is limited access to highly valued, more effective professional development offerings (Garcia & Weiss, 2019; NCES, 2016). In fact, according to a 2019 study by Garcia and Weiss, "small shares of teachers attend university courses related to teaching (26.6 percent), present at workshops (23.1 percent), or make observational visits to

other schools (21.6 percent)" (para. 4). Since not all districts allocate funds for professional development in the same way, some teachers are at a disadvantage when it comes to accessing high quality professional development because they lack the resources needed, particularly with regard to funding or reimbursement for fees related to conferences or workshops and college tuition (Garcia & Weiss, 2019).

Existing research indicates that providing teachers time and compensation for professional development opportunities is of the utmost importance (Bill & Melinda Gates Foundation, 2014; Garcia & Weiss, 2019; Hill, 2009; Learning Forward, 2019). However, we must ensure that these resources are being distributed equitably and utilized effectively to provide teachers the time and funding necessary to engage in professional development that will affect changes in their classroom practices (Darling-Hammond et al., 2017). Ultimately, while we currently dedicate many resources to teachers' professional learning, we need to engage in critical reflection of these expenditures in order to re-allocate this funding and time to those activities that make the most meaningful impacts on teachers, and therefore students (Jacob & McGovern, 2015; Learning Forward, 2013). Based on the available research, I hypothesize that the receipt of release time and financial compensation for professional learning will positively predict teachers' resource satisfaction (Hypothesis 1a and 1b, respectively) and whether teachers incorporate their learning in the classroom (Hypothesis 4a and 4b, respectively).

Teachers' Perceptions of Professional Development

Research has revealed that teachers are unsatisfied with professional development as it currently exists (Bill & Melinda Gates Foundation, 2014; Darling-Hammond, 2016). In fact, in a 2014 study consisting of 1,300 teachers, a mere 29% said they were highly satisfied with the current structure and focus of professional development, and a large majority expressed that they

did not feel professional learning opportunities helped them meet the ever-changing expectations of their jobs or support the needs of their students (Bill & Melinda Gates Foundation, 2014). This is highly problematic as research has shown that there is a strong connection between teachers' perception of professional development relevancy and their incorporation of their professional learning within the context of their classrooms (Glover et al., 2016). Brody and Hadar (2015) reaffirm this and argue that if teachers find professional development worthwhile and useful, they are more likely to make changes to their professional practice. Generally speaking, teachers report finding professional learning more effective if it occurs over time and involves active learning and collaboration. Moreover, teachers tend to find professional development relevant if it is connected to their day-to-day responsibilities (Flores, 2005; Tate, 2009) or in line with their daily needs or concerns (Guskey, 1995).

However, little is known about teachers' perceptions of various formats or focus areas of professional development (Wei et al., 2009). Lynch (2014) makes clear that additional research is needed to better understand what types of professional development are perceived by teachers to be most relevant and worthwhile, and this study seeks to address this gap in the literature. The following includes a discussion of various formats and focus areas of professional development that may impact teachers' perception of professional development relevancy.

Format of Professional Development

While there are many formats of professional development, not all are equally effective nor are perceived by teachers as beneficial or worthwhile (Bill & Melinda Gates Foundation, 2014; Darling-Hammond, 2016). The following includes a discussion of the available research on the professional development formats that are most relevant to the study at hand and are most frequently cited in current literature. Additional research is needed to determine the extent to

which the format of professional development impacts teachers' perceptions of professional development relevancy, and, in turn, their implementation of professional learning.

Co-Planning

At its core, co-planning occurs when two or more teachers work collaboratively to channel their expertise in order to plan instructional content or delivery as well as student assessments (Friend, 2014; Kamens et al., 2013). Co-planning is frequently used as a form of professional development because it does not require any funding for implementation, but rather administrative support to secure needed planning time for teachers (Hunt et al., 2004). At times, co-planning consists of a general education teacher working closely with a special education teacher, however co-planning could also involve the collaboration of two or more teachers in the same discipline or varying disciplines. Research has shown that teachers highly value opportunities for shared reflection and joint planning with colleagues (Villa & Thousand, 2005). Moreover, the literature asserts that teachers who co-plan maximize their instructional effectiveness (Friend, 2008; Gately & Gately, 2001; Howard & Potts, 2009; Murawski, 2009; Villa & Thousand, 2005). After all, by working collaboratively with colleagues, teachers can acquire knowledge of instructional strategies and classroom practices that have proven successful in the classroom. With that said, the literature reveals that if teachers do not communicate effectively with one another during the co-planning process, its efficacy is greatly hindered (Morgan, 2016). Ultimately, in order for co-planning to reach its full potential, educators must be open and honest with one another (Scruggs & Mastropiere, 2017) and administrators must be willing to allocate the time necessary for teachers to have common planning periods (Hunt et al., 2004; Murawski, 2009; Murawski & Dieker, 2004).

Collaborative Consultation About Students

In order to best promote student success, it is important to allow teachers opportunities to work collaboratively to consult about student needs and progress. Darling-Hammond (1999) identified that teachers learn best "by collaborating with other teachers; by looking closely at students and their work; and by sharing what they see" (para. 6). When teachers are given time to engage in professional development that prompts them to consult with one another about individual students, they engage in critical pedagogical reflection (Larrivee, 2008) which allows them to consider how they "assess student thinking, how their actions influence student understanding, and what classroom norms they can incorporate [to] promote higher-order thinking" (Murray, 2015, p. 25). This, in turn, leads to changes in their practice as they work to better reach all students. In addition, having time to consult with colleagues about shared students allows teachers to identify which students are struggling and may need additional support or interventions as well as those students who are excelling and may need additional enrichment opportunities (Smith, 2001). However much like co-planning, for these consultations to be effective, administrators must allocate sufficient time to ensure their success (Hunt et al., 2004; Murawski, 2009; Murawski & Dieker, 2004).

Collaboration on Issues of Instruction

In addition to having time to co-plan and engage in conversations with colleagues about individual students, teachers also must have a forum to collaborate on issues of instruction. This format of professional development provides teachers space to engage in collaborative learning with their colleagues and share resources, instructional strategies, and content knowledge with one another (Jacquith et al., 2010). Moreover, it can encourage teachers to facilitate trans-disciplinary lessons, where they extend their content area work to another subject area, and

interdisciplinary lessons, where they cultivate cooperative learning experiences across several disciplines (Arber, 1993). This, in turn, can foster an interdisciplinary learning environment that promotes more authentic learning experiences for staff and students alike (Beckmann, 2009; Coke, 2005). Teaching can be a very isolating profession, but when educators have time to engage in collaborative professional learning, they are exposed to new instructional strategies and knowledge that can elevate their classroom practices (Croft et al., 2010; Decuyper et al., 2010; Edmondson, 2013). Ultimately, in order to facilitate an innovative student-centered approach, teachers must engage in critical reflection with one another (Arber, 1993; Meirink, 2007; Shipley, 2009; Slavit et al., 2011). Though a 2007 study indicated that there is limited evidence that these types of collaborative professional development opportunities impact educators' teaching practices (Blankenship & Ruona, 2007), a more recent study, in 2013, illustrated that those teachers who engaged in collaboration on issues of instruction displayed higher levels of not only job satisfaction, but also self-efficacy (European Commission, 2013). Likewise, a 2022 study illustrated that teachers hone their craft more in workplaces that are collaborative, thus improving student outcomes (Hill & Papay, 2022).

Serving as a Mentor

Research has shown that when districts provide veteran teachers the opportunity to serve as a mentor for novice teachers, it allows them to hone both their leadership skills and their instructional practices (Bowman, 2014). In assuming a role as a mentor, experienced teachers expand their "sphere of influence" and consequently build their identities as teacher leaders (Weisling & Gardiner, 2018, para. 1). Nonetheless, the literature indicates that while a veteran teacher may excel in the classroom, this does not necessitate that they will be a strong mentor, since mentoring is a skill that must be honed (Aspfors & Fransson, 2015; Bullough, 2012; Carver

& Feiman-Nemser, 2009). Thus, it is important that mentors are selected with intention and given extensive professional development to ensure that they have the knowledge and tools needed to successfully support new teachers (Weisling & Gardiner, 2018). Ultimately, as Bowman (2014) makes clear, "when schools implement mentoring programs effectively, the sharing of knowledge between teachers becomes an inherent quality whereby students, teachers, and the school climate benefits" (p. 47). In this sense, mentoring can serve as a vehicle for continued professional growth and elevated learning for staff and students alike.

Receiving Mentoring

While veteran teachers can benefit greatly from serving as a mentor, there is also much that they can gain from being on the receiving end of mentoring. In many districts, mentoring programs are in place to assist novice teachers (Weisling & Gardiner, 2018), however, seasoned teachers stand to gain just as much from working with colleagues to identify areas where they can further improve and developing the strategies and skills needed to strengthen these focus areas (Pruitt & Wallace, 2012). As such, administrators responsible for planning and facilitating professional development opportunities should strive to ensure that there are continuous supports, such as mentoring for veteran and novice teachers alike (Spelman et al., 2016). Coaching is one form of mentorship that can be used to improve teachers' instructional strategies and technology use (Joyce & Showers, 1995; Sailors & Shanklin, 2010). This form of professional development has been shown to be particularly effective as it provides teachers more individualized support from knowledgeable colleagues who are intimately familiar with the particular needs of students within the context of their school (Knight, 2019). Moreover, research indicates that because this school-based professional development format is personalized,

sustained, collaborative, it has a greater impact on teacher implementation (Corcoran, 1995; Garet et al., 2001; Darling-Hammond et al., 2009).

Online Self-Paced Professional Development

With the advent of digital professional development offerings, teachers were able to leverage technology to gain greater access to resources, with greater flexibility (Rice, 2017). Research has shown that some teachers prefer the digital professional development to traditional offerings such as workshops, co-planning, and the like due to its asynchronous and self-paced structure (Charalambousa & Ioannou, 2011; Kao et al., 2011). This is, in part, because online professional development provides them greater agency to direct their own professional learning (Beach & Willows, 2017). Nonetheless, the literature identifies that access to virtual self-paced professional development "does not ensure quality experiences or outcomes and may create a false sense of effectiveness if technology is used merely as a delivery tool void of effective design or implementation principles" (p. 19). Ultimately, to ensure its efficacy, online professional development must adhere to the tenets of effective professional development and be designed in a manner that intentionally addresses the needs of educators in these online learning environments (Burns, 2013; Vrasida & Zembylas, 2004). Specifically, Rizzuto (2017) identifies that for online professional development to be effective, it should be multimodal and make use of visuals, text, and audio, promote choice, encourage educators to engage in reflection, and allow educators to set their own pace.

Workshops

Workshops are one of the most common professional development offerings, yet are often viewed as one of the least effective by teachers (Jacob & McGovern, 2015). Workshops typically occur in isolation and therefore do not engage teachers in the ongoing reflection needed

to ultimately lead to classroom implementation according to the available literature (Blank et al., 2007; Corcoran, 1995; Darling-Hammond et al., 2016; Porter et al., 2003; Rebora, 2004). When workshops are deemed ineffective by educators, it is typically because the workshop is disconnected from teachers' practice in the classroom or does not provide the time or space necessary to delve into topics in greater depth (Darling-Hammond, 2009; Yoon et al., 2007). Moreover, a study by Darling-Hammond (2009) revealed that 9 out of 10 teachers never receive feedback or reinforcement following these types of professional development opportunities. Nonetheless, if workshops employ research-based practices that center teacher needs and promote opportunities for educators' active engagement, they can lead to teacher implementation (Guskey & Yoon, 2009).

Conferences

Research indicates that conferences are one of the formats of professional development that is most valued by educators (Bill & Melinda Gates Foundation, 2014). This is, in part, because they allow teachers to not only learn about innovations and instructional practices related to their subject area, but also network with other educational professionals at the local and national level (Tingley, 2021). Thus, teachers can cultivate strong bonds with other educators who can bolster their classroom practices and expand their pedagogical knowledge (Cherrstrom, 2012; Ghosh & Githens, 2009). Though teachers and researchers alike praise the merits of conferences, there are some who view them as ineffective means for professional development because they are short-term unlike other sustained and intensive professional development opportunities (Islas, 2010). Moreover, because of the high registration fees often associated with conference attendance, they are less accessible to teachers (Garcia & Weiss,

2019; NCES, 2016), as many educators rely on compensation from their local districts in order to attend (Tingley, 2021).

Summary of Professional Development Formats

Ultimately, as the research suggests, there are a wide array of professional learning opportunities available to teachers including co-planning, collaborative consultation on individual students, collaboration on issues of instruction, mentorship programs, online professional development, workshops, and conferences. Based on the available research, I hypothesize that the format of professional development will positively predict teachers' perception of professional development relevancy and whether teachers incorporate their learning in the classroom (Hypothesis 2a and 4b respectively). Specifically, I believe that co-planning, mentorship programs, and collaboration on issues of instruction will be the most predictive of perceived relevancy and teacher implementation of professional development, relative to other professional development formats (Hypothesis 2b.1, 2b.2, and 2b.3, respectively), given that they are typically facilitated within the context of the school and tend to occur over a sustained duration (Darling-Hammond et al., 2017; Knight, 2019; National Staff Development Council, 2001; Roy, 2013;).

Focus of Professional Development

Just as professional development can vary greatly in terms of its format, professional learning can also have a wide range of focus areas. While some professional development centers around teachers' subject areas or instructional strategies (Lambert, Wallach, & Ramsey, 2007; Lieberman & Pointer Mace, 2008; Mundry, 2005), other offerings are focused on the integration of STEM principles across subject areas and educational technology. The following includes a discussion of the current literature that is frequently cited regarding the professional

development focus areas that are most relevant to this study. This section will culminate with a summary of common professional development foci and formal hypotheses.

Content Area

Research has shown that students benefit greatly from teachers who have strengthened their overall content knowledge, which is defined as knowledge of a particular subject area (Shulman, 1986), through professional development (Baynes, 2014). In fact, the literature consistently reveals that content knowledge significantly influences not only teacher quality, but also teacher effectiveness (Borko, 2004; Boyle, et al., 2005; Darling-Hammond et al., 2010; Katz et al., 2010; Kemp et al., 2009; Wei et al., 2010). According to Solís (2009), "teachers of mathematics, science, and language [arts] are particularly looking for support as these are content areas where many students perform poorly on academic test often due to content teachers' lack of rigorous and accurate preparation" (para. 3). It is no surprise that content area teachers have unique needs that are specific to their respective subject areas, and content-focused professional development can work to meet those needs in ways that traditional professional learning cannot (Vesga, 2016). For example, content knowledge is necessary to ground English teachers' approach to teaching writing and literature, which is needed to improve the literacy rates of students (Grossman & Howey, 1989), whereas in mathematics, content knowledge is necessary to ensure teachers are able to scaffold their instruction and provide process-oriented support that will aid students' understanding of mathematical procedures (Lachner & Nückles, 2016). Similarly, in history, educators must not only have content knowledge of historical phenomena and turning points, but also an understanding of the significance and change resulting from these phenomena in order to select sources and pose questions that will develop students' historical reasoning skills (Tuithof et al., 2019). Moreover, to be effective, science

teachers must have a strong understanding of science concepts in order to design, deliver, and assess students' effectively, and, in turn, ensure that they do not pass on misconceptions to students (McConnell et al., 2013).

Nonetheless, there are a few studies whose results indicate that simply improving teachers' content knowledge did not have a significant impact on student achievement (Loewus, 2016), yet other research does suggest that content-focused professional development did improve some aspects of teachers' instructional practices, so long as they participated in sustained professional development over the course of a year (National Center for Education Evaluation and Regional Assistance, 2016). Overall, the new reforms in education have necessitated that teachers learn new content and teaching methods, and research has shown that professional development that is specifically targeted towards equipping educators with knowledge and strategies specific to their subject area can perform a "catalytic function" (Desimone et al., 2006, para. 1).

Technology

With the influx of educational technologies in the last decade, particularly in the wake of COVID-19, it is now more important than ever that teachers have training to help them capitalize on this technology in truly meaningful ways. Research has shown that when teachers engage in professional development centered around the use of technology in the classroom, they are not only more likely to utilize it for their classroom instruction, but also more skilled in their implementation of it (Blanchard et al., 2016; Chou et al., 2012; Cifuentes et al., 2011; Liu et al., 2015; Xie et al., 2017). Moreover, the literature suggests that high-quality professional learning is an effective vehicle for improving *how* technology is integrated as it increases teachers' skills and abilities (Liu et al., 2015; Xie et al., 2017).

Nonetheless, it is important to examine teachers' current perceptions of educational technology professional development in order to ensure that they find it relevant and pertinent to their day-to-day responsibilities and needs in the classroom. A study by Dedmon (2020) revealed that over 80% of teachers had to engage in technology learning outside their contracted hours. While the majority found the training that they participated in engaging, only 43% felt that they were adequately trained, and only 58% felt confident in their abilities to integrate it within the context of their classroom (Dedmon, 2020). Thus, it is important to make changes to current technology professional development offerings, and offer teachers additional time and support to ensure they feel confident with technology and are more skilled in how to best incorporate and implement it (Cheng et al., 2020; Cheng & Xie, 2018; Er & Kim, 2017).

STEM

Professional development centered around STEM aims to promote innovative problem-solving skills across all subject areas, including humanities courses. This is done by providing scaffolded supports for teachers centered around the design thinking process, project-based learning, and the 4 C's of STEM: critical thinking, communication, collaboration, and creativity (Carrell et al., 2020; English, 2016). To promote the successful facilitation of an integrative STEM education, it is imperative that educators receive professional development (Avery & Reeve, 2013). Research suggests that there is a growing need to identify which methods best support K-12 teachers in gaining the skills, knowledge, and confidence needed to support students throughout all stages of the engineering design process across all subject areas, not only those traditionally viewed as STEM disciplines (Brophy et al., 2007).

However, as Custer et al. (2007) make clear, these professional development offerings must be multifaceted, research-backed, and standards based in order to be most effective.

Research suggests that teachers often struggle to make meaningful connections across the STEM disciplines as well as humanities disciplines, which results in fragmented, disjointed learning experiences for students (Kelley & Knowles, 2016). To better prepare students for the complexity of the modern world, it is important that learners engage in a cohesive, integrative STEM curriculum that will equip them for real-world application of their skills and knowledge (Friedman, 2005; Kelley & Knowles, 2016). Thus, it is imperative that schools work to invest the money, time, and resources necessary to provide professional development opportunities to teachers that will enable them to facilitate quality STEM education programs across all subject areas (Avery & Reeve, 2013).

Classroom Management

Research has shown that teachers' ability to manage the behavior of students as well as their ability to organize their classroom effectively has a significant impact on students' educational outcomes (Oliver & Reschly, 2007). Thus, it is important that professional development is available to teachers to provide them support in these areas. Novice teachers often voice concerns with their ability to successfully mitigate disruptive behaviors of students (Browers & Tomic, 2000). In fact, studies have shown that teachers who struggle with classroom management are more likely to provide ineffective instruction, experience high levels of stress, and, ultimately, leave the profession (Berliner, 1986; Browser & Tomic, 2000; Espin & Yell, 1994; Ingersoll & Smith, 2003). While school leaders and educators alike recognize the importance of effective classroom management, all too often, new teachers report receiving inadequate training and support with regard to establishing positive, safe, and productive classroom environments (Baker, 2005; Siebert, 2005). Therefore, it is imperative that districts ensure that they allocate the time and resources needed to provide comprehensive professional

development centered around classroom and behavior management, should they wish to improve student outcomes (Oliver & Reschly, 2007).

Special Education

Legislative mandates and case law make clear the importance of ensuring that students with disabilities are provided the best possible education, through the use of research-based approaches (Cook et al., 2012). Nonetheless, research has shown that there is limited use of these evidence-based instructional practices, primarily because professional development geared towards special education teachers and topics is severely lacking (Cook & Schirmer, 2003; McLean et al., 2002; Snell, 2003). Research indicates that there is a lack of professional development centered around the use of assistive technologies, effective facilitation of co-teaching, assessment modification, and implementation of specialized interventions (Brock & Carter, 2015; Lourenco, 2015). Moreover, the literature suggests that special education instructors often use ineffective instructional practices because they are not familiar enough with nor confident enough in their ability to facilitate the practices that are validated by research (Burns & Ysseldyke, 2009). However, special education teachers are not the only ones who need support in this area; subject area secondary teachers also expressed that they feel unprepared to teach students with disabilities (Grskovic & Trzcinka, 2011). In addition, paraprofessionals, who work closely with students on day-to-day basis, typically receive little to no training, even on basic instructional strategies (Carter et al., 2009). The literature suggests that there is a great need for additional professional development centered around special education (Brock & Carter, 2015). Researchers also indicate that to assess the efficacy of these professional learning opportunities, one should examine the extent to which they equip educators with the skills and knowledge necessary to successfully facilitate instruction for students with disabilities

(Giangreco et al., 2001). Thus, school leaders must identify how they can effectively channel resources to better support their staff and students alike.

Differentiated Instruction

Tomlinson and Jarvis (2009) identify that "differentiation is an approach to curriculum and instruction that systematically takes student differences into account in designing opportunities for each student to engage with information and ideas and to develop essential skills" (p. 599). There is no doubt that it is challenging to teach students at such disparate levels, because this requires teachers to adjust their teaching strategies in an effort to support all learners equitably rather than using a one-size-fits-all approach (Hall et al., 2009). As Dixon et al. (2014) make clear, teachers must have professional development geared towards supporting their ability to understand variations in student learning and adapt their lessons to better support these various learning styles. Research illustrates that many teachers feel ill-equipped to differentiate instruction because they have not had sufficient training in how to do so without calling attention to student differences (Moon et al., 1995; Schumm & Vaughn (1992). Ultimately, professional development on differentiation can be widely varied as while it can include traditional workshops, it can also involve simply permitting teachers to observe one another in differentiate efforts, engaging in co-planning, or shared consultation of individual students' needs (Dixon et al., 2015).

Annual Assessment Literacy Training

Each year, students across the nation engage in a wide variety of annual standardized testing as well as other common assessments implemented at the school or district level. Research has shown that when teachers use these assessments to ground their classroom practices, student performance is positively impacted (Volante, 2005). To date, many educators

report not receiving professional development training on assessment usage and have articulated a need for additional learning opportunities centered around using these annual assessments to inform their instruction (Jones, 2004). The literature suggests that if teachers receive assessment literacy training, they can help better prepare students for annual assessments so as to bolster student progress and ensure that these benchmarks better reflect student learning (Popham, 2003; Stiggens, 2002). Unfortunately, research has shown that the majority of standardized testing regimes and other annual tests "do not provide teachers with professional development related to the testing process or precise feedback on the performance of their results" (Volante, 2005, p. 4). However, while this type of professional development can help student learning, it can also hinder it. Some teachers who engage in professional learning centered around annual assessments simply end up "teaching to the test" (Popham, 2001, para. 1), which has been shown to have little effect on students' learning (Neil, 2003). After all, going to this extreme will narrow the curriculum and prevent innovative, engaging lessons aimed at preparing students for the world at large (Linn, 2000). Thus, while it is helpful for teachers to engage in professional development in about annual assessments in some capacity, this professional learning must emphasize that teachers should not resort to simply doing test prep activities all year for this will negatively impact the quality of students' learning experiences (Popham, 2001; Stiggins & Conklin, 1992; Volante, 2005).

Analyzing Data

Research by Lewis et al. (2010) makes clear that "with appropriate analysis and interpretation of data, educators can make informed decisions that positively affect student outcomes" (para. 1). However, many teachers report having little to no training in how to use the data collected from standardized assessments or classroom level assessments to inform their

instruction (Jones, 2004; Volante, 2005). For teachers to better identify, communicate, and meet students' needs, educators must have access to professional development centered around this topic (Cimbricz, 2002; Popham, 2003). School leaders must recognize that without sufficient support with regard to interpreting assessment results and tailoring instruction accordingly, teachers will struggle to address gaps in student learning (Lewis et al., 2010; Volante, 2005). Nonetheless, the research suggests that when teachers do receive training in how to analyze and capitalize on student data, they are able to better formulate useful activities and assignments to ameliorate gaps in student learning (McMillan, 2000).

Summary of Professional Development Focus Areas

Ultimately, there are a wide variety of focus areas that professional development is commonly centered around including content area, technology, classroom management, special education, differentiated instruction, annual assessments, and data analysis. Based on the available research, I hypothesize that the focus area of professional development will positively predict (a) teachers' perception of professional development relevancy and, in turn, (b) whether teachers incorporate their learning in the classroom (Hypothesis 2a and 4b, respectively). Specifically, I predict that content area and technology PD will be perceived as most relevant given their applicability to every teacher nationally (Hypothesis 2a.1 and 2a.2, respectively). Moreover, I predict that teachers of consistently tested subject areas, such as mathematics and language arts, will perceive annual assessments professional development to be most relevant (Hypothesis 3a). I also predict that classroom management professional development will be perceived as more relevant for novice teachers with under five years of teaching experience (Hypothesis 3b) given the fact that the research suggests that early career teachers struggle with

classroom management (Berliner, 1986; Browser & Tomic, 2000; Espin & Yell, 1994; Ingersoll & Smith, 2003).

Teacher Implementation of Professional Development

The research shows that very few teachers make meaningful or immediate changes to their classroom instruction as a result of professional development (Guskey 1985; Guskey, 1991). This is concerning given the fact that schools across the nation spend upwards of $18 billion annually on professional development opportunities and teachers spend nearly 90 hours each year on various professional learning opportunities (Bill & Melinda Gates Foundation, 2014). Many teachers feel that current professional development opportunities are ineffective and irrelevant and thus are less likely to change their instructional practices (Bill & Melinda Gates Foundation, 2014; Darling-Hammond, 2016; Flores, 2005; Guskey, 1995; Jacob & McGovern, 2015; Tate, 2009;). Research suggests that this is, in part, because they do not receive sustained professional development on any one topic, but rather engage with myriad topics (Guskey & Yoon, 2009; National Science Foundation, 2010; Yoon et al., 2007). After all, it takes over 30 hours for teachers to master new techniques, and subsequently feel confident in their ability to implement said techniques (Joyce & Showers, 1995). Moreover, teachers often lack access to sufficient resources to engage in high-cost professional development opportunities (Garcia & Weiss, 2019; NCES, 2016). With all the money currently being funneled into professional development offerings (Bill & Melinda Gates Foundation, 2014; Jacob & McGovern, 2015; Wei et al., 2009), and all the time teachers spend on professional development each year (Darling-Hammond, 2016), it is important for school administrators and policy makers alike to reflect on these expenditures to ensure that they are channeling resources into

professional development opportunities that will lead to teacher implementation of professional development (Adey, 2004), and therefore, improved student outcomes.

Conclusion

Overall, it is clear that professional development can not only improve teaching practices (Garet et al., 2008; Garet et al., 2010), but also positively impact student achievement (Hattie, 2003; Rice, 2003; Sanders & Rivers, 1996). The literature suggests that insufficient resources negatively impact teachers' implementation of PD as does PD that is unrelated to teachers' day-to-day responsibilities (Darling-Hammond et al., 2017; Garcia & Weiss, 2019; Jacob & McGovern, 2015). As such, in this study, I endeavor to examine the extent to which release time and financial compensation positively predict teachers' resource satisfaction and the extent to which PD focus area and format positively predict teachers' perceptions of PD relevancy. Moreover, I aim to examine how teachers' resource satisfaction and perceptions of PD relevancy impact teacher implementation of PD.

CHAPTER III: METHODOLOGY

This chapter presents an overview of this study's methodology and begins with an introduction to the research design and specific techniques used before providing a detailed account of the participants and sampling used. Subsequently, the chapter discusses how the data was collected and by whom as well as the methods of analysis used. Following this, I will discuss the strategies used to ensure the credibility and validity of the data, before ultimately engaging in a discussion of this study's limitations.

Introduction

The present study builds on past research centered around professional development by providing insight to the extent to which financial compensation and release time influence teachers' resources satisfaction as well as how the focus and format of professional development impacts teachers' perceptions of its usefulness and relevance. In doing so, the study contributes knowledge of how teachers' perceptions of professional growth resources and professional development relevancy, respectively, contribute to their incorporation of professional learning within the context of their classrooms. Ultimately, in this study, I sought to examine the factors that impact teacher implementation of professional development. Specifically, I asked:

1. To what extent does release time and financial compensation predict whether teachers perceive to have sufficient resources for their professional growth?

    H_{1a}: There is a relationship between release time and teachers' resource satisfaction.

    H_{1b}: There is a relationship between financial compensation and teachers' resource satisfaction.

2. To what extent does PD format and PD focus area predict whether teachers perceive PD to be relevant?

   H_{2a}: There is a relationship between each respective PD format and teachers' perception of PD relevancy. Specifically, the strongest of these relationships will be found for co-planning ($H_{2a.1}$), mentorship programs ($H_{2a.2}$), and collaboration on issues of instruction ($H_{2a.3}$).

   H_{2b}: There is a relationship between each respective PD focus area and teachers' perception of PD relevancy. Specifically, strong relationships will be found for content area PD ($H_{2b.1}$) and technology PD ($H_{2b.2}$).

   H_{3a}: Annual assessment professional development will interact with teacher subject area on perceptions of PD relevancy, such that annual assessment PD will more strongly predict perceived relevancy for teachers of tested subject areas, relative to teachers of non-tested subject areas.

   H_{3b}: Classroom management professional development will interact with teacher experience on perceptions of PD relevancy, such that classroom management PD will more strongly predict perceived relevancy for novice teachers, relative to teachers with greater experience.

3. To what extent do teachers' perceptions of whether they have sufficient resources for their professional growth and teachers' perceptions of PD relevancy predict teacher incorporation of professional development in the classroom?

   H_{4a}: There is a relationship between teachers' resource satisfaction and teachers' implementation of PD.

H_{4b}: There is a relationship between teachers' perception of PD relevancy and teachers' implementation of PD.

Research Design

Ultimately, this study endeavored to determine how teachers' resource satisfaction, time spent in professional development, and perceptions of professional development impact their implementation of their professional learning. As such, a quantitative approach was appropriate for this study as it provided insight to the strength of the relationships between these respective variables. A correlational analysis was used to determine the extent to which these factors are related to teacher implementation of their professional learning (Privitera, 2016).

Participants and Sampling

The participants of this study include teachers who responded to the Teacher Questionnaire that was distributed as a part of the 2017-2018 National Teacher and Principal Survey conducted by the U.S. Department of Education. The sampling of this study consists of teachers from eligible public, charter, and private schools. To be deemed eligible for participation in this study, the school needed to provide instruction to students in grades 1-12, have one or more teacher, and be located in a building that was detached from a private home (U.S. Department of Education, NCES-NTPS). All 14,600 schools selected to be a part of the NTPS sample then provided a list of teachers, both full-time and part-time, who were contacted to complete the teacher questionnaire. To incentivize teachers to complete the survey, a $5 incentive was offered by the U.S. Department of Education. Teachers at schools considered to be priority schools, those institutions that researchers struggled to get data from during previous administrations of this survey, were offered an incentive of $10. In total, the sample consisted of 60,000 public school teachers and 9,600 private school teachers (U.S. Department of Education,

NCES-NTPS). The response rate for public school teachers was 67% and the response rate for private school teachers was 53.9%. Teachers were only included in the sample of the original study if they responded to 85% or more of the items within the survey.

For the purposes of the current study, any respondent who was not a full-time teacher was dropped from the dataset as was any respondent who indicated that they did not participate in professional development on the survey. This decision was made because districts typically only mandate professional development for full-time teachers, and if individuals have not engaged in professional development, they would not have data for the independent variables of interest. Moreover, because there is a great deal of variation in the grades that comprise elementary and middle schools across the United States, I excluded respondents who indicated that they do not teach high school, which consistently represents grades 9 - 12. I also excluded any respondent who failed to respond to one or more of the survey questions and thus had missing data.

Data Sources & Data Collection

This study used archival data collected from the 2017-2018 National Teacher and Principal Survey conducted by the U.S. Department of Education. While the original survey consisted of six questionnaires, only data collected from the Teacher Questionnaire was used to answer the research questions of the current study. The original survey gathered information with regard to the following: (1) teachers' general information, (2) class organization, (3) teacher education and training, (4) teacher certification, (5) teacher evaluations, (6) teacher professional development, (7) teacher engagement, (8) general employment and background information, (9) feedback and teacher strategies, and (10) teacher contact information (see Appendix A). Because this study was primarily concerned with professional development, only sections 1, 2, 3, 6, and 8 were used for the purposes of data collection and analysis. Section 1-1 of the survey, which

centered around teachers' general information, was used to determine whether a teacher was a regular full-time teacher, section 1-6 was used to identify whether a teacher served in a public or private school, and section 1-9 was used to identify teachers' years of experience. Additionally, section 2-1 was used to determine grade level and section 2-4 was used to determine respondent's teaching assignment. Section 3-2a was used to identify whether a respondent held an advanced degree, section 8 was used to gather demographic and other ancillary information about respondents including their gender (8-11), race (8-13/8-14), salary (8-3), and age (8-14), and section 10-1 was used to gather information about respondents' respective regions. Information regarding teachers' experiences with and perceptions of professional development was gathered from section 6 of the survey. To gain access to this data set, I applied for a Restricted-use Data License through the National Center for Education Statistics.

Measures

Professional Development Format

Participants completed several binary questions regarding which types of professional development formats they either did (1) or did not engage in over the past 12 months (0; questionnaire section 6-1). These formats included planning lessons or courses with other teachers (co-planning), consulting with other teachers about individual students (collaborative consultation), collaborating on issues of instruction, serving as a mentor, receiving mentoring, participating in online professional development, attending a workshop, and attending a conference. Each format category was used as a separate predictor.

Professional Development Focus

This multicategorical variable reflects the following binary, categorical variables, each of which indicates whether teachers participated in professional development in the past 12 months

centered around one or more of the identified focus areas (1) or did not (0), as per their questionnaire responses (6-2): professional development directly related to one's teaching assignment (content area PD), using technology to support instruction (technology PD), teaching Science, Technology, Engineering, or Mathematics or incorporating STEM into other subjects (STEM PD), classroom and behavior management (classroom management PD), instruction strategies to teach students with disabilities or IEPs (special education PD), differentiated instruction for all students (differentiated instruction PD), preparing students to take annual assessments (annual assessment PD), analyzing and interpreting student achievement data (analyzing data PD). Each format category will be used as a separate predictor.[2]

Perceived PD Relevance

This continuous variable is a scale of teachers' perception of whether the professional development the teacher participated in during the last 12 months was relevant to their teaching assignment (6-3). This four-point Likert scale included (1) Did not complete any professional development in the past 12 months, (2) Not relevant at all, (3) Somewhat relevant, and (4) Very relevant. Higher values on this scale indicate greater relevance to the respondent's assignment.

Received Release Time

This binary, categorical variable was taken from teachers' questionnaires (6-6 a.), and indicates whether teachers received release time from teaching to attend professional development in the past 12 months (1) or did not receive release time (0).

[2] Throughout the remainder of this dissertation, I will use shorthand for these variables for the sake of concision. If you would like additional information, please contact me via email.

Received Financial Compensation

This binary, composite variable was created from teachers' questionnaire responses (6-6 b-e) and indicates whether teachers received funding, stipends, or reimbursement for professional development activities in the past 12 months (1) or did not receive funding (0). If teachers indicated that they received any funding for questions 6-6.b-6-6.e, they were coded as yes (1) for financial compensation, and if teachers indicated that they did not receive funding for all four questions, they were coded as no (0). For the purposes of this study, financial compensation indicates that teachers were given financial compensation for professional development in the form of funding or reimbursement for conference or workshop costs, travel and daily expenses, college courses, or professional development activities that took place outside of their regular work hours.

Resource Satisfaction

This continuous variable is a scale of teachers' perception (6-7a.) of whether they have sufficient resources available for their professional development. Teachers were asked to indicate the extent to which they agreed or disagreed with the following statement about their professional development at their school: I have sufficient resources available for my professional development. This four-point Likert scale ranged from Strongly Disagree (1) to Strongly Agree (4). Higher values on this scale indicate greater satisfaction with the resources available for their professional development.

Incorporation of PD

This continuous variable is a scale of teachers' incorporation (6-4 a.) of the extent to which teachers incorporated what they learned in professional development into their teaching over the past 12 months. This four-point Likert scale ranged from Never (1) to Always (4).

Higher values on this scale indicate more frequent incorporation of professional development learning.

Control Variables

Tested Subject

This binary categorical variable was taken from teachers' questionnaires (2-4) and indicates whether teachers' main teaching assignment at the school is tested (1) or non-tested (0). All teachers who indicated that they taught courses under the Mathematics and Computer Science, English and Language Arts, or English as a Second Language subheadings were coded as tested (1), while all others were coded as non-tested (0).

Years Experience

This continuous variable indicates how many school years the respondent has worked, either full time or part time as a K-12 or ungraded level teacher in a public, public charter, or private school.

Degree

This categorical variable was taken from teachers' questionnaires (3-3) and indicates the highest degree earned by the respondent: (1) Associate's degree or no college degree, (2) Bachelor's degree, (3) Master's degree, (4) Education specialist or Certificate of Advanced Graduate Studies, or (5) Doctorate or Professional degree.

Salary

This continuous variable was taken from teachers' questionnaires (8-3) and identifies the respondent's base teaching salary for the entirety of the current school year.

Female

This binary, categorical variable was taken from teachers' questionnaires (8-11) and indicates whether the respondent is female (1) or male (0).

Race

This multicategorical variable reflects the following binary, categorical variables, each of which indicates whether the respondent identifies as a race (1) or does not (0) per their questionnaire responses (8-13, 8-14). Respondents were able to mark one or more of the following races to indicate what they consider themselves to be: White, Hispanic, Black or African American, Asian, Native Hawaiian or Other Pacific Islander, and American Indian or Alaskan Native.

School Type

This binary categorical variable reflects whether the respondent's school is public (1) or private (0).

School Region

This multicategorical variable reflects the following binary, categorical variables, which indicate whether the respondent's current school is in a region (1) or not (0). Regions include Northeast, South, West, and Midwest.

School Locale

This multicategorical variable reflects the following binary, categorical variables, which indicate whether the respondent's current school is in the locale (1) or not (0). Locales include Suburb, Town, Rural, and City.

Percent Free and Reduced Price Lunch

This continuous variable indicates the percentage of students at the respondent's school who receive free and reduced prince lunch.

Data Analysis

In this study, I used a correlational analysis to investigate the relationships between the variables of interest in each question. In order to ensure that the teachers included in the sample of this study represent the population at large, weighting adjustments were made using information from the Teacher Listing Forms collected at the school and teacher levels. Nonresponse adjustments were also made in an attempt to reduce and eliminate nonresponse bias to the greatest extent possible (Institute of Education Sciences, 2020). To improve the precision of survey estimates, a ranking factor was calculated using the Teacher Data Files and adjusted to the Common Core of Data (CCD) frame totals for Full Time Equivalent teachers "so that the sum of the weights within each of the specified cells [was] equal to the corresponding CCD frame total for the cell…A tree search algorithm [was] used to define the adjustment cells" (Institute of Education Sciences, 2020, p. B-14). For each research question, I estimated a multiple regression model and controlled for several factors to estimate and isolate their impact from the independent variables of interest. I discuss the analyses for each research question in turn.

For research question one, I sought to examine the impact of release time and financial compensation on teachers' perception of professional development resource sufficiency. Therefore, my main variables of interest were *release time*, *financial compensation*, and *resource satisfaction*. In the multiple regression model for research question one, the primary variables that I controlled for were *tested subject*, *years of experience, highest degree earned, salary,*

gender, race, school type, school region, school locale, and the percentage of students receiving free and reduced priced lunch By controlling for factors such as these, I ensured that the coefficient was more representative of the actual relationship between my dependent variables and independent variables. Research has shown that the most common focus of professional development is teachers' subject areas, which is more applicable for secondary teachers given their certifications are content-area specific (Rotermund et al., 2017). As per the Every Student Succeeds Act (2015), each state must administer a statewide assessment in reading/language arts and mathematics for students in grades 9-12. Likewise, under ESEA (2015) all students identified as English Language Learners must participate in an annual English Language Proficiency assessment. Because English, mathematics, and English as a Second Language are tested for federal accountability purposes, these teachers often engage in additional professional development to ensure students are prepared for these assessments and it is important to control for these differences. Moreover, the literature suggests that novice teachers receive more professional development training than more experienced teachers (Pruitt & Wallace, 2012; Weisling & Gardiner, 2018) and that only limited numbers of teachers are able to gain access to high-access professional development like university courses related to teaching because not all districts provide teachers funding if they wish to pursue an advanced degree (Garcia & Weiss, 2019). In addition, because teachers' compensation is related to their level of education and the research indicates that there is a relationship between teachers' salary and their access to high quality professional development (Will, 2019), this was controlled for as well. Because state professional development requirements vary greatly (Jacob & McGovern, 2015) and many private schools do not mandate professional development (U.S. Department of Education, 2009), I also controlled for these variables. I controlled for race and gender as well because the research

indicates that teachers from traditionally marginalized communities tend to teach in urban settings with fewer resources to aid their professional growth (Sanders & Rivers, 1996) and that there are marked differences in teachers' views and use of professional development by gender (Gino et al., 2015; Schneider, 2013). It is also important to control for school region as professional development requirements vary from one region to the next (Loeb et al., 2009) and school locale because this can impact funding for and access to professional development, particularly for those individuals living in rural communities (Thorne Wallington & Johnson, 2022). Finally, I controlled for the percentage of students who receive free and reduced-price lunch within a school because as per Title I, Part A of ESEA (2015), schools in which at least 40 percent of the student population consists of children from low-income families are eligible for Title I funding. This funding can be used to cover the costs of professional development to better support the needs of these students. By controlling for these aforementioned variables, I hoped to isolate their impact and ensure my main coefficients of interest for each model were measuring the relationships I am interested in as accurately as possible.

For research question two, I sought to examine the impact of PD focus area and format on teachers' perceptions of PD relevancy. In this case, my main variables of interest were PD format, PD focus area, and PD relevance. Finally, for research question three, I sought to examine the impact of teachers' resource satisfaction as well as teachers' perceptions of professional development relevancy on teachers' incorporation of their professional learning. As such, my main variables of interest were resource satisfaction, perceived PD relevance, and teacher incorporation. In my regressions for research question two and three, I controlled for the same variables that were controlled for in research question one's regression model.

Research Question 1

To answer my first research question, I estimated a multiple linear regression to control for factors that may impact both teachers' receipt of release time and financial compensation as well as their resource satisfaction such as tested subject areas, teaching experience, whether a teacher possessed an advanced degree, teacher salary, teacher gender, and teacher race. This model is represented by Equation 1:

$$Satisfaction = \beta_0 + \beta_1 Release + \beta_2 Compensation + \beta_3 Tested + \beta_4 Experience + \beta_5 Degree + \beta_6 Salary + \beta_7 Female + \boldsymbol{\beta_8 Race} + \beta_9 SchoolType + \boldsymbol{\beta_{10} SchoolRegion} + \boldsymbol{\beta_{11} SchoolLocale} + \beta_{12} PctFRPL + \varepsilon$$

For this multiple regression, resource satisfaction was the dependent variable and release time, compensation, tested subject area, teaching experience, advanced degree, teacher salary, female, Hispanic/Latinx, Black, Asian, Pacific Islander, and American Indian were the independent variables. A statistically significant beta coefficient for release time when examining teachers' resource satisfaction would indicate support for Hypothesis 1a. A statistically significant beta coefficient for financial compensation when examining teachers' resource satisfaction would indicate support for Hypothesis 1b.

Research Question 2

To answer my second research question, I estimated a model similar to Equation 1 where *PDRelevance* was the dependent variable and the various PD focus areas and types of PD activities were the independent variables of interest. This model estimated the relationship between teachers' perceptions of professional development relevance in relation to the focus area and format of professional learning. This model is represented by Equation 2:

$$PDRelevance = \beta_0 + \boldsymbol{\beta_1 PDFormat} + \boldsymbol{\beta_2 PDFocus} + \beta_3 Tested + \beta_4 Experience + \beta_5 Degree + \beta_6 Salary + \beta_7 Female + \boldsymbol{\beta_8 Race} + \beta_9 SchoolType + \boldsymbol{\beta_{10} SchoolRegion} + \boldsymbol{\beta_{11} SchoolLocale} + \beta_{12} PctFRPL + \varepsilon$$

$$PDRelevance = \beta_0 + \beta_1 AnnualAssessmentsPD + \beta_2 Tested + \beta_3 (AnnualAssessmentsPD * Tested) + \varepsilon$$

$$PDRelevance = \beta_0 + \beta_1 ClassroomManagementPD + \beta_2 Experience + \beta_3 (ClassroomMangagementPD * Experience) + \varepsilon$$

For the purposes of this study, the following binary, composite variables were used to represent whether teachers participated in each type of professional development: *CoPlanning*, *Consultation*, *Collaboration, Mentored, ReceivedMentoring, OnlinePD, AttendedWorkshop,* and *AttendedConference*. In the regression model above, these are represented by the variable *PDFormat*. Likewise, the following binary, composite variables were used to represent whether teachers participated in each professional development focus area: *ContentAreaPD, TechnologyPD, STEMPD, ClassroomManagementPD, SpecialEducationPD, DifferentiatedInstructionPD, AnnualAssessmentsPD,* and *AnalyzingDataPD*. In the regression model, these are represented by the variable *PDFocus*. The same variables were controlled for in this regression as in the regression for research question 1. A statistically significant beta coefficient for co-planning, receiving mentoring, or collaboration on issues of instruction when examining teachers' perceptions of PD relevancy would indicate support for Hypotheses 2a.1-2a.3. A statistically significant beta coefficient for content area PD and technology PD when examining teachers' perceptions of PD relevancy would indicate support for Hypotheses 2b.1-2b.2.

Hypothesis 3a would be initially supported if I found a significant beta coefficient for the interaction term between annual assessment PD and tested/non-tested subject area on PD relevancy, and Hypothesis 3b would be initially supported if I found a significant beta coefficient for the interaction term between classroom management PD and early/later career stage on perceptions of PD relevancy. Furthermore, if I found a significant beta coefficient for either or both of these two interaction terms, I would have probed each interaction using simple slopes analysis in order to examine the strength of relationships within each respective group.

Research Question 3

To answer my third research question, I estimated a model similar to Equations 1 and 2, where *IncorporationofPD* is the dependent variable and *Satisfaction* and *PDRelevance* are the independent variables of interest. This model estimated the relationships between teachers' implementation of professional development in relation to teachers' resource satisfaction as well as perception of professional development relevance. This model is represented by Equation 3:

$$IncorporationofPD = \beta_0 + \beta_1 Satisfaction + \beta_2 PDRelevance + \beta_3 Tested + \beta_4 Experience + \beta_5 Degree + \beta_6 Salary + \beta_7 Female + \boldsymbol{\beta_8 Race} + \beta_9 SchoolType + \boldsymbol{\beta_{10} SchoolRegion} + \boldsymbol{\beta_{11} SchoolLocale} + \beta_{12} PctFRPL + \varepsilon$$

Again, the same variables were controlled for in the regression for question 3 as were controlled for in the regressions for questions 1 and 2. A statistically significant beta coefficient for resource satisfaction when examining teachers' implementation of PD would indicate support for Hypothesis 4a. Likewise, a statistically significant beta coefficient for perceived PD relevance when examining teachers' implementation of PD would indicate support for Hypothesis 4b.

Validity & Credibility

The secondary data used for the purposes of this study was collected by the U.S. Department of Education, and thereby analyzed by the U.S. Census Bureau and the National Center for Education Statistics, two reputable professional organizations. To ensure a high response rate, teachers were sent mailings, and field follow-ups and telephone calls were used to remind staff to complete the necessary forms (U.S. Department of Education, 2018). As a result of these efforts, this study features a large sampling size and a rigorous sampling approach was used to ensure that the sample was nationally representative. After all data was collected, a computer program conducted various quality control checks to ensure that there was sufficient data to be included in the dataset. The National Center for Education Statistics has a strong reputation and is known to

"provide consistent, reliable, complete, and accurate indicators of education status and trends; and report timely, useful, and high-quality data to the U.S. Department of Education" (Institute of Education Sciences, 2020). The National Center for Education Statistics and the U.S. Census Bureau have a long-standing history of creating strong survey instruments (Institute of Education Sciences, 2020). Given the credibility of the organizations responsible for collecting and analyzing the secondary data used for the purposes of this study, it is reasonable to conclude its validity and credibility. Finally, as none of the Variance Inflation Factors (VIF) in the analyses exceeded 3, there is little concern for multicollinearity.

Limitations

One of the primary limitations of this study is that it used data collected from 2017-2018, which was before the global COVID-19 pandemic created sweeping changes to education. As such, while it provides insight as to what worked prior to COVID-19, it is an open question as to whether the relationships between the main variables of interest in each model would be the same today, given the changing state of education. With the advent of online and hybrid learning, it is likely that teachers' perceptions of professional development related to technology has shifted due to their increased reliance on it to facilitate their daily instruction. Moreover, due to the fact the U.S. Department of Education's 2017-2018 Teacher Questionnaire (see Appendix A) was limited in its scope, it was not able to gather information about other factors that could impact teacher implementation of professional development including, but not limited to, whether the professional development teachers participated in was mandated or self-selected, the total number of hours teachers spent in professional development over the course of the year, and whether the professional development was offered within or outside of their district. Likewise, because the data regarding implementation of PD was self-reported, the findings may be subject

to response bias as teachers may have been inclined to respond favorably to questions in an effort to make themselves look good. However, because the questions are worded in neutral manner and the answer choices are not leading, this works to reduce the impact of response bias. Finally, because this was not a longitudinal study, it does not provide insight to how teachers' perceptions may have changed over time. Future studies can expand upon the current findings by not only studying teachers over a longer period of time, but also exploring the extent to which teacher implementation of professional development impacted their overall performance, as evidenced by teachers' yearly evaluations.

CHAPTER IV: RESULTS

This chapter shares the results of the analyses conducted in five sections, beginning with an introduction and overview of the collected data. All coefficients presented in the tables within this chapter are standardized. For all regression analyses, a conservative VIF threshold of 2.5 was used to detect collinearity (Johnston et al., 2018). Each model's variance inflation factors fell under this threshold thus indicating that multicollinearity is not a significant concern and that the regression models are reliable. I used Bosco et al.'s (2015) benchmarks for correlational effect sizes throughout. For correlation coefficients related to teachers' perceptions of professional relevance and teachers' resource satisfaction, Bosco et al.'s (2015) attitude-attitude benchmark were utilized: r<.18 indicates a small effect size, .19 ≤ *r* ≥.39 indicates a medium effect size, and r>.39 indicates a large effect size. For correlation coefficients related to teacher implementation of professional development, Bosco et al.'s (2015) attitudes-intentions benchmarks were utilized: *r*<.19 indicates a small effect size, .19 ≤ *r* ≥.37 indicates a medium effect size, and *r*>.37 indicates a large effect size. The final three sections review the findings with regard to each research question.

Overview of Data

This study uses archival data from the 2017-2018 National Teacher and Principal Survey conducted by the U.S. Department of Education. Any respondent who indicated that they were not a full-time teacher, did not teach high school, or did not participate in professional development in the past 12 months was excluded from the dataset used for this study. To comply with the Institute of Education Science's regulations, all unweighted sample size numbers reported in this chapter have been rounded to the nearest 10 and their corresponding percentages

were adjusted to provide disclosure protection. After dropping the respondents mentioned above, 14,460 survey responses were included for use in this quantitative study.

Table 1 contains information regarding study participants' demographics. The demographic breakdown of participants in the final sample are mostly similar to those in the broader dataset and are comparable to estimates from Pew Research (Schaeffer, 2021; U.S. Department of Education, 2018). With that said, the final sample for this study consists of a greater percentage of individuals who identified as White than those in the broader population (90% compared to 80%, respectively). In the survey, respondents were asked to identify one or more races that they identify with. Based on the responses collected, 90.4% identified as White, 8.0% identified as Hispanic, 6.6% identified as Black, 3.5% identified as Asian, .8% identified as Native Hawaiian/Pacific Islander, and 1.9% identified as American Indian/Alaska Native. In addition, 58.2% of the respondents identified as female and 41.8% identified as male. The participating teachers also indicated their highest degree earned. 4.3% earned an associate's degree or no college degree, 34.1% earned a Bachelor's degree, 52.% earned a Master's degree, 7.2% earned an Educational Specialist degree or certificate, and 2.4% earned a Doctorate or professional degree. 31.8% stated that their primary teaching assignment was a tested subject area.

Table 1. Study Participants' Demographic Information

	Frequency (N=14460)	Percent of Sample
Race/Ethnicity		
White	13,070	90.4%
Hispanic	1,160	8.0%
Black	950	6.6%
Asian	510	3.5%
Native Hawaiian/Pacific Islander	120	0.8%
American Indian/Alaskan Native	270	1.9%
Sex		
Female	8,410	58.2%
Male	6,050	41.8%
Education Level		
Associate's Degree or No College Degree	620	4.3%
Bachelor's Degree	4,930	34.1%
Master's Degree	7,520	52.0%
Education Specialist or Certificate	1,040	7.2%
Doctorate or Professional Degree	340	2.4%
Subject Area		
Tested Subject Area	4,600	31.8%
Non-Tested Subject Area	9,850	68.1%

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), "Public School Teacher and Private School Teacher Data Files," 2017–18.

Table 2 contains descriptive statistics of the respondents' schools. 88% of respondents indicated that they are employed in a public school and 12% are employed in a private school. Based on the regional information collected from the survey, 22.1% of the participants worked in the Northeast, 33.2% worked in the South, 22.9% worked in the West, and 21.8% worked in the

Midwest. State regional designations align with those identified by the United States Census Bureau (2021). Moreover, 30.9% reported working in a city, 37.3% worked in a suburb, 13.4% worked in a town, and 17.6% worked in a rural setting.

Table 2. Study Participants' School Information

	Frequency (N=14460)	Percent of Sample
Teaching Placement		
Public School Teacher	12,730	88%
Private School Teacher	1,730	12%
School Region		
School is in the Northeast	3,200	22.1%
School is in the South	4,800	33.2%
School is in the West	3,310	22.9%
School is in the Midwest	3,150	21.8%
School Locale		
School is in a City	4,470	30.9%
School is in a Suburb	5,400	37.3%
School is in a Town	1,940	13.4%
School is in a Rural Setting	2,550	17.6%

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), "Public School, Private School, Public School Teacher, and Private School Teacher Data Files," 2017–18.

Table 3 provides additional descriptive statistics regarding the participants and their respective schools. The mean number of school years taught by participants is 14.14 and the mean age of respondents is 43.10. mean school year salary is 58,055.47. Table 3 also provides information regarding the mean percentage of students within the respondents' school who qualified for free and reduced-price lunch (FRPL), which was 42.36%.

Table 3. Descriptive Statistics of Participants and Their Schools

	Minimum	Maximum	Mean	Standard Deviation
School Years Taught	1	60	14.14	9.664
Age	20	100	43.10	11.549
School Year- Base Salary	0	185,000	58,055.47	18323.368
% of Students Eligible for FRPL	0	100	42.36	33.123

Note: N=14460
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), "Public School, Private School, Public School Teacher, and Private School Teacher Data Files," 2017–18.

Research Question 1

Research question 1 sought to determine whether financial compensation and release time predict teachers' resource satisfaction. Respondents indicated whether they received release time (6-6.a.) or financial compensation (6-6.b-e.). If a teacher received funding or reimbursement for attending conferences or workshops, travel or daily expenses, full or partial reimbursement of college tuition for courses, or stipends for professional development activities that took place outside of regular work hours, they were coded as having received financial compensation for the purposes of this study. Table 4 presents a summary of teachers' responses.

Table 4. Respondents' Reported Release Time and Financial Compensation

	Frequency (N=14460)	Percent of Sample
Received Release Time	8,900	61.6%
Did Not Receive Release Time	5,560	38.5%
Received Financial Compensation	7,990	55.3%
Did Not Receive Financial Compensation	6,460	44.7%

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), "Public School Teacher and Private School Teacher Data Files," 2017–18.

Based on the information reported, a hierarchical multiple regression model was run to control for other factors and ensure that the coefficient is more representative of the actual relationship between my dependent and independent variables. In the first model, the dependent variable was teachers' perception of professional development resource sufficiency and the variables controlled for were teachers of tested subjects, years of teaching experience, highest degree earned, school year base salary, gender, race, school type, school region, school locale, and the percentage of students who qualified for free and reduced priced lunch. The second model included the same dependent and control variables, but also included two independent variables of interest: teachers' receipt of release time and financial compensation. Table 5 identifies the means for Model 1 and Model 2 as well as the R-square value for each model.

Model 1A

Based on the R-square results for Model 1A, which are included in Table 5 below, 1.7% of variation in teachers' resource satisfaction can be explained by whether educators teach a tested subject as well as teachers' years experience, highest degree earned, school year base salary, gender, race, school type, school region, school locale, and the percent of students at the school who qualified for free and reduced price lunch. The p-values in Table 5 identify that there are statistically significant relationships between school years taught, teachers with Master's degree, teachers' with an education specialist degree or certificate, school year base salary, gender, Native Hawaiian/Pacific Islander teachers, American Indian/Alaskan Native teachers, suburb, town, Midwest, South, percentage of students receiving free and reduced price lunch, and school type and the dependent variable, teachers' resource satisfaction. Respondents with greater years of teaching experience and more education as well as teachers who identified as female, Hawaiian/Pacific Islander, American Indian/Alaskan Native, and those with large

percentages of students who qualify for free and reduced price lunch reported lower levels of resource satisfaction. Respondents with higher teaching salaries as well as those who identified that they worked in a suburb, town, the Midwest, South, or a public school identified higher levels of resource satisfaction.

Model 1B

After accounting for receipt of release time and compensation, the reported R-square result for Model 1B identifies that 6.5% of the variation in teachers' resource satisfaction can be explained by the control variables as well as these two independent variables: receipt of release time and receipt of financial compensation. The R-square change from the first model was 4.8%, which means these two variables, when added, explained unique variance in the dependent variable (teachers' resource satisfaction) that was not already explained by the control variables. Supporting hypothesis 1a and 1b, the data suggests that participants were more satisfied with the resources available to them when provided release time (β=.117, p<.001) and financial compensation (β=.148, p<.001). Holding all else constant, higher levels of release time result in greater resource satisfaction and higher levels of financial compensation result in greater resource satisfaction. The effect size for resource satisfaction was β=.193, which indicates a medium effect size (Bosco et al., 2015, p. 433). While this is a small relationship, it is a conservative finding because to create these variables, I had to collapse several questions regarding financial compensation. Thus, there could be stronger effects. The results of this hierarchical multiple regression support hypothesis 1a and 1b, illustrating that schools should reflect on how they can coordinate substitutes and duty coverages to provide instructors release time from teaching to attend professional development. Likewise, they should consider how they can allocate budget lines to ensure teachers receive funding or reimbursement to attend

conferences and workshops, to travel for professional development, enroll in college courses, or receive a stipend for professional development activities outside of their regularly contracted hours.

Table 5. Regression Model for Teachers' Resource Satisfaction

	Model 1A Beta	Model 1B Beta
Tested Subject	.010	.014
School Years Taught	-.040***	-.023*
Associate's Degree or No College Degree	-.006	-.011
Master's Degree	-.033***	-.033***
Education Specialist or Certificate	-.018*	-.021*
Doctorate or Professional Degree	-.011	-.011
School Year- Base Salary	.053***	.047***
Female	-.059***	-.065***
Hispanic	.001	-.001
Black	.012	.013
Asian	.016	.019*
Native Hawaiian/ Pacific Islander	-.018*	-.021*
American Indian/ Alaska Native	-.026**	-.027***
Suburb	.022*	.017
Town	.025**	.013
Rural	.015	.001
Midwest	.028*	.003
South	.066***	.060***
West	.017	-.004
% of Students FRPL	-.071***	-.068***
School Type (Public, Private)	.041***	.036***
Received Release Time	—	.117***
Received Financial Compensation	—	.148***
Sample Size	14460	14460
R-squared	.017***	.065***

Note: *p<.05, **p<.01, ***p<.001
The dependent variable is teachers' resource satisfaction. All coefficients presented in the table above are standardized.
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), "Public School, Private School, Public School Teacher, and Private School Teacher Data Files," 2017–18.

Research Question 2

Research question 2 sought to determine whether PD format and PD focus area predict teachers' perception of professional development relevancy. Respondents indicated how frequently they participated in each format of professional development (6-1). If an individual responded that they participated once or a few times a year, once or a few times a month, or once or a few times a week, they were coded as having participated in the given PD format. Likewise, respondents indicated how many hours they spent participating in each PD focus area (6-2). If an individual identified that they participated 8 hours or less, 9-16 hours, 17-32 hours, or 33 hours or more, they were coded as having attended PD for the focus area listed. Table 6 presents a summary of teachers' responses.

Table 6. Reported PD Format and Focus Area Participation

	Frequency (N=14460)	Percent of Sample
PD Format		
Co-Planning	12,850	88.9%
Collaborative Consultation	14,100	97.5%
Instruction Collaboration	13,830	95.6%
Mentored	9,410	65.1%
Received Mentoring	9,740	67.4%
Online PD	9,450	65.4%
Attended Workshop	13,170	91.1%

Attended Conference	9,660	66.8%
PD Focus Area		
Content Area PD	13,310	92.0%
Technology PD	12,950	89.6%
STEM PD	6,270	43.4%
Classroom Management PD	9,150	63.3%
Special Education PD	9,320	64.5%
Differentiated Instruction PD	11,220	77.6%
Annual Assessments PD	8,750	60.5%
Analyzing Data PD	10,380	71.8%

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), "Public School, Private School, Public School Teacher, and Private School Teacher Data Files," 2017–18.

Like with equation one, a hierarchical multiple regression model was run to control for other factors and obtain a coefficient that is more representative of the relationship between my dependent variable and independent variables. In the first model, the dependent variable was teachers' perception of PD relevance and the variables controlled for were teachers of tested subjects, years of teaching experience, highest degree earned, school year base salary, gender, race, school type, school region, school locale, and the percentage of students who qualified for free and reduced priced lunch. The second model included the same dependent and control variables, but also included the two composite independent variables of interest: PD format and PD focus area. Table 7 identifies the means for Model 2A and Model 2B as well as the R-square value for each model.

Model 2A

The R-Square results for 2A, included in Table 7 below, 2.3% of variation in teachers' perception of PD relevance can be explained by whether educators teach a tested subject as well

as teachers' years of experience, highest degree earned, school year base salary, gender, race, school type, school region, school locale, and the percent of students at the school who qualified for free and reduced price lunch. The reported p-values in Table 7 illustrate that there is a statistically significant relationship between school years taught, gender, Hispanic teachers, Black teachers, Asian teachers, South, and West and the dependent variable, teachers' perception of professional development relevance. Respondents who identified as female, Hispanic, Black, or Asian, as well as those who identified that they worked in the South or West reported higher PD relevance, relative to participants who were not from these groups. On the other hand, those teachers with greater years of teaching experience reported lower PD relevance.

Model 2B

Model 2B controlled for the following PD formats: co-planning, collaborative consultation, instruction collaboration, serving as a mentor, receiving mentoring, online professional development, attending a workshop, and attending a conference. Moreover, the model controlled for the following PD focus areas: content area, technology, STEM, classroom management, special education, differentiated instruction, annual assessments, and analyzing data. After accounting for these PD formats and PD focus areas, the reported R-square result for Model 2B identifies that 11.3% of the variation in teachers' perception of PD relevance can be explained by the control variables as well as the composite independent variables: PD format and PD focus. The R-square change from the first model was 9.0%, meaning that these two variables, when added, explained unique variance in the dependent variable (teachers' perceptions of PD relevance) that was not already accounted for by the control variables. Partially supporting hypothesis 2a, the data suggests that participants perceived PD as relevant when they engaged in one of the following formats: co-planning (β=.042, p<.001), collaborative consultation (β=.020,

p<.05), collaboration on issues of instruction (β=.028, p<.001), received mentoring (β=.067, p<.001), online professional development (β=.038, p<.001), attending a workshop (β=.033, p<.001), or attended a conference (β=.062, p<.001). Of the eight formats examined, only one format did not have a significant relationship with perceived PD relevancy, serving as a mentor. Holding all else constant, participation in each of these formats results in higher levels of perceived PD relevancy. While there is a small relationship between each of the aforementioned formats, it is a conservative finding because to create these variables, I had to collapse responses regarding teacher participation in each format. Thus, there could be stronger effects.

I originally hypothesized that each PD format would have a relationship with teachers' perception of PD relevancy, however the data suggests that there is not a statistically significant relationship between serving as a mentor and one's perception of PD relevancy. Moreover, I hypothesized that the largest of the relationships between PD format and teachers' perceived PD relevance would be found for co-planning ($H_{2a.1}$), receiving mentoring ($H_{2a.2}$), and collaboration on issues of instruction ($H_{2a.3}$). While this held true for co-planning (β=.042, p<.001) and receiving mentoring (β=.067, p<.001), the relationship for collaboration on issues of instruction (β=.028, p<.001) did not appear to be noticeably larger than the relationships between other formats and perceived PD relevance. In fact, the data revealed that conference attendance had one of the largest relationships with perceived PD relevance (β=.062, p<.001). The results of this hierarchical multiple regression partially support hypothesis 2a as well as hypothesis 2a.1 and 2a.2, and illustrate that teachers are more likely to perceive PD as relevant if it centers opportunities for teachers to engage in collaborative learning. Given these findings, schools should reflect on the formats of professional development available to teachers as well as the focus areas of professional learning opportunities.

Partially supporting hypothesis 2b, the data suggests that participants perceived PD as more relevant when they engaged in one of the following focus areas: content area (β=.167, p<.001), technology (β=.018, p<.05), STEM (β=.039, p<.001), classroom management (β=.048, p<.001), special education (β=.022, p<.05), and differentiated instruction (β=.035, p<.001). With that said, the data illustrates that there is not a statistically significant relationship between annual assessments PD and analyzing data PD. Though the relationship between each PD focus area and perceived relevancy is small, this is a conservative finding because as with the PD formats, I had to collapse responses regarding teacher participation in each focus area. The effect size for perceived relevance was β=..229, which indicates a medium effect size (Bosco et al., 2015, p. 433).As such, there could be stronger effects.

Initially, I hypothesized that each PD focus area would have a relationship with teachers' perception of PD relevancy, however the data indicates that there is not a statistically significant relationship between annual assessments PD or analyzing data PD and one's perception of PD relevancy. Moreover, I originally hypothesized that the largest of the relationships between PD focus area and teachers' perceived PD relevance would be found for content area PD ($H_{2b.1}$) and technology PD ($H_{2b.2}$). While content PD was perceived to be highly relevant (β=.167, p<.001), the data suggests that the relationship between technology PD (β=.018, p<.05) and perceived PD relevance did not appear to be noticeably larger than the relationship between other formats and perceived PD relevance. The results of this multiple hierarchical regression support hypothesis 2b as well as hypothesis 2b.1 and illustrate that teachers are more likely to perceive PD as relevant if it centers around their content area. As such, schools should work to identify opportunities for teachers to engage in subject area professional development that can strengthen teachers' content knowledge and subject-specific pedagogies.

Table 7. Regression Model for Teachers' Perception of PD Relevance

	Model 2A Beta	Model 2B Beta
Tested Subject	-.008	-.006
School Years Taught	-.053***	-.020*
Associate's Degree or No College Degree	.009	.004
Master's Degree	-.017	-.014
Education Specialist or Certificate	.016	.010
Doctorate or Professional Degree	.009	.010
School Year – Base Salary	.001	.008
Female	.076***	.089***
Hispanic	.026**	.031***
Black	.080***	.072***
Asian	.025**	.022**
Native Hawaiian/Pacific Islander	.008	.007
American Indian/Alaska Native	-.001	-.005
Suburb	.001	.005
Town	.002	.008
Rural	.003	.017
Midwest	.000	-.020
South	.029*	.004
West	.030**	.014
% Students FRPL	.012	.011
School Type (Public, Private)	.066***	.085***
Co-Planning	—	.042***
Collaborative Consultation	—	.020*
Instruction Collaboration	—	.028***
Mentored	—	-.014

Received Mentoring	—	.067***
Online PD	—	.038***
Attended Workshop	—	.033***
Attended Conference	—	.062***
Content Area PD	—	.167***
Technology PD	—	.018*
STEM PD	—	.039***
Classroom Management PD	—	.048***
Special Education PD	—	.022*
Differentiated Instruction PD	—	.035***
Annual Assessments PD	—	-.004
Analyzing Data PD	—	-.015
Sample Size	14460	14460
R-squared	.023***	.113***

Note: *p<.05, **p<.01, ***p<.001

The dependent variable is teachers' perception of PD relevance. All coefficients presented in the table above are standardized.
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), "Public School, Private School, Public School Teacher, and Private School Teacher Data Files," 2017–18.

Interaction Hypothesis 1

I hypothesized (H_{3a}) that annual assessments professional development would more strongly predict perceived relevancy of PD for teachers of tested subject areas, compared to teachers of non-tested subject areas. To determine whether there was a significant interaction between annual assessments PD and teachers' subject area on perceived PD relevance, I used a two-way ANOVA. The results, which are included in Table 8 below, indicate that there is a significant main effect for annual assessments $F(1,14450) = 105.038$, p<.001, but not tested subjects. People

who took annual assessments professional development found it more relevant than those who did not (M = 2.318 compared to M = 2.212, respectively). Furthermore, there was a significant interaction between annual assessments PD and teachers of tested subjects, as seen in Table 8 below F(1,14450)=5.841, p<.001. Teachers of tested subject areas, including English, ESL, and mathematics, perceived professional development as more relevant when it focused on annual assessments. As seen in Table 9 below, when professional development was not focused on annual assessments, it was perceived as more relevant by teachers of untested subjects than by teachers of tested subjects (M=2.229 compared to M=2.195, respectively). On the other hand, if the professional development was focused on annual assessments, it was perceived as more relevant by teachers of tested subject areas than by teachers of untested subject areas (M=2.323 compared to M=2.310, respectively). Though the effect is small, it is still a significant outcome.

Table 8. ANOVA Results for Annual Assessments PD, Tested Subject Area, and Perceived Relevance

	df	F	Sig.	Partial Eta Square
Annual Assessments	1	105.038	<.001	.007
Tested Subject	1	.804	.370	.000
Annual Assessments * Tested Subject	1	5.841	.016	.000

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), "Public School Teacher and Private School Teacher Data Files," 2017–18.

Table 9. Pairwise Comparisons Based on Estimated Marginal Means

Annual Assessments	Tested Subject	Mean	St. Error
No	No	2.229	.009
No	Yes	2.195	.014
Yes	No	2.310	.007

Yes	Yes	2.325	.010

*Annual Assessments * Tested Subject*

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), "Public School Teacher and Private School Teacher Data Files," 2017–18.

In looking at the means and t-test results included in Table 10 below, annual assessments PD was perceived to be more relevant than other types of PD by both tested teachers (M=2.33, SD=.541 compared to M=2.20, SD=.550, respectively) and untested teachers (M=2.31, SD=.554, compared to M=2.23, SD=.579, respectively). However, in looking at the Cohen's d for each t-test and the confidence intervals of each, the effect is bigger for tested teachers (d=.564, CI [-.183, -.103]) than for untested teachers (d=.544, CI [-.299, -.179]). Though annual assessments PD is perceived as more relevant than other PD focus areas by both groups, this is especially true for teachers of tested subjects.

Table 10. T-Test Results for Annual Assessments PD, Tested Subject Area, and Perceived Relevance

Perceived Relevance of PD	Tested Subject		Untested Subject		t	p
	M	SD	M	SD		
Annual Assessments PD	2.33	.541	2.31	.554	-6.967	<.001
Non-Annual Assessments PD	2.20	.550	2.23	.579	-7.809	<.001

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), "Public School Teacher and Private School Teacher Data Files," 2017–18.

Interaction Hypothesis 2

I hypothesized (H_{3b}) that classroom management professional development would more strongly predict perceived relevancy of PD for novice teachers, compared to teachers with greater experience. To determine whether there was a significant positive interaction between

classroom management professional development, years experience, and perceived PD relevance, I ran a hierarchical regression. Based on the results, as seen in Table 10 below, the main effects, classroom management PD (β=.127, p<.001) and years of teaching experience (β=-.035, p<.05) are both statistically significant, however the interaction is not significant. Notably, the data suggests that those with fewer years of teaching experience generally reported higher perceptions of PD relevance. The R-Square results for 2C, included in Table 11 below, 2% of variation in teachers' perception of PD relevance can be explained by years of teaching experience and whether teachers engaged in classroom management PD. After entering the interaction term in Model 2D, the data indicated that the interaction was not significant as the variance did not change. Thus, the findings disprove Hypothesis 3b.

*Table 11. Regression Model for Classroom Management*Experience*

	Model 2C Beta	Model 2D Beta
Constant		
Classroom Management	.126***	.127***
Experience (Mean-Centered)	-.048***	-.035*
Management*Experience	-.016	.259
Sample Size	14460	14460
R-Squared	.020***	.020

Note: *p<.05, **p<.01, ***p<.001

The dependent variable is teachers' perception of PD relevance. All coefficients presented in the table above are standardized.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), "Public School Teacher and Private School Teacher Data Files," 2017–18.

Research Question 3

Research question 3 aimed to determine whether teachers' resource satisfaction and perceptions of PD relevance predicts their implementation of professional development.

Respondents indicated whether they had sufficient resources available for their professional development (6-7.a) and engaged in professional development during the past 12 months that was relevant to their teaching assignment (6-3). Moreover, they indicated how often they incorporated what they learned in professional development into their teaching (6-4.a).

As with the other equations, a hierarchical multiple regression model was run to control for other factors and ensure the coefficient is more representative of the relationship between my dependent and independent variables. In the first model, the dependent variable was teachers' implementation of professional development and the independent variables controlled for were teachers of tested subjects, years of teaching experience, highest degree earned, school year base salary, gender, race, school type, school region, school locale, and the percentage of students who qualified for free and reduced priced lunch. The second model included the same dependent and independent variables, but also controlled for resource satisfaction and perceived PD relevance. Table 12 identifies the means for Model 3A and Model 3B as well as the R-square value for each model.

Model 3A

The R-Square results for 3A, included in Table 11 below, 2.6% of the variation in teachers' implementation of professional development can be explained by whether educators teach a tested subject as well as teachers' years' experience, highest degree earned, school year base salary, gender, race, school type, school region, school locale, and the percent of students at the school who qualified for free and reduced price lunch. The reported p-values in Table 11 indicate that there is a statistically significant positive relationship between gender, Hispanic, Black, Asian, as well as those who identified that they worked in the West, with high percentages of students qualifying for free or reduced priced lunch, or public schools. On the

other hand, teachers of tested subject areas as well as those with higher levels of education and higher salaries reported that they were less likely to implement professional development.

Model 3B

After accounting for teachers' resource satisfaction and perceived PD relevance, the reported R-square result for Model 2D illustrates that 32.6% of the variation in teachers' implementation of professional development can be explained by the control variables as well as these two independent variables: resource satisfaction and perceived PD relevance. The R-square change from the first model was 30%, which means that these two variables, when added, explained unique variance in the dependent variable (teachers' implementation of professional development) that was not already accounted for by the control variables. Supporting hypothesis 4a and 4b, the data identifies that participants were more likely to implement professional development if they are satisfied with the resources available to them (β=.135, p<.001) and perceive the PD as relevant (β=.495, p<.001). Holding all else constant, higher levels of resource satisfaction and perceived PD relevance result in more frequent implementation of professional development in classrooms. The effect size for teacher implementation of PD was β=.549, which indicates a large effect size (Bosco et al., 2015, p. 433). The results of this hierarchical multiple regression support Hypothesis 4a and 4b and as such schools should consider surveying their staff to determine what additional resources they feel they need to aid their professional learning as well as what professional development sessions they perceive to be the most relevant to their teaching assignments. In doing so, schools can collect the information they need to facilitate professional learning opportunities that lead to changes in classroom practices.

Table 12. Regression Model for Teachers' Incorporation of PD

	Model 3A Beta	Model 3B Beta

Tested Subject	-.024**	-.021**
School Years Taught	-.057***	-.026**
Associate's Degree or No College Degree	.018*	.015*
Master's Degree	-.023*	-.010
Education Specialist or Certificate	.020*	.015*
Doctorate or Professional Degree	.004	.001
School Year – Base Salary	-.005***	-.012
Female	.058***	.029***
Hispanic	.052***	.038***
Black	.085***	.044***
Asian	.030***	.015*
Native Hawaiian/Pacific Islander	.003	.001
American Indian/Alaska Native	.008	.012
Suburb	-.009	-.013
Town	-.009	-.013
Rural	-.010	-.014
Midwest	.013	.010
South	.019	-.004
West	.034**	.017
% Students FRPL	.034***	.037***
School Type (Public, Private)	.039***	.001
Resource Satisfaction	—	.135***
PD Relevance	—	.495***
Sample Size	14460	14460
R-squared	.026***	.325***

Note: *p<.05, **p<.01, ***p<.001

The dependent variable is teachers' implementation of professional development. All coefficients presented in the table above are standardized.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), "Public School, Private School, Public School Teacher, and Private School Teacher Data Files," 2017–18.

This chapter has presented the results of the analyses conducted for each research question. Moreover, it has provided an overview of the data collected from the 2017-2018 National Teacher and Principal Survey as well as the quantitative results corresponding to each research question. In the next and final chapter, I will discuss the findings of my research as well as practical implications to guide policy and practice. Finally, I will identify areas for recommended future research.

CHAPTER V: CONCLUSIONS AND RECOMMENDATIONS

To bring this dissertation to a close, I will present a discussion of the conclusions and corresponding recommendations derived from the research. The first section of this chapter will provide a summary of the study and lay the foundation for the second section which will review the findings of this study. Finally, the third section will review implications for school practice and educational policy and the fourth section will provide recommendations for future research studies.

Introduction

Each year, an extensive amount of time and resources are allocated to support the professional learning of teachers (Jacob & McGovern, 2015; Killeen et al., 2002). At the federal level alone, over $2.5 billion a year is spent (Layton, 2015, p. 2). If these resources are not used in purposeful ways, then teachers may not make meaningful changes to their classroom practices to support student learning. This study endeavors to identify the factors that influence teachers' resource satisfaction and perception of PD relevance in hopes of ultimately identifying whether these lead teachers to incorporate professional learning in their respective classrooms.

A review of previous research and current literature led me to adopt David Kolb's (1984) experiential learning theory as the theoretical framework for this study. Kolb (1984) makes clear that individuals learn most effectively when they engage in a cycle consisting of four key stages: concrete experiences, reflective observations of the experience, abstract conceptualization, and active experimentation. To strengthen one's pedagogy, one must have resources to access concrete experiences such as professional development to learn new strategies, content, and techniques to guide classroom practices. However, this alone is insufficient. If teachers do not have time to reflect on these experiences (stage two) and conceptualize how their learning can be

used within the context of their classrooms (stage three), they are unlikely to make changes to their classroom practices and reach the fourth and final stage in Kolb's model, active experimentation. Moreover, if teachers do not perceive their professional development to be relevant, they are likely to disregard the sessions they attend and give little thought to it after leaving the session. Thus, they too would not make changes to their classroom practices and reach even the second stage of Kolb's model.

This dissertation examined teacher-level data from the 2017-2018 National Teacher and Principal Survey that was conducted by the U.S. Department of Education to investigate the factors that impact teachers' resource satisfaction and perceptions of PD relevance, and, in turn, their incorporation of professional development. After reviewing the available literature regarding teacher implementation of professional development, the following questions were formulated to ground this quantitative study:

1. To what extent does release time and financial compensation predict whether teachers perceive to have sufficient resources for their professional growth?
2. To what extent does professional development focus area and professional development format predict whether teachers perceive professional development to be relevant?
3. To what extent do teachers' perceptions of whether they have sufficient resources for their professional growth and teachers' perceptions of professional development relevancy predict teacher incorporation of professional development in the classroom?

In total, data from 14,460 teachers was used for this study. Any teacher who was not a full-time teacher or did not participate in professional development was dropped from this study as was any teacher who indicated that they did not teach high school. The teachers who participated in this study taught in schools across the United States including the Northeast

(22.1%), South (33.2%), West (22.9%), and Midwest (21.8%), and thus the findings based on this sample population are generalizable to the population at large.

For the first research question, I examined the relationship between teachers' receipt of release time and compensation and their overall resource satisfaction. Similarly, for the second research question, I explored the relationship between professional development format and focus and teachers' perception of professional development relevance. In addition, I sought to determine whether there was a significant interaction between annual assessments PD, teachers' subject area, and perceived PD relevance and whether there was a significant positive interaction between classroom management, professional development, years experience, and perceived PD relevance. For my final research question, I sought to examine the relationship between teachers' resource satisfaction and perception of PD relevance and their ultimate incorporation of professional development.

Summary of Findings

This section will provide a summary of the findings from the data analysis described in Chapter 4.

Resource Satisfaction

As Kolb (1984) identifies in his experiential learning theory, concrete experiences are necessary for individuals to engage in true learning. For teachers to have access to the concrete experiences that Kolb describes, they need to have sufficient resources available to support their professional learning. For research question one, I sought to determine whether there was a statistically significant relationship between teachers' receipt of release time as well as financial compensation and teachers' resource satisfaction. The results indicate that there is a positive, statistically significant relationship between release time and teachers' resource satisfaction as

well as financial compensation and teachers' resource satisfaction. After controlling for receipt of release time and financial compensation in Model 1B, the results indicated that 6.4% of teachers' resource satisfaction can be explained by the control variables as well as these two independent variables, receipt of financial compensation and release time.

Thus, it is important for schools to consider how they allocate funding and time to ensure teachers feel that they have sufficient resources available for their professional development. Moreover, administrators should consider surveying their staff members to gauge teachers' current levels of resource satisfaction so that they can determine how to best allocate the budget for subsequent school years. Because this dataset does not provide insight to the number of release time hour received by teachers nor the total amount of financial compensation received, further research should be conducted to determine whether there is a statistically significant relationship between the amount of release time, or financial compensation, that a teacher receives and their perceived research satisfaction.

Professional Development Relevance

To engage in the second and third stages of Kolb's (1984) experiential learning theory, reflective observations of the experience and abstract conceptualization, teachers must find the professional development they engage in relevant. Otherwise, they will allocate little time and effort to reflecting on their professional learning. Research question two endeavored to determine if there was a statistically significant relationship between various professional development formats and teachers' perceptions of professional development relevance. Likewise, it sought to examine the relationship between various professional development focus areas and teachers' perceptions of professional development relevance.

The results for research question two indicate that there is a statistically significant, positive relationship between teachers' perceptions of professional development relevance and the following PD formats: co-planning, collaborative consultation, collaboration on issues of instruction, received mentoring, online professional development, attending a workshop, and attended a conference. There was only one format that did not have a significant relationship with teachers' perceptions of PD relevancy: serving as a mentor. Given this information, schools may want to consider revisiting the current structure of their mentorship programs to ensure that the experience is perceived as relevant and beneficial for both novice teachers as well as the experienced teachers serving as mentors.

Of the PD formats examined, receiving mentoring, attending conferences, and co-planning had the most significant, positive relationships to perception of PD relevancy. Thus, schools should reflect on how they can further bolster teacher induction and mentoring programs. Moreover, they should consider how to allocate budgets to help ameliorate the costs of conference attendance. Last, but not least, school leaders should consider allocating time for common planning as they build the master schedule, whether that be by scheduling common prep periods for teachers of the same subject or by designating time for professional learning communities within the regularly scheduled day. Additional research should be conducted to determine whether there is a significant relationship between teachers' perceptions of professional development relevance and whether they engaged in professional development offered by their schools or from an outside provider. This information was not available in the dataset but may be relevant.

Likewise, the results illustrate that there is a statistically significant, positive relationship between teachers' perceptions of professional development relevance and the following PD

focus areas: content area, technology, STEM, classroom management, special education, and differentiated instruction. There were only two focus areas that did not have a significant relationship with teachers' perceptions of PD relevancy: annual assessments PD and analyzing data PD. After controlling for PD format and PD focus area in Model 2B, the results indicated that 11.3% of the variation in teachers' perception of PD relevance can be explained by the control variables and these composite independent variables.

Of the PD focus areas that were analyzed, the following had the most significant, positive relationships to teachers' perceptions of PD relevancy: content area PD, STEM PD, and differentiated instruction PD. Given that content area PD was perceived to be the most relevant, it is important for school leaders to consider how they can create time for teachers to collaborate with others within their content area to engage in subject-specific professional learning. This could be accomplished by leveraging department meeting time, structuring the master schedule to allow for common prep periods for teachers within a department, or providing time for professional learning communities within the school day itself. Likewise, to facilitate STEM PD or differentiated instruction PD, administrators might consider leveraging their department supervisors or teachers within these subject areas to facilitate workshops for teachers. Although the data suggests that annual assessments PD and analyzing data PD were not perceived to be relevant, this does not mean that administrators should ignore these professional learning focus areas. Rather, school leaders should work to determine how they can make these areas more relevant to teachers' practice given that annual assessments can provide insight to students' levels of achievement and data analysis can help teachers set achievement goals and create targeted lessons to support student learning (Schmoker, 2004).

In addition to assessing the relationship between teachers' perceptions of PD relevance and PD format as well as PD focus area for research question two, I sought to determine whether there was a significant interaction between annual assessments PD and teachers' subject area with regard to PD relevance. While there was a significant main effect for annual assessments, this was not the case for tested subjects. Ultimately, teachers who took annual assessments professional development found it more relevant than those who did not. Furthermore, there was a significant interaction between annual assessments PD and teachers of tested subjects. Given the fact that annual assessments professional development more strongly predicts perceived relevancy for teachers of tested subject areas, relative to teachers of non-tested subject areas, school leaders should consider offering alternative professional learning opportunities to teachers of non-tested subjects. I also sought to determine whether there was a significant positive interaction between classroom management professional development, years' experience, and perceived PD relevance. Based on the results, the main effects, classroom management PD and years of teaching experience are both statistically significant, however the interaction is not significant.

Incorporation of Professional Development

To reach the fourth and final stage of Kolb's (1984) model, active experimentation, teachers must perceive the professional development to be relevant to their classroom practices, so they take time to reflect on the information learned (stage two) and brainstorm strategies for implementation (stage three). Research question three aimed to discern whether there was a statistically significant relationship between teachers' resource satisfaction and perceptions of professional development relevancy and their ultimate incorporation of professional development. The results for research question three indicate that there is a statistically

significant, positive relationship between teachers' resource satisfaction and incorporation of professional development as well as teachers' perceptions of professional development relevancy and incorporation of professional development. After controlling for teachers' resource satisfaction and perceived PD relevance, the results for Model 2D illustrates that 32.5% of the variation in teachers' implementation of professional development can be explained by the control variables as well as the two independent variables: resource satisfaction and perceived PD relevance.

School leaders should consider administering a survey within their buildings to determine their staff's current resource satisfaction and perceptions regarding the relevance of professional development within the district. In doing so, administrators can collect valuable information about areas of need so they can more intentionally allocate funding and time to support teacher needs. Moreover, they can use the data from this survey to structure professional learning opportunities that are relevant to teachers and therefore more likely to lead to changes in classroom practices.

Implications for Practice and Policy

Given the immense amount of funding that is earmarked for professional development each year (Layton, 2015), it is imperative that school leaders as well as policymakers who weigh in on professional development codes review the current research as well as the following implications about teacher implementation of professional development. In doing so, they can ensure that they understand how to better structure professional learning opportunities that will lead to changes in the classroom and thus impact student learning at a higher level.

Implications for Practice

At the local level, district and school administrators strive to provide teachers' support to promote better instruction and thereby bolster student achievement (Hattie, 2003; Rice, 2003; Sanders & Rivers, 1996). However, research has shown that while teachers often have a wide array of resources at their disposal, often it is not perceived to be helpful (Jacob & McGovern, 2015). School administrators should consider the following practical implications, which are organized and presented within the context of each research question.

Research Question 1

Research question 1 sought to determine whether financial compensation and release time predict teachers' resource satisfaction. This study found statistically significant relationships between the receipt of release time and financial compensation and teachers' reported resource satisfaction. With this knowledge, school leaders should take steps to identify how they can further improve teachers' resource satisfaction by allocating time and funds to teachers' professional learning. By administering a districtwide survey, administrators can identify areas of priority for teachers and allocate funds to support teacher learning outside the classroom. In doing so, they can ensure teachers receive the financial support they need to attend conferences or workshops, enroll in college courses, or receive stipends for work outside of regularly contracted hours. However, because every school has different budgetary constraints, some schools may not be able to provide financial compensation to teachers and thus may need to focus on alternate approaches aimed at improving teachers' resource satisfaction, such as providing teachers release time. Principals and academic supervisors should reflect on how they can build in time for teachers to engage in professional learning during the school day, whether it be coordinating substitutes and duty coverages or building PLC time into the master schedule. In

doing so, they can encourage teachers to further grow their craft and thereby improve student outcomes.

Research Question 2

Research question 2 sought to determine whether PD format and PD focus area predict teachers' perception of professional development relevancy. School leaders should consider the format of the professional learning opportunities offered to teachers within their district. Professional development formats that offered opportunities for social interaction such as receiving mentorship, attending conferences, and co-planning presented significant, strong positive relationships with teachers' perceptions of professional learning relevancy. Thus, they should be prioritized when planning professional development opportunities for teachers. In addition, when planning in-service workshops, districts should consider how they can promote interaction and collaboration between instructors. While funding professional learning opportunities such as conferences may not be fiscally possible for some districts, all schools can take steps to further strengthen their new teacher induction and mentorship programs and to prioritize time for co-planning. School leaders seeking to increase teachers' perceptions of professional development relevancy should work to explore how they might structure professional learning opportunities within the master schedule by allocating common planning periods or building in time for professional learning communities.

In addition to considering the format of professional learning opportunities, school leaders should consider the focus area of professional development. Content area PD, STEM PD, and differentiated instruction PD were perceived as most relevant by the teachers in the sample. Of all focus areas, content area PD was perceived to be the most relevant, and therefore school leaders should work to prioritize opportunities for teachers to collaborate with others within their

department. There are a variety of ways that this could be accomplished: leveraging department or faculty meeting time, structuring common prep periods within the master schedule, utilizing in-house professional development days, or creating professional learning communities. School leaders should also take steps to identify areas that are most relevant to their staff given each school may have its own unique needs. In doing so, they can determine the format and focus areas that would be most fitting for their school's professional development offerings.

Research Question 3

Research question 3 endeavored to determine whether teachers' resource satisfaction and perceptions of PD relevance predict teacher implementation of professional development. The literature illustrates that the continuous learning and development of teachers is key to improving schools (Desimone, 2009) and is one of the most significant factors that impacts student achievement (Coleman, 1966; Garet et al., 2000; Mizell, 2010). However, if teachers are not reflecting on the knowledge that they gain in professional learning opportunities and making meaningful changes to their classroom instruction, then the time and money allocated for this purpose is all for naught. This study finds a significant positive relationship between teachers' resource satisfaction and incorporation of professional development as well as teachers' perceptions of professional development relevancy and incorporation of professional development. As such, school leaders should take steps to engage with their teaching staff to determine their current levels of resource satisfaction and their perceptions of the professional learning opportunities within the school and district. In gathering this information, administrators can better allocate time and funding to support teacher needs and, in turn, student outcomes. School leaders should also ensure that they are providing teachers ample time to reflect on the professional development opportunities that they attend and collaborate with their peers to

conceptualize how they might make use of their learning within the context of the classroom. In doing so, they can increase the likelihood of teachers incorporating professional development to improve student learning outcomes. Ultimately, administrators at both the district and school level play a pivotal role in the decision-making process and should use their knowledge to plan professional development offerings that will lead to instructional changes in the classroom.

Implications for Policy

There are extensive resources allocated to the professional development of teachers annually. In fact, there are federal mandates which dictate that all districts must provide professional learning opportunities that are "sustained…intensive, collaborative, job-embedded, data-driven, and classroom focused" (U.S. Department of Education, 2016, p. 11). While this definition is extensive, the findings of this research suggest that policymakers should consider also addressing the need to provide relevant professional development opportunities that promote teacher implementation of professional development. At the federal level, there are funds allocated for the professional development of teachers. For example, many of the ESEA Titled Programs provide schools funding for professional learning in hopes of improving student achievement outcomes (U.S. Department of Education, 2016). This study suggests that teachers' resource satisfaction ultimately impacts their incorporation of professional development. Policymakers should consider adding verbiage that requires districts to administer a survey to all staff members at the close of each school year to get their input on the professional development that was facilitated using Title funding.

This study finds that professional development format and focus area impact teachers' perception of PD relevance and, in turn, their implementation of professional learning. While the U.S. Department of Education (2016) asserts that professional development must be "sustained,"

however conferences were identified as one of the most relevant formats by respondents, which would not meet the stipulations of this federal mandate. As Hill and colleagues (2022) identify, "time, on its own, does not guarantee programs will move the needle on instructional practice or student outcomes" (p. 5). This study confirms this finding and contradicts research stating that professional learning must be sustained to have an impact (Borko, 2004; Islas, 2010; Yoon et al., 2007). The data suggests that if teachers feel satisfied with the resources available to support their professional learning and view it as relevant, they are more likely to implement it within the classroom.

Policymakers are encouraged to review the current criteria for professional at both the state and national level to make refinements that reflect current research. Moreover, the federal definition asserts that professional development should be "data-driven" (U.S. Department of Education, 2016), however professional development surrounding annual assessments and analyzing data did not show a statistically significant relationship with perceived relevance. Because these areas are clearly a priority for policymakers, additional work must be done at the state and federal level to establish the relevance of these professional development focus areas so that teachers are more engaged in these sessions. Policymakers should consider offering recommendations to schools as to the best formats to utilize to facilitate this content.

Ultimately, the goal of any professional learning is to change teacher practice and improve student learning outcomes. As such, it is imperative that policymakers review the current research on the factors that impact teacher implementation of professional learning such as resource satisfaction and perceived relevance. In doing so, they can construct recommendations and clear parameters to guide schools across the nation. This guidance may include recommendations for professional development focus areas that have been deemed most

relevant, such as content area PD, STEM PD, and differentiated instruction PD, as well as PD formats that are perceived as relevant such as mentoring programs, co-planning, and conferences. The demographics of this research sample are similar to those of high school teachers nationally, therefore the results of this study can inform decisions at the federal and state level. With that said, additional research should be conducted to determine the factors that impact teacher implementation of professional learning at the elementary and middle school levels.

Recommendations for Future Research

Given the findings of this study, the following recommendations can guide future researchers seeking to further explore teacher implementation of professional development:

1. In the wake of the COVID-19 pandemic, the landscape of education has changed substantially, with more schools offering online or hybrid course options to students than ever before. Because the 2017-2018 National Teacher and Principal Survey was administered prior to the COVID-19 pandemic, additional research should be conducted to determine if there have been changes in the PD content areas and formats that teachers perceive to be relevant. For example, this study did not find a significant relationship between technology PD and perceptions of professional learning relevance, however given teachers' increased use of technology during the pandemic, they may now perceive this content area to be more relevant.
2. As of late, many states have sought to make changes to the funding formulas in schools. For example, in 2018, the State of New Jersey passed S2, a law which restructured the distribution of funds to its school districts (Jones, 2018). Likewise, New York City is currently considering making changes to their funding formula (City of New York,

2023). While the changes to these funding formulas stand to benefit some districts, they can and have had an adverse effect on others, resulting in cuts of millions of dollars to some school districts. As such, it is important that additional research is conducted to determine teachers' resource satisfaction, perception of professional development relevance, and incorporation of professional development in the wake of these funding cuts. Additionally, more in-depth research should explore the how the relationship between the total budget allocated for professional learning and teacher implementation of professional development. This information would allow districts to better allocate funds to meet teacher and student needs.

3. To further explore teachers' resource satisfaction, future studies should explore the impact of the time spent in professional learning. Moreover, they should examine the impact of various types of financial compensation such as paid stipends or tuition reimbursement as well as the amount of financial compensation received on teachers' resource satisfaction. While the current study did find a statistically significant relationship between these independent variables and teachers' resource satisfaction, this additional information can better guide school leaders and policy makers in allocating funding appropriately.
4. The results of this study indicate that the content area and format of professional development predict perceived PD relevance. In fact, the data suggests that content area professional development is perceived to be most relevant to teachers. Future research should clarify what content area topics are perceived to be most relevant for each subject area. For example, it would be helpful for an English supervisor to know whether teachers preferred professional development on reading interventions, vocabulary

instruction, or other areas so as to provide more relevant professional growth opportunities to their staff. Moreover, as this study indicated that collaborative professional learning formats such as co-planning and mentoring are perceived to be most relevant, additional research should clarify how best to structure these offerings. In that same vein, researchers should investigate whether teachers perceive PD to be more relevant if it is facilitated by in-house staff or an outside provider.

5. While this study explored the impact of teachers' resource satisfaction and perceptions of professional development relevance on their implementation of professional development, it did not explore the relationship between teacher implementation of professional learning and student performance. Additional research should examine how factors related to professional development, such as the content area of PD or format of PD impacts student learning outcomes. For example, content area PD was perceived to be the most relevant by teachers, so future researchers should explore the extent to which this PD focus area impacts student performance. This information can guide the decisions of both school leaders and policymakers as they strive to prioritize professional learning opportunities for future school years.
6. Because the sample of this study only included high school teachers, additional research should examine the factors that impact teacher implementation of professional development at the elementary and middle school level. This information would help capture the broader needs of teachers in K-12 schools. It would be beneficial to also explore what teachers deem to be quality professional development and whether this impacts their implementation of their professional learning. Moreover, additional research should explore the impact of professional development incorporation on various

subgroups such as multilingual students, special education students, or students who qualify for free and reduced priced lunch. This would allow researchers to make recommendations to policymakers and school leaders about how best to allocate Title funds at the local level.

Limitations

Though the large sample size of this study allows for confidence in the reliability of its findings, there are several limitations of this study. First and foremost, the data collected are limited to the teachers who responded to the 2017-2018 National Teacher and Principal Survey. Because the sample largely identified as white, this could impose limitations in generalizing to more racially diverse teacher populations. Likewise, because the sample of this study includes only high school teachers, conclusions cannot be generalized to elementary and middle school teachers. Despite this, a rigorous sampling approach was used to ensure the demographic breakdown of the participants in the final sample is mostly similar to those in the broader dataset and comparable to estimates from Pew Research Center (Schaeffer, 2021; U.S. Department of Education, 2018).

In addition, because this study used archival data, I was unable to control for variables that may impact teacher perception of professional development relevancy as well as teacher implementation of professional learning because they were not available in the dataset. For example, it would have been useful to explore whether teachers engaged in professional development by choice or because it was mandated as well as whether the professional development they participated in was offered by the district or an external party. Moreover, I was unable to control for the total amount of time teachers spent in professional development and the total financial compensation that they received for their participation in professional learning

activities. Because I could not control for these variables, there may be sources of random error that I could not account for. Nonetheless, I was able to control for several other variables that were available in the data obtained from the National Center for Education Statistics such as whether teachers taught a tested subject, years' experience, highest degree earned, gender, race, school type, school region, school locale, and the percentage of students receiving free and reduced-price lunch. By controlling for the variables that were available within the dataset, I was able to limit the influence of confounding variables to more closely examine the relationship between my dependent variables and my independent variables of interest and thereby avoid possible bias.

It is important to note that this study was conducted in 2017-2018, prior to the onset of the COVID-19 pandemic. In the wake of this pandemic, there were sweeping changes to education as many K-12 districts transitioned to virtual and hybrid classes. As such, while the results of this study may provide insight to what worked prior to the pandemic, given the changing state of education, it is possible that the relationships between the main variables of interest in each model may differ today. For example, the data in this study suggests that teachers did not perceive technology PD to be more relevant than other formats, however given teachers' increased reliance on technology to facilitate teaching and learning post-pandemic, their perceptions may have shifted. Nonetheless, the data from this study offers valuable insight to the professional development formats and focus areas that positively predict relevancy and therefore teacher implementation of professional learning. Thus, despite possible shifts in teachers' perceptions, the findings of this study can still provide valuable insight to guide school leaders and policy makers alike.

Finally, it is important to recognize that the archival data regarding implementation of professional development was self-reported and cross-sectional. As such, the findings of this study may be subject to response bias given that teachers may have responded to questions to make themselves appear more favorably. Since the questions within the survey are worded neutrally and the answer choices are objective, this works to reduce the impact of response bias. Moreover, the results of this study suggest that there are not any multicollinearity issues, so there are not significant variance issues that would detract from the statistical significance of the independent variables of interest. It is important to also note that because this was not a longitudinal study, it does not provide insight to how teachers' perceptions of professional development relevancy or implementation of professional learning changed over time. However, it does provide information about teachers' resource satisfaction, perceptions of PD relevance, and implementation of PD that can guide future studies who wish to expand on the current findings by studying teachers over a longer period of time and examining the extent to which implementation of professional learning impacted teachers' overall performance as well as that of their students. While these variables were not available in the dataset, the available literature suggests that predicting implementation will also give insight to predicting teacher performance (Arens et al., 2012; Emerling, 2010; Garet et al., 2008; Joyce & Showers, 2002).

Conclusion

This dissertation consisted of five chapters in total, each of which worked to clarify the factors that ultimately impact teacher incorporation of professional learning. Chapter 1 introduced the research topic as well as its corresponding questions, and Chapter 2 offered a systematic review of past and current research that guided the research design and methods outlined in Chapter 3. In Chapter 4, I presented and interpreted the data collected from the 2017-

2018 National Teacher and Principal Survey and discussed the results specific to each research question.

This final chapter endeavored to summarize the dissertation and provide an overview of the findings for each analysis conducted with regard to the dependent variables and independent variables of interest. It offered a discussion of resource satisfaction, perceived professional development relevance, and teacher incorporation of professional development. Last, but not least, this chapter identified implications for practice and policy as well as recommendations for future researchers in hopes of bolstering future studies that may provide insight to the factors that impact teacher implementation of professional learning.

REFERENCES

Abdal-Haqq, I. (1996). Making time for teacher professional development. *ERIC Clearinghouse on Teaching and Teacher Education.*

Adey, P. (2004). Effective professional development: What have we learned from teachers of thinking. *Gifted Education International*, 19(1), 13-20. doi:10.1177/026142940401900104

Arber, W. (1993). Introduction into the topic of the symposium: Inter- and Transdisciplinarity – why – how? A conceptual framework for cross-curricular teaching. *Institute Kurt Bösch*, 11-16.

Arens, S. A., Stoker, G., Barker, J., Shebby, S., Wang, X., Cicchinelli, L. F., & Williams, J. M. (2012). Effects of curriculum and teacher professional development on the language proficiency of elementary English language learner students in the central region. *Midcontinent Research for Education Learning*.

Aspfors, J. & Fransson, G. (2015). Research on mentor education for mentors of newly qualified teachers: A qualitative meta-synthesis. *Teaching and Teacher Education, 48,* 75-86.

Avery, Z. K., & Reeve, E. M. (2013). Developing effective STEM professional development programs. *Journal of Technology Education*, 25(1), 55-69. https://doi.org/10.21061/jte.v25i1.a.4

Birman, B., Le Floch, K.C., Klekotka, A., Ludwig, M., Taylor, J., Walters, K., Wayne, A., Yoon, K., Vernez, G., Garet, M., & O'Day, J. (2007). Evaluating teacher quality under No Child Left Behind. *Rand Corporation*.

Baker, P.H. (2005). Managing student behavior. How ready are teachers to meet the challenge? *American Secondary Education*, 33(3), 51-64.

Basma, B., & Savage, R. (2018). Teacher professional development and student literacy growth: A systematic review and meta-analysis. *Educational Psychology Review, 30*(2), 457-481.

Baynes, K. (2014). A case study of professional development for improving teachers' content knowledge. *Walden University*.

Beach, P., & Willows, D. (2017). Understanding teachers' cognitive processes during online professional learning: A methodological comparison. *Online Learning*, 21(1), 60-84.

Beckmann, A. (2009). A conceptual framework for cross-curricular teaching. *The Mathematics Enthusiast*: 6(4). 1-58.

Berliner, D.C. (1986). In pursuit of the expert pedagogue. *Educational Researcher*, 15(7), 5-13.

Bill & Melinda Gates Foundation (2014). Teachers know best: Teachers' views on professional development. Seattle, WA.

Birman, B.F., Desimone, L., Porter, A.C., & Garet, M.S. (2000). Designing professional development that works. *Educational Leadership*, 57(8), 28-33.

Blanchard, M.R., LePrevost, C.E., Tolin, A.D., & Gutierrez, K.S. (2016). Investigating technology-enhanced teacher professional development in rural, high-poverty middle schools. *Educational Researcher*, 45(3), 207-220.

Blank, R., de las Alas, N., & Smith, C. (2007). Analysis of the quality of professional development programs for mathematics and science teachers: Findings from a cross-state study. *The Council of Chief State School Officers*.

Blankenship, S., Ruona, W. (2007). Professional learning communities and communities of practice: A comparison of models, literature review. *University of Georgia*.

Blazar, D., & Kraft, M.A. (2016). Teacher and teaching effects on students attitudes and behaviors. *Education Evaluation and Policy Analysis, 39*(1), 146-170.

Booher-Jennings, J. and Beveridge, A. (2008). Who counts for accountability? High-stakes test exemptions in a large urban school district. In *No Child Left Behind and the Reduction of the Achievement Gap: Sociological Perspectives on Federal Education Policy*, 77-96.

Bowman, M. (2014). Teacher mentoring as a means to improve schools. *B.U. Journal of Graduate Studies in Education*, 6(1). 47-51.

Borko, H. (2004). Professional Development and Teacher Learning: Mapping the Terrain. *Educational Researcher*, 33(8), 3-15.

Bos, J., Sanchez, R., Tseng, F., Rayyes, N., Ortiz, L., & Sinicrope, C. (2012). Evaluation of Quality Teaching for English Learners (QTEL) Professional Development. *National Center for Education Evaluation and Regional Assistance, Institute of Education Science*s, U.S. Department of Education.

Bosco, F. A., Aguinis, H., Singh, K., Field, J. G., & Pierce, C. A. (2015). Correlational effect size benchmarks. *Journal of Applied Psychology, 100*(2), 431–449. https://doi.org/10.1037/a0038047

Boston Consulting Group (2014). Teachers know best: Teachers' views on professional development. *Bill and Melinda Gates Foundation*.

Boud, D., Cohen, R. & Walker, D. (1993). Using experience for learning. *Society for Research into Higher Education.*.

Boyle, B., Lamprianou, I., & Boyle, T. (2005). A longitudinal study of teacher change: What makes professional development effective? Report of the second year of the study. *School Effectiveness & School Improvement*, 16(1), 1-27. doi:10.1080/09243450500114819

Bredeson, P. (2000). Teacher learning as work and at work: Exploring the content and contexts

of teacher professional development. *Journal of In-Service Education*, 26(1), 63-72. https:// doi:10.1080/13674580000200104

Brock, M.E., & Carter, E.W. (2015). Effects of a professional development package to prepare special education paraprofessionals to implement evidence-based practice. *Journal of Special Education*, 49(1), 39-51.

Brody, D. L., & Hadar, L. L. (2015). Personal professional trajectories of novice and experienced teacher educators in a professional development community. *Teacher Development*, 19(2), 246-266.

Brophy, S., Klein, S., Portsmore, M. & Rogers, C. (2008). Advancing engineering education in P–12 classrooms. *Journal of Engineering Education*, 97(3), 369-387.

Browser, A. & Tomic, W. (2000). A longitudinal study of teacher burnout and perceived self-efficacy in classroom management. *Teaching and Teacher Education*, 16(2), 239-253.

Bullough, R. (2012). Mentoring and new teacher induction in the United States: A review and analysis of current practices. *Mentoring and Tutoring: Partnership in Learning, 20* (1), 57-74.

Burns, M. K., & Ysseldyke, J. E. (2009). Reported prevalence of evidence-based instructional practices in special education. *The Journal of Special Education*, 43, 3–11. doi:10.1177/0022466908315563

Burns, M. (2013). The future of professional learning. *Learning & Leading with Technology*, *40*(8), 14-18.

Bybee, R. W., & Loucks-Horsley, S. (2000). Advancing technology education: The role of professional development. *The Technology Teacher, 60*(2), 31-34.

Calvert, L. (2016). Moving from compliance to agency. What teachers need to make professional

learning work. *Learning Forward*.

Cambone, J. (1995). Time for teachers in school restructuring. *Teachers College Record*, 96(3): 512-43.

Carrell, J., Keaty, H., & Wong, A. (2020). Humanities-driven STEM- Using history as a foundation for STEM education in honors. *Honors in Practice*, 53-69.

Carter, E. W., O'Rourke, L., Sisco, L. G., & Pelsue, D. (2009). Knowledge, responsibilities, and training needs of paraprofessionals in elementary and secondary schools. *Remedial and Special Education*, 30(6), 344–359. doi:10.1177/0741932508324399

Carver, C.L. & Feiman-Nemser, S. (2009). Using policy to improve teacher education: Critical elements and missing pieces. *Educational Policy, 23*(2), 295-328.

Charalambousa, K., & Ioannou, I. (2011). The attitudes and opinions of Cypriot primary teachers about the use of the Internet for their professional development and as an educational tool. *Learning, Media and Technology*, 33(1), 45-57.

Cheng, S.-L., Lu, L., Xie, K., & Vongkulluksn, V. W. (2020). Understanding teacher technology integration from expectancy-value perspectives. *Teaching and Teacher Education*, *91*, 103062. https://doi.org/10.1016/j.tate.2020.103062

Cheng, S. L., & Xie, K. (2018). The relations among teacher value beliefs, personal characteristics, and TPACK in intervention and non-intervention settings. *Teaching and Teacher Education*, *74*, 98–113. https://doi.org/10.1016/j.tate.2018.04.014

Cherrstrom, C.A. (2012). Making connections: Attending professional conferences. *Adult Learning*, 23(3), 148–152. https://doi.org/10.1177/1045159512452263

Chou, C.C., Block, L., & Jeness, R. (2012). A case study of mobile learning pilot project in K-12 schools. *Journal of Educational Technology Development and Exchange*, 5(2), 11-26.

Christie, K. (2009). Professional development worth paying for. *Phi Delta Kappa*, 90(7), 461–463. https://doi.org/10.1177/003172170909000703

Cifuentes, L. Maxwell, G., & Bulu, S. (2011). Technology integration through a professional learning community. *Journal of Educational Computing Research,* 44(1), 58-82.

Cimbricz, S. (2002). State-mandated testing and teachers' beliefs and practice. *Educational Policy Analysis Archives*, 10(2).

City of New York (2023). Mayor Adams and Chancellor Banks push to increase equity in fair student funding formula. *Office of the Mayor, City of New York*.

Coke, P.K. (2005). Practicing what we preach: An argument for cooperative learning opportunities for elementary and secondary educators. *Education*, 126(2).

Coleman, J. S., United States., & National Center for Education Statistics. (1966). Equality of educational opportunity. *Dept. of Health, Education, and Welfare, Office of Education*.

Cook, B. G., & Schirmer, B. R. (2003). What is special about special education? Overview and analysis. *The Journal of Special Education*, 37(3), 200–205. doi:10.1177/00224669030370031001

Cook, B. G., Smith, G. J., & Tankersley, M. (2012). Evidence-based practices in education. *APA educational psychology handbook*, 495-528.

Corcoran, T. (1995). Helping teachers teach well: Transforming professional development. *Consortium for Policy Research in Education*.

Croft, A., Coggshall, J., Dolan, M., Powers, E., Killion, J. (2010). Job-embedded professional development: What it is, who is responsible, and how to get it done well. *National Comprehensive Center for Teacher Quality.*

Cullen, T.A., & Greene, B.A. (2011). Preservice teachers' beliefs, attitudes, and motivation about technology integration. *Journal of Educational Computing Research*, 45(1), 29-47.

Custer, R. L., Daugherty, J., Zeng, Y., Westrick, M., & Merrill, C. (2007). Delivering core engineering concepts to secondary level students. *Center Studies*.

Darling-Hammond, L. (1999). Teacher learning that supports student learning: What teachers need to know. National Commission on Teaching and America's Failure. *Edutopia*, 29(2), 25-28.

Darling-Hammond, L. (2000). Teacher Quality and Student Achievement: A Review of State Policy Evidence. *Education Policy Analysis Archives*, 8, 1.

Darling-Hammond, L. (2001). Inequality in teaching and schooling: How opportunity is rationed to students of color in America. *Stanford University School of Education*, 208-233.

Darling-Hammond, L., Bae, S., Cook-Harvey, C.M., Lam, L., Mercer, C., Podolsky, A., & Stosich, E.L. (2016). Pathways to new accountability through the Every Student Succeeds Act. *Learning Policy Institute*.

Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). Effective teacher professional development. *Learning Policy Institute*.

Darling-Hammond, L., Wei, R. C., Andree, A., Richardson, N., & Orphanos, R. (2009). Professional learning in the learning profession. Washington, DC. *National Staff Development Council,* 12.

Darling-Hammond, L., Wei, R. C., & Adamson, F. (2010). Professional learning in the United States: Trends and challenges. *National Staff Development Council*.

Darling-Hammond, L., & Youngs, P. (2002) Defining “highly qualified teachers”: What does “scientifically-based research” actually tell us? *Educational Researcher, 31*(9), 13-25.

DeAngelis, T. (2012). Support for teachers. *Monitor on Psychology*, 43(2). 468-505.

Decuyper, S., Dochy, F., Van den Bossche, P. (2010). Grasping the dynamic complexity of team learning: An integrative model for effective team learning in organisations. *Educational Research Review*, 5(2), 111-133.

Dedmon, J. (2020). Increasing relevance and impact: Using action research with middle level teachers' insights and perceptions of technology professional development.

Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher*, 38(3), 181-200. doi:10.3102/0013189X08331140

Desimone, L. M., Smith, T. M., Hayes, S., & Frisvold, D. (2005). Beyond accountability and average math scores: Relating multiple state education policy attributes to changes in student achievement in procedural knowledge, conceptual understanding and problem solving in mathematics. *Educational Measurement: Issues and Practice*, 24(4), 5–18.

Desimone, L. M., Smith, T. M., & Ueno, K. (2006). Are Teachers Who Need Sustained, Content-Focused Professional Development Getting It? An Administrator's Dilemma. *Educational Administration Quarterly*, 42(2), 179–215. https://doi.org/10.1177/0013161X04273848

Dixon, F.A., Yssel, N., McConnell, J.M., & Hardin, T. (2014). Differentiated instruction, professional development, and teacher efficacy. *Journal for the Education of the Gifted*, 37(2), 111-127.

Dochy, F., Segers, M., Van den Bossche, P., & Gijbels, D. (2003). Effects of problem-based learning: a meta-analysis. *Learning and Instruction*, 13(5), 533–568. https://doi.org/10.1016/S0959-4752(02)00025-7

Edmondson, A.C. (2013). Teaming to innovate. *John Wiley & Sons*.

Elementary and Secondary Education Act of 1965, Pub. L. No. 89-10 § 79, Stat. 2362 (1965).

English, L.D. (2016). STEM education K-12: perspectives on integration. *International Journal of STEM Education*, 3(1), 1-8. https://doi.org/10.1186/s40594-016-0036-1

Er, E., & Kim, C. (2017). Episode-centered guidelines for teacher belief change toward technology integration. *Educational Technology Research and Development*, *65*(4), 1041–1065. https://doi.org/10.1007/s11423-017-9518-1

Ermeling, Bradley. (2010). Tracing the effects of teacher inquiry on classroom practice. *Teaching and Teacher Education,* 26(3). 377-388.

Espin, C.A. & Yell, M.L. (1994). Critical indicators of effective teaching for preservice teachers: Relationships between teaching behaviors and ratings of effectiveness. *Teacher Education and Special Education*, 17(3), 154-169.

European Commission (2013). The Teaching and Learning International Survey (TALIS) 2013: Main findings from the survey and implications for education and training policies in Europe. *National Center for Education Statistics*.

Every Student Succeeds Act, Pub. L. No. 114-95 § 20, Stat. 6301 (2015).

Faraclas, K. (2018). A professional development training model for improving co-teaching Performance. *International Journal of Special Education*, 33(3), 524-540.

Flores, M. (2005). How do teachers learn in the workplace? Findings from an empirical study carried out in Portugal. *Journal of In-service Education*, 31(3), 485-508.

Freire, P. (1970). Pedagogy of the oppressed. New York, NY: Continuum.

Friedman, T. L. (2005). *The world is flat: A brief history of the twenty-first century*. New York: Farra, Straus, and Giroux.

Friend, M. (2008). Co-teaching: A simple solution that isn't simple after all. *Journal of Curriculum and Instruction*, 2(2), 9-19. doi.org/10.3776/joci.2008.v2n2p9-19

Friend, M. (2014). Co-teach! Building and sustaining effective classroom partnerships in inclusive schools (2nd ed.). *Marilyn Friend, Inc*.

Fullan, M.G. (1995). The limits and the potential of professional development. *Professional Development in Education: New Paradigms and Practices*, 253-267.

Garcia, E., & Weiss, E. (2019). The role of early career supports, continuous professional development, and learning communities in the teacher shortage. *Economic Policy Institute*.

Garet, M.S., Porter, A.C., Desimone, L., Birman, B.F., Kwang, S.Y. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal*, 39(4), 915-945.

Garet, M. S., Cronen, S., Eaton, M., Kurki, A., Ludwig, M., Jones, W., Uekawa, K., Falk, A., Bloom, H., Doolittle, F., Zhu, P., & Sztejnberg, L. (2008). The impact of two professional development interventions on early reading instruction and achievement. *National Center for Education Evaluation and Regional Assistance*.

Garet, M. S., Wayne, A. J., Stancavage, F., Taylor, J., Walters, K., Song, M., Brown, S., Hurlburt, S., Zhu, P., Sepanik, S., & Doolittle, F. (2010). Middle school mathematics professional development impacts study: Findings after the first year of implementation. *National Center for Education Evaluation and Regional Assistance*.

Gately, S. E., & Frank J. Gately, J. (2001). Understanding co-teaching components. *Teaching Exceptional Children*, 33(4), 40-47.

Ghosh, R., Githens, R. P. (2009). Application of social network theory: Doctoral students'

experiences in conferences. *New Horizons in Adult Education & Human Resource Development*, 23(1), 25-28.

Giangreco, M. F., Edelman, S. W., & Broer, S. M. (2001). Respect, appreciation, and acknowledgment of paraprofessionals who support students with disabilities. *Exceptional Children*, 67(4), 485–498.

Gino, F., Wilmuth, C.A., Brooks, A.W. (2015). Compared to men, women view professional advancement as equally attainable, but less desirable. *Proceedings of the National Academy of Sciences, 112*(4), 12354-12359.

Glover, T. A., Nugent, G. C., Chumney, F. L., Ihlo, T., Shapiro, E. S., Guard, K., & Bovaird, J. (2016). Investigating rural teachers' professional development, instructional knowledge, and classroom practice. *Journal of Research in Rural Education*, 31(3), 1-16.

Goldberg, M., & Harvey, J. (1983). A Nation at Risk: The Report of the National Commission on Excellence in Education. Phi Delta Kappa International, 65(1), 14-18.

Gordon, S. (2004). Professional development for school improvement: Empowering learning communities. *Pearson Education*.

Green, T., Allen, M. (2015). Professional Development Urban Schools: What Do Teachers Say? Journal of Inquiry & Action in Education, 6(2), 53-79.

Grossman, P.L, & Howey, K. (1989). A study in contrast: Sources of pedagogical content knowledge for secondary English. *Journal of Teacher Education, 40(5),* 24-31.

Grskovic, J. & Trzcinka, S. (2011). Essential standards for preparing secondary content teachers to effectively teach students with mild disabilities in included settings. American Secondary Education. 39. 94-106.

Gupta, A., & Guang-Lea, L. (2020). The effects of a site-based teacher professional development

program on student learning. *International Electronic Journal of Elementary Education, 12*(5), 417-428. https://doi.org/10.26822/iejee.2020562132

Guskey, T. R. (1985). Staff development and teacher change. *Educational, School, and Counseling Psychology Faculty Publications*. 42(7), 57.

Guskey, T. R. (1991). Enhancing the effectiveness of professional development programs. *Journal of Educational and Psychological Consultation*, 2(3), 239-247. doi:10.1207/s1532768xjepc0203_3

Guskey, T.R. (1995). Professional development in education: In search of the optimal mix. *Professional Development in Education: New Paradigms and Practices*, 114-131.

Guskey, T.R. (1999). Apply time with wisdom. *Journal of Staff Development*, 20(2), 10-15.

Guskey, T. (2003). Characteristics of Effective Professional Development: A Synthesis of Lists. *American Educational Research Association*, 87(637), 4-20.

Guskey, T.R. (2009). Closing the Knowledge Gap on Effective Professional Development. *Educational Horizons*, *87*(4), 224-233.

Guskey, T., & Yoon, K. (2009). What Works in Professional Development? *Phi Delta Kappa, 90*(7), 495-500.

Hall, T., Strangman, N., & Meyer, A. (2009). Differentiated instruction and implications for UDL implementation. *National Center on Accessing the General Curriculum*.

Hansen, M. & Quintero, D. (2018). How gender diversity among the teacher workforce affects student learning. *Brown Center Chalkboard*.

Hattie, J. (2003). Teachers make a difference, what is the research evidence? *Australian Council for Education Research*.

Hill, H.C. 2009. "Fixing Teacher Professional Development." *Phi Delta Kappa*, 90(7), 470–477.

Hill, K.K., Bicer, A., & Capraro, R.M. (2017). Effect of teachers' professional development from MathForwardTM on students' math achievement. *International Journal of Research in Education and Science (IJRES)*, 3(1), 67-74

Hill, H. & Papay, J. (2022). Building better PL: How to strengthen teacher learning. *Research Partnership for Professional Learning*, 1-19.

Hill, H., Papay, J., & Schwartz, N. (2022). Dispelling the myths: What the research says about teacher professional learning, *Research Partnership for Professional Learning*, 1-10.

Holland, H. (2005). Teaching teachers: Professional development to improve student achievement. *AERA Research Points*, *3*(1).

Howard, L., & Potts, E. A. (2009). Using co-planning time: Strategies for a successful co-teaching marriage. *Teaching Exceptional Children Plus*, 5(4), 1-12.

Hunt, P., Soto, G., Maier, J., Liboiron, N., & Bae, S. (2004). Collaborative teaming to support preschoolers with severe disabilities who are placed in general education early childhood programs. *Topics in Early Childhood Special Education*, 24(3), 123-142.

Hunzicker, J. (2010). Characteristics of effective professional development: A checklist. *Bradley University*.

Improving America's Schools Act of 1994. Pub. L. No. 103-382.

Ingersoll, R.M. & Smith, T.M. (2003). The wrong solution to the teacher shortage. *Educational Leadership*, 60(8), 30-33.

Institute of Education Sciences (2020). Characteristics of public and private elementary and secondary school teachers in the United States.

Islas, M.R. (2010). The federal policy landscape: A look at how legislation affects professional development. *Journal of Staff Development, 31*(6), 10.

Jacob, A. & McGovern, K. (2015). The mirage: Confronting the hard truth about our quest for teacher development. *The New Teacher Project.*

Jaquith, A., Mindich, D., Wei, R.C., Darling-Hammond, L. (2010). Teaching Professional Learning in the United States: Case Studies of State Policies and Strategies. *Learning Forward*.

Jeffrey, J. (1978). Education for children of the poor: A study of the origins and implementation of the Elementary and Secondary Education Act of 1965. *Ohio State University Press.*

Johnson, C. C. & Fargo, J. D. (2014). A study of the impact of transformative professional development on Hispanic student performance on state mandated assessments of science in elementary school. *Journal of Elementary Science Teacher Education, 25*(7), 845–859.

Johnston R., Jones K., & Manley D. (2018). Confounding and collinearity in regression analysis: A cautionary tale and an alternative procedure, illustrated by studies of British voting behaviour. *Quality and Quantity, 52*(4), 1957-1976.

Jones, C. (2018). State aid for schools, explained. *New Jersey School Boards Association*, *49*(3).

Jones, K. (2004). A balanced school accountability model: An alternative to high-stakes testing. *Phi Delta Kappan*, 85(8), 584-90.

Joyce, B., and B. Showers. (1995). Student achievement through staff development: Fundamentals of school renewal. *Longman*.

Joyce, B. R., & Showers, B. (2002). Student achievement through staff development. *Association for Supervision & Curriculum Development*.

Kamens, M. & Susko, J.A.P. & Elliott, J. (2013). Evaluation and supervision of co-teaching: A study of administrator practices in New Jersey. *NASSP Bulletin*. 97(2). 166-190. https://doi.org/10.1177/0192636513476337.

Kao, C. P., Wu, Y. T., & Tsai, C. C. (2011). Elementary school teachers' motivation toward web-based professional development, and the relationship with Internet self-efficacy and belief about web-based learning. *Teaching and Teacher Education*, 27(2), 406-415.

Katz, L., Inan, H., Tyson, C., Dixson, A., & Hyun-Young, K. (2010). Professional development for the early learning content social studies standards. *International Electronic Journal of Elementary Education*, 2(2), 261-285.

Keeton, M., & Tate, P. (1978). The boom in experiential learning. *Learning by experience – what, why, how*, 1-8.

Kelley, T.R., & Knowles, J.G. (2016). A conceptual framework for integrated STEM education. *IJ STEM,* 3(11), 1-11. https://doi.org/10.1186/s40594-016-0046-z

Kemp, A., Blake, B., Shaw, C., & Preston, J. (2009). A conversation about content versus pedagogy. *Curriculum & Teaching Dialogue*, 11(1), 103-119

Kennedy, M. M. (1998). Form and substance in in-service teacher education. *National Institute for Science Education*, 13.

Kennedy, M. (2016). How does professional development improve teaching?. *Review of Education Research*, 86(4), 945-980.

Killeen, K. M., Monk, D. H., & Plecki, M. L. (2002). School District Spending on Professional Development: Insights Available from National Data (1992-1998). *Journal of Education Finance*, *28*(1), 25–49.

King, B. & Newmann, F. (2004). Key link: Successful professional development must consider school capacity. *Journal of Staff Development*, 25(1), 26-30.

Knight, J. (2019). Why teacher autonomy is central to coaching success. *Association of Supervision and Curriculum Development,* 77(3), 14-20.

Knowles, M. (1983). Adults are not grown up children as learners. *Community Services Catalyst,* 13(4), 4-8.

Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development. *Prentice-Hall*.

Lachner, A., & Nückles, M. (2016). Tell me why! Content knowledge predicts process-orientation of math researchers' and math teachers' explanations. *Instructional Sci*ence, 44(3), 221–242. https://doi.org/10.1007/s11251-015-9365-6

Lambert, M., Wallach, C. & Ramsey, B. (2007). The other three Rs: Small schools project examines instructional change through relationships, relevance, and rigor. *Journal of Staff Development*, 28(4), 36-38.

Larrivee, B. (2008). Development of a tool to assess teachers' level of reflective practice. *Reflective Practice*, 9(3), 341-360.

Layton, L. (2015). Study: Billions of dollars in annual teacher training is largely a waste. *The Washington Post*. Learning Forward (2019). Professional development definition. *National Staff Development Council*.

Lewis, D., Madison-Harris, R., Muoneke, A., & Times, C. (2010). Using data to guide instruction and improve student learning. *SEDL Letter*, 22(2). 10-12.

Lieberman, A. & Pointer Mace, D. (2008). Teacher learning: the key to education reform. *Journal of Teacher Education*, 59(3), 226-234

Linder, S.M. (2011). The Facilitator's Role in Elementary Mathematics Professional Development. *Mathematics Teacher Education and Development*, 13(2), 44-66.

Linn, R. (2000). Assessment: Responsibility and reasonable expectations. *Educational Researcher*, 32(7), 3-13.

Little, J. W. (1999). Organizing schools for teacher learning. *Teaching as the learning profession: Handbook of teaching and policy,* 233–62.

Liu, S. H., Tsai, H. C., & Huang, Y. T. (2015). Collaborative professional development of mentor teachers and pre-service teachers in relation to technology integration. *Educational Technology & Society*, *18*(3), 161–172.

Loeb, S., Miller, L. C., & Strunk, K. O. (2009). The State Role in Teacher Professional Development and Education Throughout Teachers' Careers. *Education Finance and Policy*, *4*(2), 212–228. http://www.jstor.org/stable/educfinapoli.4.2.212

Loewus, L. (2016). Study: Improving teachers' math knowledge doesn't boost student scores. *Education Week*.

Loucks-Horsley, S. & Stiegelbauer, S. (1991). Using knowledge of change to guide staff development. *Staff Development for Education in the 90s: New Demands, New Realities, New Perspectives*, 15-36.

Lourenco, G.F., Gonclaves, A.G., & Elias, N.C. (2015). Differentiated instructional strategies and assistive technology in Brazil: Are we talking about the same subject? *Universal Journal of Educational Research* 3(11), 891-896.

Lynch, D. (2014). Improving teaching through coaching, mentoring and feedback: A review of literature. *MIER Journal of Educational Studies, Trends & Practices*, 4(2), 136-166.

Maeng, J. L., Whitworth, B. A., Bell, R. L., & Sterling, D. R. (2020). The effect of professional development on elementary science teachers' understanding, confidence, and classroom implementation of reform-based science instruction. *Science Education*, *104*(2), 326-353.

McConnell, T.J., Parker, J.M. & Eberhardt, J. (2013) Assessing teachers' science content knowledge: A strategy for assessing depth of understanding, *Journal of Science Teacher*

Education, 24:4, 717-743, doi:10.1007/s10972-013-9342-3

McLaughlin, M. (1975). Evaluation and reform: The Elementary and Secondary Education Act of 1965, Title I. Ballinger Publishing Company.

McLean, M. E., Snyder, P., Smith, B. J., & Sandall, S. R. (2002). The DEC recommended practices in early intervention/early childhood special education: Social validation. *Journal of Early Intervention*, *25*(2), 120–128. doi:10.1177/105381510202500209

McLeod, S. (2017). Kolb's learning styles and experiential learning cycle. *Simply Psychology*.

McMillan, J. H. (2000). Fundamental assessment principles for teachers and school administrators. Practical Assessment, Research & Evaluation, 7(8), 8.

Meirink, J. A. (2007). Individual teacher learning in a context of collaboration in teams. Leiden University.

Merritt, E. (2016). Time for teacher learning, planning critical for school reform. *Phi Delta Kappan*, *98*(4), 31-36.

Mizell, H. (2010). Why Professional Development Matters. *Learning Forward*.

Moon, T. R., Tomlinson, C. A., & Callahan, C. M. (1995). Academic diversity in the middle school: Results of a national survey of middle school administrators and teachers. *National Research Center on the Gifted and Talented.*

Morgan, J. L. (2016). Reshaping the role of a special educator into a collaborative learning specialist. *International Journal of Whole Schooling*, 12(1), 40–60.

Moyer-Packenham, P.S., Bolyard, J.J., Kistantas, A., Oh, H. (2008). The assessment of mathematics and science teacher quality. *Peabody Journal of Education, 83*(4), 562-591.

Mundry, S. (2005). Changing perspectives in professional development. *Science Educator*, 14(1), 9-15.

Murawski, W. W. (2009). Collaborative teaching in secondary schools: Making the co-teaching marriage work! *Corwin Press.*

Murawski, W., & Dieker, L. (2004). Tips and strategies for co-teaching at the secondary level. *Teaching Exceptional Children*, 36(5), 52-58.

Murray, E. (2015). Improving teaching through collaborative reflective teaching cycles. *The Research Council on Mathematics Learning*, 7(3), 23-29.

Murray, S., Ma, X., & Mazur, J. (2009). Effects of peer coaching on teachers' collaborative interactions and students' mathematics achievement. *The Journal of Educational Research*, 102(3), 203-212.

National Center for Education Evaluation and Regional Assistance (2016). Does content-focused teacher professional development work? Findings from three Institute of Education Sciences studies. *Institute of Education Sciences*.

National Center for Educational Statistics (2008). Revenues and Expenditures for Public Elementary and Secondary Education: School Year 2005-06. *National Center for Education Statistics*.

National Center for Education Statistics (2016a). Licensed microdata from the 2015–2016 National Teacher and Principal Survey. U.S. Department of Education. National Education Association. *National Education Association*.

National Education Commission on Time and Learning (1994). Prisoners of time. *U.S. Department of Education*.

National Science Foundation (2010). Providing classroom release time for teacher leaders. *Math and Science Partnership: Knowledge Management and Dissemination*.

National Staff Development Council. (2001). Standards for staff development. *National Staff*

Development Council.

National Staff Development Council (2009). NSDC Standards: Learning. *National Staff Development Council.*

Neil, M. (2003). High stakes, high risk: The dangerous consequences of high-stakes testing. *American School Board Journal*, 190(2), 18-21.

No Child Left Behind (NCLB) Act of 2001, Pub. L. No. 107-110, § 101, Stat. 1425 (2002).

Oliver, R.M. & Reschly, D.J. (2007). Effective classroom management: Teacher *preparation and professional development. National* Comprehensive Center for Teacher Quality.

Opper, I.M. (2019). Teachers matter: Understanding teachers' impact on student achievement. *RAND Corporation.*

Paul, C.A. (2016). Elementary and Secondary Education Act of 1965. *Social Welfare History Project*.

Pelsue, B. (2017). When it comes to education, the federal government is in charge of...um, what? *Harvard Education Magazine*

Popham, W. J. (2001). Teaching to the test. *Educational Leadership*, 58(6), 16-20.

Popham, W. J. (2003). The seductive allure of data. *Educational Leadership*, 60(5), 48-51.

Porter, A., Garet, M., Desimone, L., & Birman, B. (2003). Providing effective professional development: Lessons from the Eisenhower program. *Science Educator*, 12(1), 23-40.

Powell, C.G. & Bodur, Y. (2019). Teachers' perceptions of an online professional development experience: Implications for a design and implementation framework. *Teaching and Teacher Education* (77), 19-30.

Privitera, G. (2016). Research methods for the behavioral sciences. *SAGE Publications*.

Pruitt, S. L., & Wallace, C. S. (2012). The effect of a State Department of Education teacher

mentor initiative on science achievement. *Journal of Science Teacher Education*, 23(4), 367-385.

Quick, H., Holtzman, D. & Chaney, K. (2009). Professional development and instructional practice: Conceptions and evidence of effectiveness. *Journal of Education for Students Placed at Risk (JESPAR)*, 14(1), 45-71.

Rebora, A. (2004). Professional Development. Education Week.

Rebora, A. (2011). Professional development. *Education Week*.

Rentner, D.S., Kober, N., & Frizzell, M. (2016). Listen to us: Teachers' views and voices. *Center on Education Policy*.

Rice, J.K. (2003). Understanding the effectiveness of teacher attributes. *Economic Policy Institute*.

Rice, M. (2017). Few and Far Between: Describing K-12 Online Teachers' Online Professional Development Opportunities for Students with Disabilities. *Online Learning Journal*, 21(4), 103-121.

Riley, R.W. (1993). The emerging role of professional development in education reform. *On Common Ground*, 1.

Rizzuto, M. (2017). Design recommendations for self-paced online faculty development courses. *TechTrends,* 61(1)**,** 77–86. https://doi.org/10.1007/s11528-016-0130-8

Robelen, E. (2005). 40 Years After ESEA, Federal Role in Schools is Broader than Ever. *Education Week*, 24(31), 1-42.

Rotermund, S., DeRoche, J., & Ottem, R. (2017). Professional development by selected teacher and school characteristics. *National Center for Education Statistics*.

Roumell, E. A. (2019). Priming adult learners for learning transfer: Beyond content and delivery.

Adult Learning, 30(1), 15–22. https://doi.org/10.1177/1045159518791281

Roy, Patricia (2013). School-based professional learning for implementing the Common Core. *Learning Forward*.

Sailors, M. & Shanklin, Nancy L. (2010). Introduction: Growing evidence to support coaching in literacy and mathematics. The Elementary School Journal. 111(1). 1-6. doi:10.1086/653467.

Sanders, W.L., & Rivers, J.C. (1996). Cumulative and residual effects of teachers on future student academic achievement. *University of Tennessee Value-Added Research and Assessment Center.*

Saunders, W. M., Goldenberg, C. N., & Gallimore, R. (2009). Classroom learning: A prospective, quasi-experimental study of Title I schools. *American Education Research Journal*, 46(4), 1006-1033.

Schaeffer, K. (2021). America's public school teachers are far less racially and ethnically diverse than their students. *Pew Research Center*.

Schmoker, M. (2004). Learning communities at the crossroads: A response to Joyce and Cook. Phi Delta Kappan, 86(1), 84–89.

Schneider, D.A. (2013). Teacher perceptions and professional development as indicators of gender differences in educational outcomes.

Schul, J. E. (2011). Unintended consequences: Fundamental flaws that plague the No Child Left Behind act. *JEP: EJournal of Education Policy*.

Schumm, J., & Vaughn, S. (1992). Getting ready for inclusion: Is the stage set? *Learning Disabilities Research & Practice*, 10, 169–179.

Scruggs, T. E., & Mastropieri, M. A. (2017). Making inclusion work with co-teaching. *Teaching*

Exceptional Children, 49(4), 284–293. https://doi.org/10.1177/0040059916685065

Shipley, W. (2009). Examining teacher collaboration in a kindergarten building: A case study.

Shulman, L.S. (1986). Those who understand: Knowledge growth in teaching. *Educational Research,* 15(4). doi: 10.3102/0013189X015002004

Shulman, L.S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1-22.

Siebert, C.J. (2005). Promoting preservice teacher's success in classroom management by leveraging a local union's resources: A professional development school initiative. *Education*, 125(3), 385-392.

Slavit, D., Kennedy, A., Lean, Z., Nelson, T. H., & Deuel, A. (2011). Support for professional collaboration in middle school mathematics: A complex web. *Teacher Education Quarterly*, *38*(3), 113-131.

Smith, T. M., & Ingersoll, R. (2004). What are the effects of induction and mentoring on beginning teacher turnover?. *American Educational Research Journal, 41*(3), 681-714.

Smith, M.S. (2001). Practice-based professional development for teachers of mathematics. *National Council of Teachers of Mathematics*.

Snell, M. E. (2003). Applying research to practice: The more pervasive problem? Research and Practice for Persons with Severe Disabilities, 28(3), 143–147. doi:10.2511/rpsd.28.3.143

Solis, A. (2009). Pedagogical content knowledge- What matters most in the professional learning of content teachers in classrooms with diverse student populations. *IDRA Newsletter*, 2, 9-16.

Spellings, M. (2005). Policy letter from former Secretary of Education Margaret Spellings to the Chief State School Officers. *LBJ J. Pub. Aff.*, 17, 6.

Spelman, M., Bell, D., Thomas, E., & Briody, J. (2016). Combining professional development & instructional coaching to transform the classroom environment on pre-K-3 classrooms. *Journal of Research in Innovative Teaching*, 9(1), 31-46.

Stiggins, R J., & Conklin, N. F. (1992). In teachers' hands: Investigating the practice of classroom assessment. *SUNY Press*.

Stiggens, R.J. (2002). Assessment crisis: The absence of assessment for learning. *Phi Delta Kappan*, 83(10), 758-765.

Sunderman, G.L., J.S. Kim, G. Orfield. (2005). NCLB meets school realities: Lessons from the field. *Corwin Press*.

Tate, M. L. (2009). Workshops: Extend learning beyond your presentation with this brain friendly strategies. *Journal of Staff Development*, 30(1), 44-46.

Thorne Wallington, E. & Johnson, A. (2022). Systemic Approaches for Professional Development on Diverse Learners in Rural Communities. *Educational Considerations*, 48(2).

Tingley, S.C. (2021). Education conferences are a great place for teachers to grow. *Western Governors University*.

Tomlinson, C. A., & Jarvis, J. (2009). Differentiation: Making curriculum work for all students through responsive planning and instruction. *Systems and Models for Developing Programs for the Gifted and Talented*, 599-628.

Troen, V., & Bolles, K. (1994). Two teachers examine the power of teacher leadership. *Teachers as leaders: Perspectives on the professional development of teachers*, 275-286.

Tuithof, H., Logtenberg, A., Bronckhorst, L., Van Drie, J., Dorsman, L., & Van Tartwijk, J. (2019). What do we know about the pedagogical content knowledge of history teachers:

A review of empirical research. *Historical Encounters*, *6*(1), 72-95.

U.S. Department of Education (2009). State regulation of private schools. *U.S. Department of Education Office of Innovation and Improvement Office of Non-Public Education.*

U.S. Department of Education (2016). Non-regulatory guidance for Title II, Part A: Building systems of support for excellent teaching and learning.

U.S. Department of Education (2018). 2017-2018 Public school principal, and public school teacher documentation data files. *National Center for Education Statistics*.

U.S. Department of Education (2017). 2017-2018 Private school principal, and private school teacher documentation data files. *National Center for Education Statistics*.

Vesga, L.F. (2016). High school content-area teachers' responses to an exploratory, investigative, and experimental professional development program for content area literacy. *Florida International University*.

Villa, R., & Thousand, J. (2005). Creating an inclusive school. *Association for Supervision and Curriculum Development*.

Villegas-Reimers, E. (2003). Teacher professional development: An international review of the literature. *International Institute for Educational Planning*.

Volante, L. (2005). Accountability, student assessment, and the need for a comprehensive approach. International Electronic Journal for Leadership in Learning, 9(6), 6.

Vrasidas, C., & Zembylas, M. (2004). Online professional development: Lessons from the field. *Education+Training*.

Watts, G. D., & Castle, S. (1993). The time dilemma in school restructuring. *Phi Delta Kappan* 75(4): 306-10.

Weber, E. (2014). Turning learning into action: A proven methodology for effective transfer of

learning. *Kogan Page Publishers*.

Webster, C. (2019). ESEA titled programs- purposes and uses of funds. *New Jersey Department of Education.*

Weddle, H. (2022). Approaches to studying teacher collaboration for instructional improvement: A review of literature. *Educational Research Review, 35*, 1-46.

Wei, R.C., Darling-Hammond, L., & Adamson, F. (2010). Professional development in the United States: Trends and challenges. *National Staff Development Council*.

Wei, R. C., Darling-Hammond, L., Andree, A., Richardson, N., & Orphanos, S. (2009). Professional learning in the learning profession: A status report on teacher development in the U.S. and abroad. *National Staff Development Council: School Redesign Network at Stanford University*.

Weisling, N.F. & Gardiner, W. (2018). Making teacher mentoring work. *Phi Delta Kappan*, 99(6), 64-69.

Will, M. (2019). Higher pay leads to smarter teachers, global study says. *Education Week*.

Xie, K., Kim, M. K., Cheng, S.-L., & Luthy, N. C. (2017). Teacher professional development through digital content evaluation. *Educational Technology Research and Development*, *65*(4), 1067–1103. https://doi.org/10.1007/s11423-017-9519-0

Yoon, K. S., Duncan, T., Lee, S. W.-Y., Scarloss, B., & Shapley, K. (2007). Reviewing the evidence on how teacher professional development affects student achievement. National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest, 33.

Zambak, V., Alston, D., Marshall, J.,& Tyminski, A. (2017). Convincing Science Teachers For Inquiry-Based Instruction: Guskey's Staff Development Model Revisited. Science

Educator, 25(2), 108-116.

APPENDIX

Appendix A. Data Collection Tool

14418016

Conducted by:
U.S. DEPARTMENT OF EDUCATION
NATIONAL CENTER FOR EDUCATION STATISTICS

OMB No. 1850-0598 Approval Expires 06/30/2020
Collected by:
U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU

TEACHER QUESTIONNAIRE
NATIONAL TEACHER AND PRINCIPAL SURVEY
2017-18 SCHOOL YEAR

THIS SURVEY HAS BEEN ENDORSED BY:

American Association of School Administrators
American Association of School Librarians
American Federation of Teachers
American Montessori Society
American School Counselors Association
Association for Middle Level Education (formerly National Middle School Association)
Association for Supervision and Curriculum Development
Association of American Educators
Council of Chief State School Officers
Council of the Great City Schools
National Association of Elementary School Principals
National Association of Secondary School Principals
National Parent Teacher Association

Please return your completed questionnaire in the pre-addressed, postage-paid envelope or mail it to:

U.S. CENSUS BUREAU
ATTN: DCB/PCSPU, BUILDING 60A
1201 E. 10TH STREET
JEFFERSONVILLE, IN 47132-0001

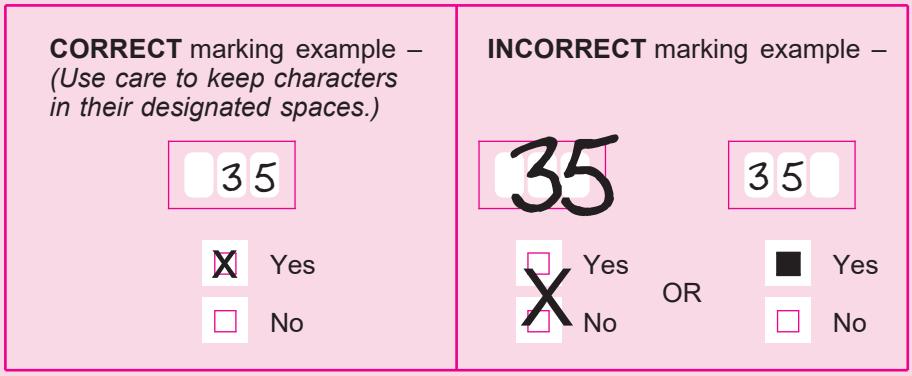
NOTICE:

The National Center for Education Statistics (NCES), within the U.S. Department of Education, is authorized to conduct this survey by the Education Sciences Reform Act of 2002 (ESRA 2002, 20 U.S.C. §9543).

FORM **NTPS-4A**
(07-19-2017)

INSTRUCTIONS AND DEFINITIONS

The data you enter on this form will be captured through the use of imaging technology. Please print all information clearly in ordinary characters, using a **blue or black ballpoint pen**.



a. If you are the teacher named on the cover page label, please complete the questionnaire.

b. Please do not write any comments near the answer boxes.

c. If you are unsure about how to answer a question, please give the best answer you can rather than leaving it blank.

d. If you have any questions, call the U.S. Census Bureau at 1-888-595-1338. Someone will be available to take your call Monday through Friday, between 8:00 a.m. and 8:00 p.m. (Eastern Time). The U.S. Census Bureau is also available to answer your questions via e-mail at: ntps@census.gov

Teachers who teach in multiple schools: Please respond to questions as they apply to the school where you received this questionnaire.

Grades K-12 and comparable ungraded levels. This survey focuses on schools offering any of grades K-12 or comparable ungraded levels at the elementary, middle, or secondary level. The term "ungraded levels" refers to schools that classify students by an alternative means other than particular grade levels (e.g., Kindergarten, 1st grade, 2nd grade, etc.).

All of the information you provide may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151).

1. GENERAL INFORMATION

1-1. How do you classify your position at THIS school, that is, the activity at which you spend most of your time during this school year?

Mark (X) only one box.

0100

- 1 ☐ Regular full-time teacher (in any of grades K-12 or comparable ungraded levels)
- 2 ☐ Regular part-time teacher (in any of grades K-12 or comparable ungraded levels)
- 3 ☐ Itinerant teacher (i.e. your assignment requires you to provide instruction at more than one school)
- 4 ☐ Long-term substitute (i.e. your assignment requires that you fill the role of a regular teacher on a long-term basis, but you are still considered a substitute)
- 5 ☐ Short-term substitute
- 6 ☐ Student teacher
- 7 ☐ Teacher aide
- 8 ☐ Administrator (e.g., principal, assistant principal, director, school head)
- 9 ☐ Library media specialist or Librarian
- 10 ☐ Other professional staff (e.g., counselor, curriculum coordinator, social worker)
- 11 ☐ Support staff (e.g., secretary)

1-2. Which box did you mark in item 1-1 above?

0101

- 1 ☐ Box 1 ➔ *GO TO item 1-5 on page 4.*
- 2 ☐ Box 2, 3, or 4 ➔ *GO TO item 1-4 on page 4.*
- 3 ☐ Box 5, 6, or 7 ➔ ***Please STOP now and return this questionnaire to the U.S. Census Bureau. Thank you for your time.***
- 4 ☐ Box 8, 9, 10, or 11

1-3. Do you TEACH one or more classes at THIS school, at least once per week, in any of grades K-12 or comparable ungraded levels?

- *If you work as a library media specialist or librarian at this school, do not include classes in which you teach students how to use the library (e.g., library skills or library research).*
- *If you teach a particular specialty either within or outside of a regular classroom (e.g., reading specialist, special education teacher, English as a Second Language teacher), include that time as a regularly scheduled class.*

0102

- 1 ☐ Yes ➔ *GO TO item 1-4 on page 4.*
- 2 ☐ No ➔ ***Please STOP now and return this questionnaire to the U.S. Census Bureau. Thank you for your time.***

1-4. How much time do you work as a TEACHER in any of grades K-12 or comparable ungraded levels at THIS school?

Mark (X) only one box.

0103

- 1 ☐ Full time
- 2 ☐ 3/4 time or more, but less than full-time
- 3 ☐ 1/2 time or more, but less than 3/4 time
- 4 ☐ 1/4 time or more, but less than 1/2 time
- 5 ☐ Less than 1/4 time
- 6 ☐ I do not teach any of grades K-12 or comparable ungraded levels ➔

Please STOP now and return this questionnaire to the U.S. Census Bureau. Thank you for your time.

1-5. When did you begin teaching, either full-time or part-time, at THIS school?

Do NOT include time spent as a student teacher.

Enter the month AND year. Report month as a number, that is, 01 for January, 02 for February, etc.

0104 Month ☐☐ 0105 Year ☐☐☐☐

1-6. During the LAST school year (2016-17), what was your MAIN activity?

Mark (X) only ONE box which best applies to how you spent the MOST time LAST school year.

If you were a substitute or itinerant teacher, please mark (X) the box which best applies to your MAIN activity LAST school year.

0106

- 1 ☐ Teaching in this school
- 2 ☐ Teaching in another public elementary, middle, or secondary school IN THIS SCHOOL SYSTEM
- 3 ☐ Teaching in a public elementary, middle, or secondary school IN A DIFFERENT SCHOOL SYSTEM IN THIS STATE
- 4 ☐ Teaching in a public elementary, middle, or secondary school IN ANOTHER STATE
- 5 ☐ Teaching in a PRIVATE elementary, middle, or secondary school
- 6 ☐ Teaching in a preschool
- 7 ☐ Teaching at a college or university
- 8 ☐ Student at a college or university
- 9 ☐ Working in a position in the field of education, but not as a teacher
- 10 ☐ Working in a position outside the field of education
- 11 ☐ On leave (e.g., maternity or paternity leave, disability leave, sabbatical)
- 12 ☐ Caring for family members, but not on leave (e.g., homemaking, childrearing)
- 13 ☐ Military service
- 14 ☐ Unemployed and seeking work
- 15 ☐ Retired from another job
- 16 ☐ Other – please specify ➔ 5106

1-7. **When did you FIRST begin teaching, either full-time or part-time, at the K-12 or comparable ungraded level?**

- *Do NOT include time spent as a student teacher.*
- *Enter the month AND year. Report month as a number, that is, 01 for January, 02 for February, etc.*

0107 Month **0108** Year

1-8. **In how many schools have you taught, either full-time or part-time, at the K-12 or comparable ungraded level?**

- *Do NOT include time spent as a student teacher.*

0109 Schools

1-9. **Excluding time spent on maternity/paternity leave or sabbatical, how many school years have you worked, either full-time or part-time, as a K-12 or comparable ungraded level teacher in public, public charter, or private schools?**

- *Include the current school year.*
- *Do NOT include time spent as a student teacher.*
- *Report years to the nearest whole year, not fractions or months.*

0110 School years

2. CLASS ORGANIZATION

2-1. **Do you currently teach students in any of these grades at THIS school?**
Please mark (X) Yes or No for each grade level.

0200	**Prekindergarten**	1 ☐	Yes	2 ☐	No
0201	**Kindergarten**	1 ☐	Yes	2 ☐	No
0202	**1st**	1 ☐	Yes	2 ☐	No
0203	**2nd**	1 ☐	Yes	2 ☐	No
0204	**3rd**	1 ☐	Yes	2 ☐	No
0205	**4th**	1 ☐	Yes	2 ☐	No
0206	**5th**	1 ☐	Yes	2 ☐	No
0207	**6th**	1 ☐	Yes	2 ☐	No
0208	**7th**	1 ☐	Yes	2 ☐	No
0209	**8th**	1 ☐	Yes	2 ☐	No
0210	**9th**	1 ☐	Yes	2 ☐	No
0211	**10th**	1 ☐	Yes	2 ☐	No
0212	**11th**	1 ☐	Yes	2 ☐	No
0213	**12th**	1 ☐	Yes	2 ☐	No
0214	**Ungraded**	1 ☐	Yes	2 ☐	No

2-2. **Of all the students you teach at THIS school, how many have an Individualized Education Program (IEP) because they have disabilities or are special education students?**
Do NOT include students who have only a 504 plan.
If none, please mark (X) the box.

0215 0 ☐ None **or** ☐☐☐ Students

2-3. Of all the students you teach at THIS school, how many are of limited-English proficiency (LEP) or are English-language learners (ELLs)?
(Students of limited-English proficiency [LEP] or English-language learners [ELLs] are those whose native or dominant language is other than English and who have sufficient difficulty speaking, reading, writing, or understanding the English language as to deny them the opportunity to learn successfully in an English-speaking-only classroom.)
If none, please mark (X) the box.

0216 0 ☐ None **or** ☐☐☐ Students

2-4. Using Table 1 on page 10, this school year, in what subject is your MAIN teaching assignment at THIS school, that is, the subject matter in which you teach the most classes?
Record one of the main teaching assignment codes and labels from Table 1 on page 10.

0217 ☐☐☐ Main Teaching Assignment Code | 5217 | Main Teaching Assignment Label

2-5. Are you intentionally assigned to instruct the same group of students for more than one year (e.g., looping)?

0218 1 ☐ Yes
2 ☐ No

2-6a. During any of your classes, do you have students use instructional software to learn some or all of their lessons?

0219 1 ☐ Yes
2 ☐ No → *GO TO item 2-7 on page 8.*

b. Does any of the instructional software the students use AUTOMATICALLY ADJUST the level of instruction to an individual student's performance?

0220 1 ☐ Yes
2 ☐ No

2-7. Which statement best describes the way YOUR classes at THIS school are organized?
Mark (X) only one box.

0221

1 ☐ You instruct several classes of different students most or all of the day in one or more subjects (sometimes called Departmentalized Instruction).

2 ☐ You are an elementary school teacher who teaches only one subject to different classes of students (sometimes called an Elementary Subject Specialist).

3 ☐ You instruct the same group of students all or most of the day in multiple subjects (sometimes called a Self-Contained Class).

4 ☐ You are one of two or more teachers, in the same class, at the same time, and are jointly responsible for teaching the same group of students all or most of the day (sometimes called Team Teaching).

5 ☐ You instruct a small number of selected students released from or in their regular classes in specific skills or to address specific needs (sometimes called a "Pull-Out" Class or "Push-In" Instruction).

2-8. Which box did you mark in item 2-7 above?

0222

1 ☐ Box 1 or 2 ➔ *GO TO item 2-12 on page 11.*

2 ☐ Box 3 or 4

3 ☐ Box 5 ➔ *GO TO item 2-10 below.*

2-9. During your most recent FULL WEEK of teaching at THIS school, what is the total number of students enrolled in the class you taught?
If you teach more than one self-contained class, report the number from your class with the most students.

0223 ☐☐ Students ➔ *GO TO item 2-11 on page 9.*

2-10. During your most recent FULL WEEK of teaching at THIS school, what is the average number of students you taught at any one time?

0224 ☐☐ Students

2-11. **During your most recent FULL WEEK of teaching, approximately how many minutes did YOU spend teaching each of the following subjects at THIS school?**

- *If you taught two or more subjects at the same time, apportion the time to each subject the best you can.*
- *If you did not teach a particular subject during the week, mark (X) the "None" box.*

a. English, reading, or language arts (including reading and writing)

0270 Minutes per day 0271 Days per week

0 ☐ None **or** ☐☐☐ **for** ☐

(1) Of these minutes, how many were designated for reading instruction?

0272 Minutes per day 0273 Days per week

0 ☐ None **or** ☐☐☐ **for** ☐

GO TO item 2-11b below.

b. Arithmetic or mathematics

0274 Minutes per day 0275 Days per week

0 ☐ None **or** ☐☐☐ **for** ☐

c. Social studies or history

0276 Minutes per day 0277 Days per week

0 ☐ None **or** ☐☐☐ **for** ☐

d. Science

0278 Minutes per day 0279 Days per week

0 ☐ None **or** ☐☐☐ **for** ☐

GO TO Section 3 on page 12.

Table 1. Main Teaching Assignment and Subject-matter Codes and Labels For Questions 2-4 and 2-13

General Education Codes and Labels

Elementary Education
101 Early childhood or pre-K, general
102 Elementary grades, general
103 Middle grades, general

Special Education
110 Special education, any

Subject-matter Specific Codes and Labels

Arts and Music
141 Art or arts and crafts
142 Art history
143 Dance
144 Drama or theater
145 Music

English and Language Arts
151 Communications
152 Composition
153 English
154 Journalism
155 Language arts
157 Literature or literary criticism
158 Reading
159 Speech

English as a Second Language (ESL)
160 ESL or bilingual education: General
161 ESL or bilingual education: Spanish
162 ESL or bilingual education: Other languages

Foreign Languages
171 French
172 German
173 Latin
174 Spanish
175 Other foreign language

Health Education
181 Health education
182 Physical education

Mathematics and Computer Science
191 Algebra I
192 Algebra II
193 Algebra III
194 Basic and general mathematics
195 Business and applied math
196 Calculus and pre-calculus
197 Computer science
198 Geometry
199 Pre-algebra
200 Statistics and probability
201 Trigonometry

Natural Sciences
210 Science, general
211 Biology or life sciences
212 Chemistry
213 Earth sciences
214 Engineering
215 Integrated science
216 Physical sciences
217 Physics
218 Other natural sciences

Social Sciences
220 Social studies, general
221 Anthropology
222 Area or ethnic studies (excluding Native American studies)
225 Economics
226 Geography
227 Government or civics
228 History
231 Native American studies
232 Political Science
233 Psychology
234 Sociology
235 Other social sciences

Career or Technical Education
241 Agriculture and natural resources
242 Business management
243 Business support
244 Marketing and distribution
245 Healthcare occupations
246 Construction trades, engineering, or science technologies (including CADD and drafting)
247 Mechanics and repair
249 Manufacturing or precision production (electronics, metalwork, textiles, etc.)
250 Communications and related technologies (including design, graphics, or printing; not including computer science)
253 Personal and public services (including culinary arts, cosmetology, child care, social work, protective services, custodial services, and interior design)
254 Family and consumer sciences education
255 Industrial arts or technology education
256 Other career or technical education

Miscellaneous
262 Driver education
264 Library or information science
265 Military science or ROTC
266 Philosophy
267 Religious studies, theology, or divinity

Other
268 Other

NOTE: *Items 2-12 and 2-13 are for teachers who marked box 1 or 2 for item 2-7 on page 8.*

If you marked box 3, 4, or 5 for item 2-7 ➔ *GO TO Section 3 on page 12.*

2-12. How many separate class periods or sections do you currently teach at THIS school?

- *Do NOT include homeroom periods or study halls.*
  (Example: If you teach 2 classes or sections of chemistry I, a class or section of physics I, and a class or section of physics II, you would report 04 classes or sections.)

0230 ☐☐ Number of classes or sections

2-13. Using Table 1 on page 10, for EACH class period or section that you reported in item 2-12, record the subject-matter code, subject-matter label, grade level code, and number of students.

- *If you teach a class or section with more than one grade level, list the grade level with the most students in column C and record the total number of students in column D.*
- *If you reported more than 10 periods or sections in item 2-12, report on only 10 of those periods or sections.*

	A. Subject-Matter Code from Table 1		B. Subject-Matter Label from Table 1	C. Grade Level Code from list below		D. Number of Students	
Example	192		Algebra II	11		33	
(1)	☐☐☐	0240	5240	☐☐	0250	☐☐☐	0260
(2)	☐☐☐	0241	5241	☐☐	0251	☐☐☐	0261
(3)	☐☐☐	0242	5242	☐☐	0252	☐☐☐	0262
(4)	☐☐☐	0243	5243	☐☐	0253	☐☐☐	0263
(5)	☐☐☐	0244	5244	☐☐	0254	☐☐☐	0264
(6)	☐☐☐	0245	5245	☐☐	0255	☐☐☐	0265
(7)	☐☐☐	0246	5246	☐☐	0256	☐☐☐	0266
(8)	☐☐☐	0247	5247	☐☐	0257	☐☐☐	0267
(9)	☐☐☐	0248	5248	☐☐	0258	☐☐☐	0268
(10)	☐☐☐	0249	5249	☐☐	0259	☐☐☐	0269

Grade Level Codes

If your class period or section has students from more than one grade level (i.e., MIXED GRADES), please list the grade with the most students.

PK	Prekindergarten	07	7th grade
KG	Kindergarten	08	8th grade
01	1st grade	09	9th grade
02	2nd grade	10	10th grade
03	3rd grade	11	11th grade
04	4th grade	12	12th grade
05	5th grade	UG	Ungraded
06	6th grade		

3. EDUCATION AND TRAINING

3-1a. Do you have a bachelor's degree?
If you have more than one bachelor's degree, information about additional degrees will be asked in item 3-3 on page 15.

0300
1 ☐ Yes
2 ☐ No → *GO TO item 3-3 on page 15.*

b. What is the name of the college or university where you earned this degree?

Name of college or university

5301

In what city and state is it located?

City

5302

State

5303

0304 1 ☐ Located outside the United States

c. In what year did you receive your bachelor's degree?

0305 ☐☐☐☐ Year

d. Which of the following best describes your bachelor's degree?
Mark (X) only one box.

0306
1 ☐ It was awarded by your school's College of Education, School of Education, or Department of Education
2 ☐ It was awarded by another college, school, or department, not in education

e. Using Table 2 on page 13, what was your major field of study?

0307 ☐☐☐ Major Field of Study Code

5307 Major Field of Study Label

f. Did you have a second major field of study?
Do NOT report academic minors or concentrations.

0308
1 ☐ Yes
2 ☐ No → *GO TO item 3-1h on page 14.*

g. Using Table 2 on page 13, what was your second major field of study?
Do NOT report academic minors or concentrations.

0309 ☐☐☐ Major Field of Study Code

5309 Major Field of Study Label

Table 2. Major and Minor Fields of Study Codes and Labels For Questions 3-1e, 3-1g, 3-1i, 3-2e, and 3-3b

General Education Codes and Labels

Elementary Education
101 Early childhood or pre-K, general
102 Elementary grades, general

Secondary Education
103 Middle grades, general
104 Secondary grades, general

Special Education
110 Special education, any

Other Education
131 Administration
132 Counseling and guidance
133 Educational psychology
134 Policy studies
135 School psychology
136 Other non-subject-matter-specific education

Subject-matter Specific Codes and Labels

Arts and Music
141 Art or arts and crafts
142 Art history
143 Dance
144 Drama or theater
145 Music

English and Language Arts
151 Communications
152 Composition
153 English
154 Journalism
155 Language arts
156 Linguistics
157 Literature or literary criticism
158 Reading
159 Speech

English as a Second Language (ESL)
160 ESL or bilingual education: General
161 ESL or bilingual education: Spanish
162 ESL or bilingual education: Other languages

Foreign Languages
171 French
172 German
173 Latin
174 Spanish
175 Other foreign language

Health Education
181 Health education
182 Physical education

Mathematics and Computer Science
190 Mathematics
197 Computer science
200 Statistics and probability

Natural Sciences
211 Biology or life sciences
212 Chemistry
213 Earth sciences
214 Engineering
217 Physics
218 Other natural sciences

Social Sciences
220 Social studies, general
221 Anthropology
222 Area or ethnic studies (excluding Native American studies)
223 Criminal justice
224 Cultural studies
225 Economics
226 Geography
227 Government or civics
228 History
229 International studies
230 Law
231 Native American studies
232 Political science
233 Psychology
234 Sociology
235 Other social sciences

Career or Technical Education
241 Agriculture and natural resources
242 Business management
243 Business support
244 Marketing and distribution
245 Healthcare occupations
246 Construction trades, engineering, or science technologies (including CADD and drafting)
247 Mechanics and repair
249 Manufacturing or precision production (electronics, metalwork, textiles, etc.)
250 Communications and related technologies (including design, graphics, or printing; not including computer science)
253 Personal and public services (including culinary arts, cosmetology, child care, social work, protective services, custodial services, and interior design)
254 Family and consumer sciences education
255 Industrial arts or technology education
256 Other career or technical education

Miscellaneous
261 Architecture
263 Humanities or liberal studies
264 Library or information science
265 Military science or ROTC
266 Philosophy
267 Religious studies, theology, or divinity

Other
268 Other

3-1h. Did you have a minor field of study?

0310
1 ☐ Yes
2 ☐ No → *GO TO item 3-2a below.*

i. Using Table 2 on page 13, what was your minor field of study?

0311 ☐☐☐ Minor Field of Study Code | 5311 | Minor Field of Study Label

3-2a. Do you have a master's degree?
● *If you have more than one master's degree, information about additional degrees will be asked in item 3-3 on page 15.*

0312
1 ☐ Yes
2 ☐ No → *GO TO item 3-3 on page 15.*

b. Was at least a portion of the cost of your master's degree paid for by a STATE, SCHOOL, or SCHOOL DISTRICT in which you taught?

0313
1 ☐ Yes
2 ☐ No

c. In what year did you receive your master's degree?

0314 ☐☐☐☐ Year

d. Which of the following best describes your master's degree?
● *Mark (X) only one box.*

0315
1 ☐ It was awarded by your school's College of Education, School of Education, or Department of Education
2 ☐ It was awarded by another college, school, or department, not in education

e. Using Table 2 on page 13, what was your major field of study for your master's degree?

0316 ☐☐☐ Major Field of Study Code | 5316 | Major Field of Study Label

3-3. Have you earned any of the degrees or certificates listed below?

0317
1 ☐ Yes
2 ☐ No ➔ *GO TO item 3-4 on page 16.*

a. Degree or certificate	b. Using Table 2 on page 13, what was your major field of study for each degree or certificate?	c. Which of the following best describes each degree or certificate? *Mark (X) only one box.*	d. In what year?
(1) Vocational certificate	Major Field of Study Code 0318 Major Field of Study Label 5318		0319 Year
(2) Associate's degree	Major Field of Study Code 0320 Major Field of Study Label 5320		0321 Year
(3) SECOND Bachelor's degree	Major Field of Study Code 0322 Major Field of Study Label 5322	0323 1 ☐ It was awarded by your school's College of Education, School of Education, or Department of Education 2 ☐ It was awarded by another college, school, or department, not in education	0324 Year
(4) SECOND Master's degree	Major Field of Study Code 0325 Major Field of Study Label 5325	0326 1 ☐ It was awarded by your school's College of Education, School of Education, or Department of Education 2 ☐ It was awarded by another college, school, or department, not in education	0327 Year
(5) Educational specialist or professional diploma (at least one year beyond a master's level)	Major Field of Study Code 0328 Major Field of Study Label 5328	0329 1 ☐ It was awarded by your school's College of Education, School of Education, or Department of Education 2 ☐ It was awarded by another college, school, or department, not in education	0330 Year
(6) Certificate of Advanced Graduate Studies	Major Field of Study Code 0331 Major Field of Study Label 5331	0332 1 ☐ It was awarded by your school's College of Education, School of Education, or Department of Education 2 ☐ It was awarded by another college, school, or department, not in education	0333 Year
(7) Doctorate or first professional degree (Ph.D., Ed.D., M.D., J.D., D.D.S.)	Major Field of Study Code 0334 Major Field of Study Label 5334	0335 1 ☐ It was awarded by your school's College of Education, School of Education, or Department of Education 2 ☐ It was awarded by another college, school, or department, not in education	0336 Year

3-4. **Have you ever taken any graduate or undergraduate courses that focused SOLELY on teaching methods?**

- *Do NOT include student teaching (sometimes called practice teaching).*
- *Do NOT include professional development courses, workshops, or seminars.*

0337
1 ☐ Yes → **How many courses?** *Mark (X) only one box.* 0338
- 1 ☐ 1 or 2 courses
- 2 ☐ 3 or 4 courses
- 3 ☐ 5 to 9 courses
- 4 ☐ 10 or more courses

2 ☐ No → *GO TO item 3-6 below.*

3-5. **Did you take any of the courses you marked in 3-4 before your first year of teaching?**

0339
1 ☐ Yes
2 ☐ No

3-6. **BEFORE your first year of teaching, did you take any graduate or undergraduate courses which taught you —**

a. Classroom management techniques?

0340
1 ☐ Yes
2 ☐ No

b. Lesson planning?

0341
1 ☐ Yes
2 ☐ No

c. How to assess learning?

0342
1 ☐ Yes
2 ☐ No

d. How to use student performance data to inform instruction?

0343
1 ☐ Yes
2 ☐ No

e. How to serve students from diverse economic backgrounds?

0344
1 ☐ Yes
2 ☐ No

3-6. *Continued* – **BEFORE your first year of teaching, did you take any graduate or undergraduate courses which taught you —**

f. How to serve students with special needs?

0345
1 ☐ Yes
2 ☐ No

g. How to teach students who are limited-English proficient (LEP) or English-language learners (ELLs)?

0346
1 ☐ Yes
2 ☐ No

3-7a. Did you have any student teaching (sometimes called practice teaching)?

0347
1 ☐ Yes
2 ☐ No → *GO TO Section 4 on page 18.*

b. In how many different classrooms did you student teach?
- *Mark (X) only one box.*

0348
1 ☐ 1
2 ☐ 2
3 ☐ 3 or more

c. How long did your student teaching last?
- *If you student taught in more than one classroom, report the total amount of time spent student teaching across all assignments.*
- *Mark (X) only one box.*

0349
1 ☐ 4 weeks or less
2 ☐ 5-7 weeks
3 ☐ 8-11 weeks
4 ☐ 12 weeks or more

4. CERTIFICATION

4-1. Did you enter teaching through an alternative route to certification program?
(An alternative route to certification program is a program that was designed to expedite the transition of nonteachers to a teaching career, for example, a state, district, or university alternative route to certification program.)

0400 1 ☐ Yes
2 ☐ No

The next series of questions is about state certification. Please read the questions carefully. This section allows teachers to report UP TO TWO current teaching certificates in the state where they are teaching, plus several content areas per certificate, if applicable. Those who have only one certificate that applies to only one content area DO NOT have to fill out the entire section and should follow the GO TO instructions.

4-2a. Which of the following describes the teaching certificate you currently hold that certifies you to teach in THIS state?
- *Mark (X) only one box.*
- *If you currently hold more than one of the following, a second certification may be listed in item 4-3.*

0401
1 ☐ Regular or standard state certificate or advanced professional certificate
2 ☐ Certificate issued after satisfying all requirements except the completion of a probationary period (in some states this is called a probationary certificate)
3 ☐ Certificate that requires some additional coursework, student teaching, or passage of a test before regular certification can be obtained (in some states this is called a temporary or provisional certificate)
4 ☐ Certificate issued to persons who must complete a certification program in order to continue teaching (in some states this is called a waiver or emergency certificate)
5 ☐ I do not hold any of the above certifications in THIS state ➔ *GO TO Section 5 on page 22.*

b. Using Table 3 on page 19, in what content area(s) and grade range(s) does the teaching certificate marked above certify you to teach in THIS state?
(For some teachers, the content area may be special education or the grade level.)
- *If this certificate certifies you to teach in more than one content area, you may report additional content areas in later items.*
- *If your certificate does not restrict you to a specific grade range(s), mark (X) all three grade ranges.*

(1) Content Area	(2) Grade Range of Certificate (*Mark (X) all that apply*)
Content Area Code 0402 ☐☐☐	1 ☐ Early childhood, preschool, or at least one of grades K-5 0403
Content Area Label 5402	1 ☐ At least one of grades 6-8 0404
	1 ☐ At least one of grades 9-12 0405

c. Does this certificate marked in item 4-2a certify you to teach in additional content areas?

0406 1 ☐ Yes ➔ *GO TO item 4-2d on page 20.*
2 ☐ No ➔ *GO TO item 4-3a on page 20.*

Table 3. Certification Content Area Codes and Labels For Questions 4-2b, 4-2d, 4-3c, and 4-3e

General Education Codes and Labels

Elementary Education
101 Early childhood or Pre-K, general
102 Elementary grades, general
103 Middle grades, general

Secondary Education
103 Middle grades, general
104 Secondary grades, general

Special Education
111 Special education, general
112 Autism
113 Deaf and hard-of-hearing
114 Developmentally delayed
115 Early childhood special education
116 Emotionally disturbed or behavior disorders

Special Education – *Continued*
117 Learning disabilities
118 Intellectual disabilities
119 Mildly or moderately disabled
120 Orthopedically impaired
121 Severely or profoundly disabled
122 Speech or language impaired
123 Traumatically brain-injured
124 Visually impaired
125 Other special education

General Administration
131 Administration
132 Counseling and guidance

Subject-matter Specific Codes and Labels

Arts and Music
141 Art or arts and crafts
142 Art History
143 Dance
144 Drama or theater
145 Music

English and Language Arts
151 Communications
152 Composition
153 English
154 Journalism
155 Language arts
157 Literature or literary criticism
158 Reading
159 Speech

English as a Second Language (ESL)
160 ESL or bilingual education: General
161 ESL or bilingual education: Spanish
162 ESL or bilingual education: Other languages

Foreign Languages
171 French
172 German
173 Latin
174 Spanish
175 Other foreign language

Health Education
181 Health education
182 Physical education

Mathematics and Computer Science
190 Mathematics
197 Computer science
200 Statistics and probability

Natural Sciences
210 Science, general
211 Biology or life sciences
212 Chemistry
213 Earth sciences
216 Physical sciences
217 Physics
218 Other natural sciences

Social Sciences
220 Social studies, general
221 Anthropology
222 Area or ethnic studies (excluding Native American studies)
225 Economics
226 Geography
227 Government or civics
228 History
231 Native American studies
232 Political Science
233 Psychology
234 Sociology
235 Other social sciences

Career or Technical Education
241 Agriculture and natural resources
242 Business management
243 Business support
244 Marketing and distribution
245 Healthcare occupations
246 Construction trades, engineering, or science technologies (including CADD and drafting
247 Mechanics and repair
249 Manufacturing or precision production (electronics, metalwork, textiles, etc.)
250 Communications and related technologies (including design, graphics or printing; not including computer science)
253 Personal and public services (including culinary arts, cosmetology, child care, social work, protective services, custodial services, and interior design)
254 Family and consumer sciences education
255 Industrial arts or technology education
256 Other career or technical education

Miscellaneous
262 Driver education
263 Humanities or liberal studies
264 Library or information science
265 Military science or ROTC
266 Philosophy
267 Religious studies, theology, or divinity

Other
268 Other

4-2. *Continued –*

d. Using Table 3 on page 19, please record all ADDITIONAL content areas and grade ranges in which this certificate certifies you to teach:
If your certificate does not restrict you to a specific range(s), mark (X) all three ranges.

Additional Content Area	Grade Range of Certificate (*Mark (X) all that apply*)
(1) Content Area Code **0407** ___ Content Area Label **5407** ___	1 ☐ Early childhood, preschool, or at least one of grades K-5 **0408** 1 ☐ At least one of grades 6-8 **0409** 1 ☐ At least one of grades 9-12 **0410**
(2) Content Area Code **0411** ___ Content Area Label **5411** ___	1 ☐ Early childhood, preschool, or at least one of grades K-5 **0412** 1 ☐ At least one of grades 6-8 **0413** 1 ☐ At least one of grades 9-12 **0414**
(3) Content Area Code **0415** ___ Content Area Label **5415** ___	1 ☐ Early childhood, preschool, or at least one of grades K-5 **0416** 1 ☐ At least one of grades 6-8 **0417** 1 ☐ At least one of grades 9-12 **0418**
(4) Content Area Code **0419** ___ Content Area Label **5419** ___	1 ☐ Early childhood, preschool, or at least one of grades K-5 **0420** 1 ☐ At least one of grades 6-8 **0421** 1 ☐ At least one of grades 9-12 **0422**

4-3a. Do you have another current teaching certificate that certifies you to teach in THIS state?

0423
1 ☐ Yes
2 ☐ No → *GO TO Section 5 on page 22.*

b. Which of the following describes this current teaching certificate you hold in THIS state?
Mark (X) only one box.

0424
1 ☐ Regular or standard state certificate or advanced professional certificate
2 ☐ Certificate issued after satisfying all requirements except the completion of a probationary period (in some states this is called a probationary certificate)
3 ☐ Certificate that requires some additional coursework, student teaching, or passage of a test before regular certification can be obtained (in some states this is called a temporary or provisional certificate)
4 ☐ Certificate issued to persons who must complete a certification program in order to continue teaching (in some states this is called a waiver or emergency certificate)

4-3. *Continued –*

c. Using Table 3 on page 19, in what content area(s) and grade range(s) does the teaching certificate marked in question 4-3b on page 20 certify you to teach in THIS state?
(For some teachers, the content area may be special education or the grade level.)
- *If this certificate certifies you to teach in more than one content area, you may report additional content areas in later items.*
- *If your certificate does not restrict you to a specific grade range(s), mark (X) all three grade ranges.*

(1) Content Area	(2) Grade Range of Certificate (*Mark (X) all that apply*)
Content Area Code 0425 ☐☐☐ Content Area Label 5425	1 ☐ Early childhood, preschool, or at least one of grades K-5 0426 1 ☐ At least one of grades 6-8 0427 1 ☐ At least one of grades 9-12 0428

d. Does this certificate marked in item 4-3b certify you to teach in additional content areas?

0429
- 1 ☐ Yes
- 2 ☐ No → *GO TO Section 5 on page 22.*

e. Using Table 3 on page 19, please record all ADDITIONAL content areas and grade ranges in which this certificate certifies you to teach:
- *If your certificate does not restrict you to a specific grade range(s), mark (X) all three grade ranges.*

Additional Content Area	Grade Range of Certificate (*Mark (X) all that apply*)
(1) Content Area Code 0430 ☐☐☐ Content Area Label 5430	1 ☐ Early childhood, preschool, or at least one of grades K-5 0431 1 ☐ At least one of grades 6-8 0432 1 ☐ At least one of grades 9-12 0433
(2) Content Area Code 0434 ☐☐☐ Content Area Label 5434	1 ☐ Early childhood, preschool, or at least one of grades K-5 0435 1 ☐ At least one of grades 6-8 0436 1 ☐ At least one of grades 9-12 0437
(3) Content Area Code 0438 ☐☐☐ Content Area Label 5438	1 ☐ Early childhood, preschool, or at least one of grades K-5 0439 1 ☐ At least one of grades 6-8 0440 1 ☐ At least one of grades 9-12 0441
(4) Content Area Code 0442 ☐☐☐ Content Area Label 5442	1 ☐ Early childhood, preschool, or at least one of grades K-5 0443 1 ☐ At least one of grades 6-8 0444 1 ☐ At least one of grades 9-12 0445

5. TEACHER EVALUATIONS

5-1. During the LAST school year (2016-17), were you evaluated at THIS school?

2500
- 1 ☐ Yes
- 2 ☐ No → **(1) During the LAST school year (2016-17), why were you not evaluated at THIS school?**

Mark (X) only one box.

2501
- 1 ☐ I was not a teacher at this school last year
- 2 ☐ I was not evaluated because I am only evaluated every 2 or more years
- 3 ☐ This school does not conduct teacher evaluations
- 4 ☐ I was not evaluated for another reason

GO TO item 6-1a on page 24.

5-2. To what extent do you agree or disagree with the following statements about THIS school's evaluation process LAST school year (2016-17)?

Mark (X) one box on each line.

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
a. Overall, the evaluation process was fair.	2502 1 ☐	2 ☐	3 ☐	4 ☐
b. The evaluation process was based on what is known about good teaching practice.	2503 1 ☐	2 ☐	3 ☐	4 ☐
c. I had a strong understanding of how I would be evaluated at this school.	2504 1 ☐	2 ☐	3 ☐	4 ☐
d. The evaluation process helped me to determine whether I had been successful with my students.	2505 1 ☐	2 ☐	3 ☐	4 ☐
e. The evaluation process had a positive effect on my teaching.	2506 1 ☐	2 ☐	3 ☐	4 ☐
f. Overall, the evaluation process led to improved student learning.	2507 1 ☐	2 ☐	3 ☐	4 ☐
g. The results of my evaluation were accurate.	2508 1 ☐	2 ☐	3 ☐	4 ☐

5-3. Did you receive feedback from your evaluation LAST school year (2016-17)?

2509
1 ☐ Yes
2 ☐ No → *GO TO item 5-5 below.*

5-4a. Did you receive feedback on your teaching methods from your evaluation LAST school year (2016-17)?

2510
1 ☐ Yes
2 ☐ No

b. Did you receive feedback on how well you were meeting the school's performance goals from your evaluation LAST school year (2016-17)?

2511
1 ☐ Yes
2 ☐ No

c. Have you used the feedback you received from your evaluation LAST school year (2016-17), to improve your teaching?

2512
1 ☐ Yes
2 ☐ No

5-5. Was participation in professional development considered during your evaluation LAST school year (2016-17)?

2513
1 ☐ Yes
2 ☐ No

6. TEACHER PROFESSIONAL DEVELOPMENT

6-1. **During the past 12 months, how frequently, if at all, did you participate in each of the following professional development activities?**

If an activity occurred all day for several days, but less than one month of the year in total, please mark "Once or a few times a year"

		Mark (X) one box on each line.			
		Did not participate	**Once or a few times a year**	**Once or a few times a month**	**Once or a few times a week**
2600	a. Planned lessons or courses with other teachers	1 ☐	2 ☐	3 ☐	4 ☐
2601	b. Consulted with other teachers about individual students	1 ☐	2 ☐	3 ☐	4 ☐
2602	c. Collaborated with other teachers on issues of instruction excluding administrative meetings	1 ☐	2 ☐	3 ☐	4 ☐
2603	d. Acted as a coach or mentor to other teachers or staff	1 ☐	2 ☐	3 ☐	4 ☐
2604	e. Received coaching or mentoring from other teachers or staff	1 ☐	2 ☐	3 ☐	4 ☐
2605	f. Participated in online or web-based professional development	1 ☐	2 ☐	3 ☐	4 ☐
2606	g. Participated in a workshop	1 ☐	2 ☐	3 ☐	4 ☐
2607	h. Attended a conference	1 ☐	2 ☐	3 ☐	4 ☐

6-2. **During the past 12 months, how many HOURS, if any, did you spend participating in any of the following types of professional development?**

		Mark (X) one box on each line.				
		Did not participate	8 hours or less	9-16 hours	17-32 hours	33 hours or more
2608	a. Professional development that directly relates to your teaching assignment	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
2609	b. Professional development on using technology to support instruction	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
2610	c. Professional development on teaching Science, Technology, Engineering or Mathematics (STEM), or incorporating STEM into other subjects	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
2611	d. Professional development on classroom and behavior management	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
2612	e. Professional development on instruction strategies to teach students with disabilities or IEPs	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
2613	f. Professional development on differentiated instruction for all students	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
2614	g. Professional development on preparing students to take annual assessments	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
2615	h. Professional development on analyzing and interpreting student achievement data	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

6-3. **Considering all of the professional development you participated in during the past 12 months, how relevant was it to your teaching assignment?**
Mark (X) only one box.

2616
1 ☐ Did not complete any professional development in the past 12 months → *GO TO item 6-7 on page 27.*
2 ☐ Not relevant at all
3 ☐ Somewhat relevant
4 ☐ Very relevant

6-4a. **During the past 12 months, how often did you incorporate what you learned in professional development into your teaching?**
Mark (X) only one box

2617
1 ☐ Never → *GO TO item 6-5 below.*
2 ☐ Rarely
3 ☐ Often
4 ☐ Always

b. **During the past 12 months, did you receive feedback about how you incorporated what you learned from professional development into your teaching?**

2618
1 ☐ Yes
2 ☐ No

6-5. **As a result of completing any professional development activities in the past 12 months, did you receive credits toward re-certification or advanced certification?**

2619
1 ☐ Yes
2 ☐ No

6-6. **During the past 12 months, did you receive any of the following types of support?**

a. **Release time from teaching to attend professional development**

2620
1 ☐ Yes
2 ☐ No

b. **Funding or reimbursement for attending conferences or workshops for professional development**

2621
1 ☐ Yes
2 ☐ No

c. **Funding or reimbursement for travel and/or daily expenses to attend professional development**

2622
1 ☐ Yes
2 ☐ No

d. **Full or partial reimbursement of college tuition for courses related to professional development**

2623
1 ☐ Yes
2 ☐ No

e. **Stipend for professional development activities that took place outside regular work hours**

2624
1 ☐ Yes
2 ☐ No

6-7. **To what extent do you agree or disagree with the following statements about YOUR professional development as a teacher at THIS school?**

		Mark (X) one box on each line.			
		Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
2625	a. I have sufficient resources available for my professional development.	1 ☐	2 ☐	3 ☐	4 ☐
2626	b. I have access to about the same amount of resources for professional development as other teachers.	1 ☐	2 ☐	3 ☐	4 ☐
2627	c. My professional development opportunities are aligned with this school's performance goals.	1 ☐	2 ☐	3 ☐	4 ☐
2628	d. The techniques I am learning about in my professional development will help improve student achievement.	1 ☐	2 ☐	3 ☐	4 ☐
2629	e. I feel capable of incorporating the kinds of techniques I am learning about in my professional development.	1 ☐	2 ☐	3 ☐	4 ☐
2630	f. The types of professional development available to me are consistent with my own professional goals.	1 ☐	2 ☐	3 ☐	4 ☐
2631	g. I have the opportunity to provide feedback to school leaders about my professional development experience to determine its value and impact.	1 ☐	2 ☐	3 ☐	4 ☐

6-8. **Does THIS school provide teachers with time for INDIVIDUAL professional development during regular contract hours?**

2632
1 ☐ Yes
2 ☐ No

6-9. **Does THIS school provide teachers with time for TEAM-BASED professional development during regular contract hours?**

2633
1 ☐ Yes
2 ☐ No

7. TEACHER ENGAGEMENT

7-1. To what extent do you agree or disagree with the following statements about your work at this school?

		Mark (X) one box on each line.			
		Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
2700	a. The stress and disappointments involved in teaching at this school aren't really worth it.	1 ☐	2 ☐	3 ☐	4 ☐
2701	b. The teachers at this school like being here; I would describe us as a satisfied group.	1 ☐	2 ☐	3 ☐	4 ☐
2702	c. I like the way things are run at this school.	1 ☐	2 ☐	3 ☐	4 ☐
2703	d. If I could get a higher paying job I'd leave teaching as soon as possible.	1 ☐	2 ☐	3 ☐	4 ☐
2704	e. I think about transferring to another school.	1 ☐	2 ☐	3 ☐	4 ☐
2705	f. I don't seem to have as much enthusiasm now as I did when I began teaching.	1 ☐	2 ☐	3 ☐	4 ☐
2706	g. I think about staying home from school because I'm just too tired to go.	1 ☐	2 ☐	3 ☐	4 ☐

8. GENERAL EMPLOYMENT AND BACKGROUND INFORMATION

The following questions refer to your BEFORE-TAX earnings from teaching and other employment.

8-1. **DURING THE SUMMER OF 2017, did you have any earnings from —**
Report amounts in whole dollars.

a. Teaching summer school in this school or any other school?

0900 1 ☐ Yes → **How much?** 0901 $, .00

2 ☐ No

(1) Did all of these earnings come from your current school?

0902 1 ☐ Yes

2 ☐ No

GO TO item 8-1b below.

b. Working in a non-teaching job in this school or any other school?

0903 1 ☐ Yes → **How much?** 0904 $, .00

2 ☐ No

(1) Did all of these earnings come from your current school?

0905 1 ☐ Yes

2 ☐ No

GO TO item 8-1c below.

c. Working in any NONSCHOOL job?

0906 1 ☐ Yes → **How much?** 0907 $, .00

2 ☐ No

GO TO item 8-2 below.

8-2. **How many days are covered by your contract, per contract year?**
Include professional development, student contact days, and any other days covered by your contract.

0908 ☐☐☐ Days per contract year

8-3. **DURING THE CURRENT SCHOOL YEAR, what is your base teaching salary for the entire school year?**
Report amounts in whole dollars.

0909 $, .00 For the entire school year

8-4. **DURING THE CURRENT SCHOOL YEAR, do you, or will you, earn any additional compensation from this school system for extracurricular or additional activities such as coaching, student activity sponsorship, mentoring teachers, or teaching evening classes?**
Report amounts in whole dollars.

0910 1 ☐ Yes → **How much?** 0911 $, .00

2 ☐ No

GO TO item 8-5 below.

8-5. **DURING THE CURRENT SCHOOL YEAR, do you, or will you, earn any additional compensation from this school system based on your students' performance (e.g., through a merit pay or pay-for-performance agreement)?**
Report amounts in whole dollars.

0912 1 ☐ Yes → **How much?** 0913 $, .00

2 ☐ No

GO TO item 8-6 below.

8-6. **DURING THE CURRENT SCHOOL YEAR, have you earned income from any OTHER sources from this school system, such as a state supplement, etc.?**
Do NOT report any earnings already reported.
Report amounts in whole dollars.

0914 1 ☐ Yes → **How much?** 0915 $, .00

2 ☐ No

GO TO item 8-7a below.

8-7a. **DURING THE CURRENT SCHOOL YEAR, do you, or will you, earn additional compensation from working in any job OUTSIDE this school system?**
Report amounts in whole dollars.

0916 1 ☐ Yes → **How much?** 0917 $, .00

GO TO item 8-7b below.

2 ☐ No → *GO TO item 8-8 on page 31.*

b. **Which of these best describes this job OUTSIDE this school system?**
Mark (X) only one box.

0918 1 ☐ Teaching or tutoring

2 ☐ Non-teaching, but related to teaching field

3 ☐ Other

8-8. **During the CURRENT SCHOOL YEAR do you, or will you, receive a retirement pension check paid from a teacher retirement system?**
Report amounts in whole dollars.

0919 1 ☐ Yes → **How much?** 0920 $, .00

2 ☐ No

GO TO item 8-9 below.

8-9. **Are you a member of a teachers' union or an employee association similar to a union?**

0921 1 ☐ Yes

2 ☐ No

8-10a. **Does your school, district, or school system offer tenure?**

0922 1 ☐ Yes

2 ☐ No → *GO TO item 8-11 below.*

b. **Are you tenured at your current school?**

0923 1 ☐ Yes

2 ☐ No

8-11. **Are you male or female?**

0924 1 ☐ Male

2 ☐ Female

8-12a. **What is your current marital status?**
Mark (X) only one box.

0925 1 ☐ Now married → *GO TO item 8-13 on page 32.*

2 ☐ Widowed

3 ☐ Separated

4 ☐ Divorced

5 ☐ Never married

b. **Are you currently living with a boyfriend/girlfriend or partner?**

0926 1 ☐ Yes

2 ☐ No

8-13. Are you of Hispanic or Latino origin?

0928 1 ☐ Yes

2 ☐ No

8-14. What is your race?

Mark (X) one or more races to indicate what you consider yourself to be.

0929 1 ☐ White

0930 1 ☐ Black or African-American

0931 1 ☐ Asian

0932 1 ☐ Native Hawaiian or Other Pacific Islander

0933 1 ☐ American Indian or Alaska Native

8-15. What is your year of birth?

0934 ☐☐☐☐

9. FEEDBACK AND TEACHER STRATEGIES

Your responses to this section of questions will help researchers and policy makers make international comparisons to teachers in other countries.

9-1. **When did you complete formal education or training that qualified you to teach?**
- *Enter a four-digit year.*
- *An approximate year is sufficient.*

Year

2900 ☐☐☐☐

9-2. **In this school, who uses the following types of information to provide feedback to you?**
(External individuals or bodies refer to, for example, inspectors, municipality representatives, or other persons from outside the school.)

	Mark (X) all that apply on each line.			
	External individuals or bodies	**School principal or member(s) of the school management team**	**Other colleagues within the school (not part of the school management team)**	**I have never received this feedback in this school**
a. Observation of my classroom teaching	2901 1 ☐	2902 1 ☐	2903 1 ☐	2904 1 ☐
b. Student survey responses related to my teaching	2905 1 ☐	2906 1 ☐	2907 1 ☐	2908 1 ☐
c. Assessment of my content knowledge	2909 1 ☐	2910 1 ☐	2911 1 ☐	2912 1 ☐
d. My students' external results (e.g., national test scores)	2913 1 ☐	2914 1 ☐	2915 1 ☐	2916 1 ☐
e. School-based and classroom-based results (e.g., performance results, project results, test scores)	2917 1 ☐	2918 1 ☐	2919 1 ☐	2920 1 ☐
f. Self-assessment of my work (e.g., presentation of a portfolio assessment, analysis of my teaching using video)	2921 1 ☐	2922 1 ☐	2923 1 ☐	2924 1 ☐

If you answered 'I have never received this feedback in this school' to all of the above ➔ *Please GO TO item 9-5 on page 35.*

9-3. **Thinking of all of the feedback that you have received during the last 12 months, did any of these have a positive impact on your teaching practice?**

2925

1 ☐ Yes

2 ☐ No → *GO TO item 9-5 on page 35.*

9-4. **Thinking about the feedback you have received during the last 12 months, did it lead to a positive change in any of the following aspects of your work as a teacher?**

Mark (X) one box on each line.

		Yes	No
2926	a. Knowledge and understanding of my main subject field(s)	1 ☐	2 ☐
2927	b. Methods of teaching in my main subject field(s)	1 ☐	2 ☐
2928	c. Use of student assessments to improve student learning	1 ☐	2 ☐
2929	d. Classroom management	1 ☐	2 ☐
2930	e. Methods for teaching students with special needs	1 ☐	2 ☐
2931	f. Methods for teaching in a multicultural or multilingual setting	1 ☐	2 ☐
2932	g. Feedback to other teachers about their teaching	1 ☐	2 ☐
2933	h. Collaboration or working with other teachers	1 ☐	2 ☐
2934	i. Confidence as a teacher	1 ☐	2 ☐
2935	j. Motivation as a teacher	1 ☐	2 ☐
2936	k. Job satisfaction	1 ☐	2 ☐
2937	l. Participation in professional development activities	1 ☐	2 ☐
2938	m. Other, please specify 5938	1 ☐	2 ☐

9-5. **In your teaching, to what extent can you do the following?**

		Mark (X) one box on each line.			
		Not at all	Very little	To some extent	A lot
2939	a. Get students to believe they can do well in school work	1 ☐	2 ☐	3 ☐	4 ☐
2940	b. Help my students value learning	1 ☐	2 ☐	3 ☐	4 ☐
2941	c. Craft good questions for my students	1 ☐	2 ☐	3 ☐	4 ☐
2942	d. Control disruptive behavior in the classroom	1 ☐	2 ☐	3 ☐	4 ☐
2943	e. Motivate students who show low interest in school work	1 ☐	2 ☐	3 ☐	4 ☐
2944	f. Make my expectations about student behavior clear	1 ☐	2 ☐	3 ☐	4 ☐
2945	g. Help students think critically	1 ☐	2 ☐	3 ☐	4 ☐
2946	h. Get students to follow classroom rules	1 ☐	2 ☐	3 ☐	4 ☐
2947	i. Calm a student who is disruptive or noisy	1 ☐	2 ☐	3 ☐	4 ☐
2948	j. Use a variety of assessment strategies	1 ☐	2 ☐	3 ☐	4 ☐
2949	k. Provide an alternative explanation for example when students are confused	1 ☐	2 ☐	3 ☐	4 ☐
2950	l. Vary instructional strategies in my classroom	1 ☐	2 ☐	3 ☐	4 ☐
2951	m. Help students develop cross-curricular skills (e.g., creativity, critical thinking, problem solving)	1 ☐	2 ☐	3 ☐	4 ☐
2952	n. Support student learning through the use of digital technology (e.g., computers, tablets, smart boards)	1 ☐	2 ☐	3 ☐	4 ☐
2953	o. Support student collaborative learning through the use of digital technology (e.g., computers, tablets, smart boards)	1 ☐	2 ☐	3 ☐	4 ☐

10. CONTACT INFORMATION

10-1. **Please PRINT your name, your home address, your cell and home telephone numbers, the most convenient time to reach you, and your work and home e-mail addresses. This information would only be used in the event that we need to contact you for follow-up. All of the information you provide may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151).**

a. First name

9000

Middle name

9001

Last name

9002

Suffix

9003

b. Street Address

9004

c. City

9005

d. State

9006

e. ZIP Code

9007

f. Cell phone number

Area code Number

9008 - -

g. Home phone number

Area code Number

9009 - -

h. Best day(s) to reach you
Mark (X) all that apply.

0010	1	☐	Monday
0011	1	☐	Tuesday
0012	1	☐	Wednesday
0013	1	☐	Thursday
0014	1	☐	Friday
0015	1	☐	Saturday
0016	1	☐	Sunday

i. Best time of the day to reach you
Mark (X) only one box.

0017	1	☐	a.m.
	2	☐	p.m.

j. Work e-mail address

9018

k. Home e-mail address

9019

10-2. **Please enter the date you completed this questionnaire.**
Report month as a number, that is, 01 for January, 02 for February, etc.

	Month		Day		Year
0020		0021		0022	2 0 1

10-3. **Please indicate how much time it took you to complete this form, not counting interruptions.**
Please record the time in minutes, e.g., 50 minutes, 65 minutes, etc.

0023 ___ Minutes

Thank you very much for your participation in this survey. If you have any questions, please contact us, toll-free, at: 1-888-595-1338 or by e-mail at: ntps@census.gov

Please return your completed questionnaire in the enclosed pre-addressed, postage-paid envelope or mail it to:

U.S. CENSUS BUREAU
ATTN: DCB/PCSPU, BUILDING 60A
1201 E. 10TH STREET
JEFFERSONVILLE, IN 47132-0001

To learn more about this survey and to access reports from earlier collections, see the National Teacher and Principal Survey (NTPS) website at:
http://nces.ed.gov/surveys/ntps

Additional data collected by the National Center for Education Statistics (NCES) on a variety of topics in elementary, secondary, postsecondary, and international education are available from NCES' website at:
http://nces.ed.gov

For additional data collected by various Federal agencies, including the Department of Education, visit the Federal Statistics clearinghouse at:
http://www.fedstats.sites.usa.gov