COMPARING PROFESSIONAL LEARNING PRACTICES

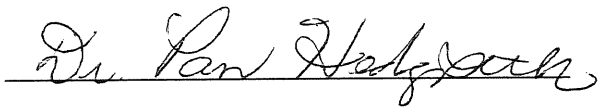
OF MISSOURI'S FOUR AND FIVE DAY SCHOOLS

The undersigned, approved by the Department Chair of Graduate Studies in Education, have examined a dissertation entitled:

COMPARING PROFESSIONAL LEARNING PRACTICES

OF MISSOURI'S FOUR AND FIVE DAY SCHOOLS

Presented by, Michael Lewis, a candidate for the degree of Doctor of Education and hereby certify that in their opinion it is worthy of acceptance.



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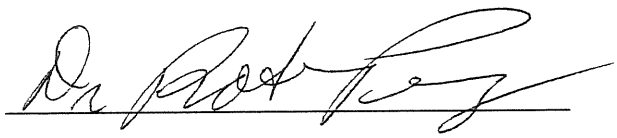

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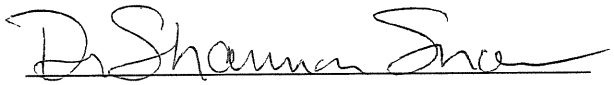

Dr. Shannon Snow

Superintendent of Stockton Schools

COMPARING PROFESSIONAL LEARNING PRACTICES OF MISSOURI'S FOUR AND FIVE DAY SCHOOLS

A Dissertation

Presented to

The Faculty of the Graduate Education Department

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By

Michael E. Lewis, B.S., M.S.

Dr. Pam Hedgpeth, Dissertation Advisor

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DEDICATION

Ruthie – When you hear people address me as Dr. Lewis, I hope you understand the title doctor is more synonymous with perseverance than with intelligence and reminded you have both. My hope and prayer for you is the same thing we pray together nearly every night -- that you will look to love God and love others in all you do.

Jamie – While it is your outward beauty that first caught my eye, I couldn't have guessed how much I would grow to love you. I cannot believe how happy I am to be married to you. Our marriage truly is an answer to my prayers growing up. More than I can express, I admire your pursuit of righteousness. I hope I make you as proud of me as I am of you. Thank you for supporting me in the pursuit of this degree. It is an amazing feeling to know you are supportive of me no matter what goals I come up with. I love you.

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ABSTRACT

The role of quality professional learning for teachers has become a top priority due to legislative changes including the Every Student Succeeds Act (ESSA). Research has shown a lack of dedicated time is among the issues that hinder effective professional learning. While the four-day school week is typically used to address budget issues for rural schools, the schedule's flexibility may be uniquely able to aid professional learning efforts. The purpose of this study was to determine the differences between professional learning practices in Missouri's four- and five-day schools. The Standards for Professional Learning, created by Learning Forward, served as the theoretical framework. The researcher obtained permission from Learning Forward to collect data using the organization's Standards Assessment Inventory (SAI) survey instrument. Teachers from 18 Missouri four-day schools and 21 comparable five-day schools based on size, RPDC region, and free and reduced lunch population were included in the study. The teachers responded via online survey distributed by email. Statistical analysis included independent sample two-tailed *t*-tests adjusted for unequal sample sizes at the $p < 0.05$ level. Missouri four-day teachers rated the Learning Communities, Leadership, and Data standards significantly higher than their five-day counterparts did. The findings of this study add to the sparse body of literature related to the four-day school week and professional learning practices. The study concluded that the four-day school week may help schools improve professional learning practices due to the unique availability of professional development time on the off-day.

CHAPTER ONE: INTRODUCTION

Quality teacher professional development has never been more critical. Changes in legislation, like that of No Child Left Behind (NCLB) and the subsequent Every Student Succeeds Act (ESSA), has shifted the intense focus from solely student achievement to changing teacher quality through more effective professional development (Glynne, 2015; Greene, 2015; Hollingworth, 2012). This change recognizes professional learning may be the greatest catalyst to closing student achievement gaps via improving quality teaching (Darling-Hammond, Hyler, & Gardner, 2017; Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009; DuFour & Eaker, 1998; Guskey, 2002; Guskey & Sparks, 2002). To have a successful professional learning environment, among other things, time and money are needed (Bill and Melinda Gates Foundation, 2014; DiPaola & Hoy, 2014; Ferguson, 1991; Nye, Konstantopoulos, & Hedges, 2004). Unfortunately, the volatile economy has tasked administrators to attempt meeting these mandates and challenges while battling budget shortfalls. Too often, professional development efforts are impeded due to various other time consuming responsibilities, expectations, and initiatives teachers face (Reeves, 2010). As a result, teachers tend to abandon newly learned strategies in favor of more familiar, convenient, and easier methods (Mosakowski, 2015; Sparks & Hirsch, 2000).

Professional development and student achievement issues have been found to impact schools of varying size, demographics, and socioeconomic status. Since research regarding achievement gaps and related solutions is typically focused on suburban and urban schools, most people do not realize these problems are particularly problematic for rural districts (Barrett, Cowen, Toma, & Troske, 2015). In fact, the geography of rural

schools often exacerbates them (Arnold, Newman, Gaddy, & Dean, 2005; Barrett et al., 2015). For example, professional development opportunities not offered in house may be too far away or too costly for teachers in rural districts to attend. Furthermore, it can be too expensive to bring the opportunities in to the rural school. Compounding the issues, federal and state grant and funding formulas have been found to be inequitable and make rural budgets razor thin and stagnant (Apling, 2007; Johnson, 2013; Strange, Johnson, & Finical, 2009; Yettick, Baker, Wickersham, & Hupfeld, 2014).

History has shown budget shortfalls, particularly for rural schools, brings about their propensity to innovate. For example, the 1970s and 1980s saw two states, Maine and Colorado respectively, implement four-day school weeks in an attempt to ease financial strain (Donis-Keller & Silvernail, 2009). While schools of varying size have attempted the four-day school week, it is mostly a rural phenomenon (Donis-Keller & Silvernail, 2009; Hewitt & Denny, 2011; Plucker, Cierniak, & Chamberlin, 2012). More recently, budget constraints brought on by federal cuts and the 2007 recession, have pushed other states including Missouri to experiment with the four-day school week (Johnson, 2013). Although typically brought on to address fiscal concerns, other advantages have been realized from the four-day school week (Donis-Keller & Silvernail, 2009; Hewitt & Denny, 2011; Kordosky, 2011). Some of these advantages include increases in teacher and student attendance, boost in employee and student morale, decline in student discipline, and increased parental involvement (Kordosky, 2011).

Most of the initial research regarding four-day schools has been focused narrowly on student achievement and has shown negligible results (Daly & Richburg, 1984; Dam, 2006; Donis-Keller & Silvernail, 2009; Grau & Shaughnessy, 1987; McCoy, 1983).

However, recent studies have brought levels of optimism to four-day proponents. Anderson and Walker (2012) found four-day schools in Colorado had a positive relationship between students scoring proficient or advanced levels on math and reading achievement tests. Furthermore, some administrators of four-day schools believe the four-day schedule is more conducive to teacher professional learning (Hanson II, 2014). These recent findings may imply the way the four-day week is used, or perhaps more specifically the way the off-day is utilized, could have a significant impact on teacher and student learning. The purpose of this study was to determine the differences between professional learning practices in Missouri's four and five-day schools.

Problem Statement

The focus of policymakers has recently shifted from the narrow issue of student achievement to the broader issue of professional development and professional learning practices (Glynne, 2015; Hollingworth, 2012). Past research has shown effective professional learning practices are critical to improving teaching quality and closing achievement gaps (Darling-Hammond et al., 2009; DuFour & Eaker, 1998; Guskey, 2002). Unfortunately, professional development offered to teachers is often arbitrary, one size fits all, and thus ineffective (Darling-Hammond et al., 2009). While many educators understand and welcome this new line of thinking, the adequate time needed for quality professional development is often lacking (Glynne, 2015; Mosakowski, 2015). Recently, due to budget constraints, some rural schools in Missouri have experimented with a four-day school week (Johnson, 2013). The majority of research regarding the four-day school week is on student achievement, and recent studies have shown some significant gains (Anderson & Walker, 2012; Donis-Keller & Silvernail, 2009). The time

arrangement for various activities including professional development in a four-day school district is structurally different; however, very little research exists on professional learning in four-day schools. Therefore, the purpose of this study was to determine the difference between professional learning practices in Missouri's four and five-day schools.

Main Research Question

What differences are there in professional learning practices as defined by Learning Forward's Standards of Professional Learning for schools in Missouri that have students in attendance four days per week versus those who attend five days?

Subset Research Questions

1. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Learning Communities** Professional Learning Standard?
2. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Leadership** Professional Learning Standard?
3. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Resources** Professional Learning Standard?
4. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Data** Professional Learning Standard?

5. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Learning Designs** Professional Learning Standard?
6. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Implementation** Professional Learning Standard?
7. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Outcomes** Professional Learning Standard?

Hypotheses

1. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Learning Communities** Professional Learning Standard.
2. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Leadership** Professional Learning Standard.
3. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Resources** Professional Learning Standard.
4. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Data** Professional Learning Standard.

5. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Learning Designs** Professional Learning Standard.
6. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Implementation** Professional Learning Standard.
7. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Outcomes** Professional Learning Standard.

Significance of Study

The role of quality professional learning for teachers has increasingly been recognized and prioritized by districts due to mounting research and subsequent legislative mandates. One of the largest roadblocks to effective teacher professional learning has historically been a lack of dedicated time. While the four-day school week is often initiated to deal with budget concerns, the schedule's unique arrangement of time may be more conducive to effective professional learning practices. This study is focused on the differences between professional learning practices in Missouri's four- and five-day schools. Previous to this study, no known research had examined the professional learning practices in four-day schools from a teacher's perspective. Furthermore, only one known study has focused on the four-day school week and professional development at all, which was a smaller case study of superintendents' perceptions (Hanson II, 2014). Hanson II (2014), as well as Farris (2013), suggested study of the impact of the four-day school week on professional development is

warranted, particularly from the viewpoint of teachers. Significant findings in this research may aid both four- and five-day schools in understanding better the frequency, amount, and arrangement of professional development time needed to support teachers. Also, this research should help schools considering the four-day week have a clearer, more comprehensive understanding of the schedules' impact beyond only budgets and student achievement.

Theoretical Framework

To properly frame this study, it is appropriate to review the educational association Learning Forward, which is dedicated solely to increasing student achievement through more effective professional learning ("Standards for Professional Learning," 2017.). Linda Darling-Hammond is a key researcher associated with Learning Forward. Her focus on the importance of professional learning is fundamental to the theoretical base of Learning Forward's Standards for Professional Learning. In 2009 Darling-Hammond, Wei, Andree, Richardson, and Orphanos released a report regarding professional learning both domestically and abroad titled *Professional Learning in the Learning Profession*. The report was the first phase of a four-phase project by Learning Forward, funded by the Bill and Melinda Gates Foundation, aimed at measuring and improving professional learning in the United States.

While the report found some positive progress domestically like an increased use of induction and mentoring programs, the United States lagged behind in other highly effective methods. For example, high performing countries are much more likely to foster teacher learning that takes place in their day-to-day environment through experimentation and collaboration with other teachers, sometimes referred to as job-

embedded professional development. Furthermore, the time needed for proper intensity and sustainability are too often not present (Darling-Hammond et al., 2009). These findings, among others, aided Darling-Hammond and Learning Forward's advocacy efforts pertaining to the Every Student Succeeds Act (ESSA) and the latest revision of Learning Forward's Standards for Professional Learning.

Learning Forward's Standards for Professional Learning are the key framework for this study as they have been refined to correlate with the findings of the most recent, comprehensive, and rigorous studies relating to effective professional development practices in improving teacher learning and student achievement. The seven Standards for Professional Learning are Learning Communities, Leadership, Resources, Data, Learning Designs, Implementation, and Outcomes. The Standards are organized in three categories: Context, Process, and Content (Roy, 2010).

The Context Standards (Learning Communities, Leadership, and Resources) address the organization and culture of a district. Learning communities are effective methods of improving schools by focusing priorities on student and teacher learning by creating a cycle of collaboration for teachers, experimentation of practice, and reflection (Lieberman, Hord, & Von Frank, 2014). Also, learning communities have been found to improve conflict resolution (Grossman, Wineburg, & Woolworth, 2001). One barrier to effective learning communities is the time needed for common meeting, which four-day schools may be uniquely able to accommodate due to the flexibility of the off-day. Another Context Standard is Leadership. While school leaders have long been expected to establish a vision, manage schools, limit disruption, and watch over student behavior, recently an expectation of instructional leadership has surfaced (Louis, Hord, & Frank,

2017; Kotter, 2012). As Leithwood, Louis, Anderson, and Wahlstrom (2004) pointed out, there is evidence that leadership is second only to classroom instruction in contribution strength to student learning; therefore, any real professional learning efforts or reform must account for it. The last Context Standard for Professional Learning is the Resource Standard. The distribution of resources extends beyond books to every conceivable facet of a school including equipment, space, and funding. The way these resources are doled out and the efficiency with which they are used has a profound effect on the success of a school and professional learning environment (Hall, 2015; Killion & Hirsh, 2013). For example, many researchers have noted the importance of teachers having input in the way professional development dollars are spent (Busick, 1994; Mosakowski, 2015; Odden, Archibald, Fermanich, & Gallagher, 2002). Moreover, time is an issue that overlaps with many facets of effective professional learning environments, and time allotted for professional learning time is critical. Again, the four-day school week may be particularly helpful in this area.

Next, the Process Standards (Data and Learning Designs) provide the information and the way in which educators acquire and ensure competency in new and more effective practices (Hall, 2015; Hirsh & Killion, 2007; Widener, 2014). While data are neither good nor bad in and of themselves, relevant data can be used to direct and evaluate professional learning (Guskey, Roy, & Frank, 2014). Too often, districts make the mistake of using old data, even reliable data like last year's standardized test scores, to direct efforts and major decisions months later the following year. This misstep has been referred to by Hargreaves and Shirley (2009) as an education autopsy. Instead, the use of data can play a more powerful role by first defining a baseline and helping to

measure real time growth, which can logistically enable a cycle of improvement (Collins, 1999; Dufour, 2003; Mosakowski, 2015). The other Process Standard, Learning Designs, is an integration of theory, research, and models of adult learning to the delivery of professional development to teachers. Too often, the design for teacher professional learning is driven by convenience or fad instead of differentiated to the individual needs of the teachers involved.

Finally, Content Standards (Implementation and Outcomes) round out the Standards for Professional Learning and help answer the "what" of professional learning by addressing the knowledge and skills educators need (Hall, 2015; Hirsh & Killion, 2007; Mosakowski, 2015). According to Fullan, Hord, and Frank (2015), the Implementation Standard may be the most critical part of school improvement because it deals with the fidelity in which teachers experiment with what they learn. Like so many other aspects of teacher professional learning effectiveness, research has shown time and support as critical to successful implementation (Fullan et al., 2015; Supovitz & Turner, 2000). Again, the four-day school week's schedule flexibility may impact implementation. The seventh and final standard, the Outcome Standard, is the coherence between the professional learning offered to teachers, their needs, and the goals of the school system as a whole. Furthermore, the Outcome Standard is directly linked to student learning objectives, which according to Lindsey, Lindsey, Hord, and Frank (2016), can be ensured successfully by the process of backwards mapping. Based on the Standards, Learning Forward has created the Standards Assessment Inventory (SAI) survey instrument to provide districts with data on the quality of their professional

learning. After obtaining permission, this instrument was used to answer this study's research questions.

Definition of Key Terms

Four-day schools. Schools with students who attend August through May, holding instruction four days a week the majority of those weeks. Typically, the school day is elongated to make up for instructional time lost from attending fewer days (Hanson II, 2014).

Five-day schools. Schools that use the traditional calendar, with students attending August through May, holding instruction five days a week the majority of those weeks (Hanson II, 2014).

Latch-key. Children who return from school to an empty house due to working parents/guardians (Jennewein, 2016).

Off-day. The day of the week, typically a consistent repeated selection of either Monday or Friday, on which a four-day school does not hold regular instruction.

Professional Development. An isolated event, occasional episode, or small set of programming the district uses to help teachers update their content knowledge or instructional methods (Killion, 2013a).

Professional Learning. An ongoing continuous learning process that values learning outcomes for teachers and students, and has a concerted effort to move learned methods to practice (Killion, 2013a).

Job-embedded professional development. Teacher learning grounded in a teacher's day-to-day environment designed to enhance teacher's knowledge and content-specific instructional practice (Darling-Hammond & McLaughlin, 1995).

Delimitations

1. Only four-day Missouri schools were studied as well as comparable five-day schools that matched the selection criteria established for the study. The criteria for selection of the five-day schools for comparison included student enrollment, free and reduced lunch population, and RPDC geographic region.
2. Four-day school selected had to be in at-least their second year of four-day schedule implementation.
3. Teachers were the only people surveyed and not administrators, community members, or students.
4. The study only included public schools.
5. The study excluded any special schools like state schools designed specifically for special needs only, gifted only, or STEM specific.

Limitations

1. The number of participants who responded to the survey.
2. The willingness of the administrators to distribute the online survey to their teachers.

Assumptions

1. It is assumed that participants were honest in their responses and the survey was interpreted as intended.
2. It is assumed the participants that received the survey took the survey themselves.

Summary

This chapter contained an overview of problems rural schools face including budget constraints due to inequitable funding formulas and access to high quality

professional development opportunities. Some rural districts in Missouri have recently moved to the four-day school week to address budget concerns (Johnson, 2013). The researcher suggests the four-day week may be implemented in such a way to move professional development to professional learning by focused utilization of the fifth day.

This chapter also introduced the leading organization on professional learning and its tenets, Learning Forward. Learning Forward has developed Standards for Professional Learning to guide the planning, implementing, and evaluation of quality professional development ("Standards for Professional Learning," 2011). Considerations given to Learning Forward's recommendations can help school districts fulfill mandates first given by No Child Left Behind (2002) and later revised and extended by Every Student Succeeds Act (2015). Those mandates expect the usage of research-based professional development shown to improve student achievement and teacher practice, which Learning Forward's Standards have been designed to do (Glynne, 2015; NCLB, 2002; United States Department of Education, 2010). Learning Forward's seven standards will serve as a framework for this study. The purpose of this study was to determine differences in quality professional learning practices for Missouri's four and five-day schools. This study has significant implications for how districts using the four-day week could use their fifth day to impact student achievement. Also, this study may help districts considering the four-day schedule make a better informed decision. Finally, this study adds to an area of the research base, the four-day week and professional learning, that is currently extremely limited.

Chapter Two of this paper will provide a review of the literature review organized thematically to include the history of four-day schools in the United States and the

research-based characteristics of effective professional learning as defined by Learning Forward. Chapter Three will describe the method used in this study to determine the differences between four-day and five-day schools with regard to professional learning. Chapter Four will present the findings of the study. Finally, Chapter Five will give a summary the project, list conclusions and professional implications, and suggest future research.

CHAPTER TWO: REVIEW OF LITERATURE

Introduction

It is imperative that effective teacher professional learning occurs in every school to help ensure equity and maximize student learning (Hargreaves & Shirley, 2009; "Standards for Professional Learning," 2011). Beginning with the No Child Left Behind Act (NCLB) and extended further with the Every Student Succeeds Act (ESSA), legislation has recognized the importance of professional development and placed a focus on its quality through additional mandates. Learning Forward, the nation's largest and most influential professional learning organization, not only helped shape aforementioned legislation, but has put forth Standards for Professional Learning to aid schools in establishing and maintaining highly effective professional learning ("ESSA and Professional Learning," 2017). Many of the needed practices for quality professional learning demand a concentration of resources including time and money. Unfortunately, these resources are often difficult for typical schools to provide (Miles, Sommers, Roy, & Frank, 2016; Hanson II, 2014; Yarbrough & Gilman, 2006).

Most school districts in the United States have traditionally used a five-day school week. However, over the years various budget concerns have led some districts in a few states to experiment with a four-day school week in an attempt to capture savings (Hewitt & Denny, 2011). In 2007, a recession prompted expansion of the four-day school week across the country including the state of Missouri (Carter, Hull, Odneal, & Roling, 2013; Johnson, 2013). Most of the research regarding the four-day school week has been narrowly focused on standardized test scores and budgetary savings (Beesley & Anderson, 2007; Dam, 2006; Donis-Keller & Silvernail, 2009). While research has

concluded four-day schools typically realize slight increases in both monetary savings and student achievement, no known research has explored the impact of the schedule's unique flexibility on teacher professional learning. This chapter includes an exhaustive review of the literature on the history, characteristics, professional development practices, advantages, and challenges of the four-day school week. Next, literature regarding professional development research and Learning Forward is reviewed including sections on theory and practice, research-identified common features of effective professional development, professional development lessons from abroad, and the advocacy work of Learning Forward. Last, Learning Forward's Standards for Professional Learning are examined, including the related research base.

History of the Four-Day School Week

The first known four-day school week was Madison Central School District, Madison, South Dakota, in 1931. It was not until an energy crisis brought on by the Arab Oil Embargo in 1973 that expansion of this model would occur in Maine and New Mexico (Hewitt & Denny, 2011; Tharp, 2014). Most of the schools that began to use the four-day week to curb transportation costs in the 1970s were rural districts because of their lengthy bus routes (Beesley & Anderson, 2007; Chmelynski, 2003; Hewitt & Denny, 2011). The longest running four-day district, Cimarron School District in New Mexico, began in the 1970s and is still using the schedule today (Tharp, 2014). Beginning in the 1980s, the four-day week propagated to Colorado, motivated again by financial strain mostly due to energy and transportation costs (Dam, 2006).

Expansion of the four-day week slowed until the recession of 2007 in which many states began to experiment with it as a cost savings measure (Johnson, 2013). Schools in

the state of Missouri found the crunch of the recession especially difficult due to the state legislature failing to fully fund its foundation formula for multiple years (Carter et al., 2013). At the request of rural districts looking to save money, particularly on transportation costs, the Missouri legislature passed a provision in an omnibus education bill enabling districts to implement a four-day school week (Missouri Education Reform, 2009). Senate Bill (SB) 291, passed in 2009, created §171.029 (RSMo.), which requires four-day schools to have the same number of hours as traditional five-day schools (1044) per school year, submit a calendar for approval, and attend at least 142 days per year (Carter et al., 2013; Knapp, 2013). To protect against possible adverse affects to student achievement, the bill stipulated four-day schools meet additional academic requirements (§171.029.2):

> If a district that attends less than one hundred seventy-four days meets at least two fewer performance standards on two successive annual performance reports than it met on its last annual performance report received prior to implementing a calendar year of less than one hundred seventy-four days, it shall be required to revert to a one hundred seventy-four day school year in the school year following the report of the drop in the number of performance standards met.

To date, no school has been required to revert. In fact, only Lexington school district has stopped using the four-day schedule after implementation. Reasons cited by Lexington's Superintendent Dan Hoehn for halting the practice included no improvements to student achievement or teacher retention, and budgetary savings being smaller than anticipated (Levin, 2016).

The longest running four-day district in Missouri, Lathrop, began the schedule in 2011 and cited an immediate savings of 1.5% ($125,000). Miller followed suit in 2013 and reported about a 1% savings. Budget savings, even though small by percentage, have been a driving force in growth among Missouri schools implementing the four-day schedule (Carter et al., 2013; Johnson, 2013; Levin, 2016). The number of four-day schools in Missouri grew to nine in 2015 and by 2018 had nearly tripled to twenty-five (District and School Information, 2017).

Characteristics of a Four-Day School and the Four-Day School Week

The vast majority of school districts that have changed to the four-day school week have some similar characteristics and structural changes through implementation. Wilmouth (1995) studied 84 districts using the four-day week and 71 identified themselves as rural. Specifically, 73 of those districts studied had less than 1,000 students enrolled and 59 had less than 500 enrolled. The small size of four-day schools is most noticeable in Colorado where 30% of districts use the four-day week; however, that represents only three percent of the student population (Lefly & Penn, 2009).

Most schools can be categorized into one of three categories (Donis-Keller & Silvernail, 2009): four-day week in only the winter, four-day week every other week, four-day week during the entire school year. While Donis-Keller and Silvernail (2009) noted these main distinctions, very little research has produced information on how districts use the fifth day and its impact on school functions. Districts must decide when switching to the four-day week which day will be the "off-day." Typically, four-day schools give the students either Monday or Friday off. Many districts will use the "fifth-day" when students are not there for conferences, in-service training, and class

preparation. Furthermore, teachers have the flexibility to attend professional development opportunities off campus without missing contact time with their students (Bauman, 1983; Hanson II, 2014). Some districts have utilized the fifth-day for targeted student contact in the form of remediation, tutoring, testing practice, enrichment, career tech courses, or even in-school suspension (Beesley & Anderson, 2007; Johnston, 1997; Keen, 2007; Mitchell, 2006). In South Dakota, state grant money has been utilized to offer programs for the off-day that otherwise may not have been available (Richard, 2002). Both teachers and students use the off-day for various appointments including doctor visits (Sagness & Salzman, 1993). In addition, students have reported using the off-day to babysit, work other jobs, and work on school projects and homework (Ferak, 2006; Geranios, 2006).

Hewitt and Denny (2011) found four-day districts select Monday through Thursday as their student instructional days so they can schedule extracurricular events on Friday in an attempt to limit the class time students miss. In contrast, other districts select Tuesday through Friday as their student instructional days due to the number of federal holidays falling on Mondays and to capture greater financial savings from extracurricular Friday facility usage that would not be otherwise discontinued (Fager, 1997; Sagness & Salzman, 1993). Missouri four-day schools are typically requiring teachers to attend every other "fifth-day" for professional development (Carter et al., 2013).

When schools change to the four-day schedule not only does the structure of the week change, but typically the structure of the day must become longer to meet state class time minimums (Hanson II, 2015). For example, in Colorado, Dam (2006) reported

the average four-day school day needed to be extended to 7.5 hours daily to meet the yearly requirements. In Missouri, the average four-day district attends 46 more minutes per day (District and School Information, 2017). However, three of the 18 Missouri four-day districts attended only 36 more minutes per day and were still able to meet the 1044 hours required. Some schools have looked to trim non-academic time where possible to lessen the lengthy additions (e.g. decreasing lunch time). Fager (1997) and Litke (1994) cited some schools that altered their lunch schedule and reaped the additional benefit of a decrease in the need for lunchtime supervision. Most schools are able to add any additional minutes needed and still release students between 3:30 and 4:00 (Fager, 1997; Ferak, 2006).

Most other states with four-day practicing schools have seen similar extended daily hours. In many cases, four-day schools end up accumulating more overall yearly hours than their traditional counterparts (Hewitt & Denny, 2011). Locally in Missouri, three four-day schools average more total hours than the 1108 hours attended by Missouri five day schools. Moreover, 201 of Missouri's 530 five-day high schools attended less total hours than the average four-day Missouri school (District and School Information, 2017).

Four-Day School Week Advantages and Challenges

School districts using the four-day school week have realized many advantages from the schedule and faced multiple challenges. While seeking financial savings has historically been the catalyst for experimentation with the schedule, many other advantages have been realized and usually have resulted in overall stakeholder satisfaction. The challenges, many of which can easily be anticipated, are typically

misplaced fears and misperceptions that a district could avoid with some planning, communication, and adjustments during implementation. In this section, research regarding the advantages and challenges will be discussed.

Financial savings. As mentioned, growth of the four-day week tends to coincide with national economic strain. The Oil Embargo in 1973 and the energy crisis of the 1980s set the conditions for the four-day schedule to blossom in various states (Hewitt & Denny, 2011; Tharp, 2014). Most recently, the Great Recession starting in 2007 brought the subsequent Missouri SB 291, which made the way for local schools to experiment with the change (Carter et al., 2013; Knapp, 2013). While financial savings switching to the four-day week can be significant, it often requires significant changes or cuts to school operations besides the weekly schedule alone (Hewitt & Denny, 2011; Plucker et al., 2012).

For instance, many schools have tried to reduce energy consumption on the off-day by regulating thermostats (Beesley & Anderson, 2007; Fager, 1997; Ferak, 2006; Sagness & Salzman, 1993). Utility savings have ranged from 10% to 25%, yielding approximately $70,000 for a one rural Idaho district (Beesley & Anderson, 2007). However, utility savings are dependent largely on how the district uses or does not use their facilities on the off-day. Often, parts of the campus will still be used for extracurriculars, enrichment activities, and teacher meetings, which decrease any potential savings (Dam, 2006).

The State of Montana in 2009 evaluated their four-day schools and found savings were lower than anticipated (Plucker et al., 2012). The Education Commission of the States (ECS) confirmed their findings, showing savings ranging from .4% to 5.45%;

however, even small percentages of savings can be beneficial to many districts (Griffith, 2011). Some districts have successfully used the savings to save jobs. For example, a district in Georgia credited the switch to savings 39 teaching positions (Dixon, 2011; Duchscherer, 2011). A small district in Arkansas was able to take savings from switching to the four-day schedule and open a preschool and offer college courses for high school students (Johnston, 1997).

In Missouri, Johnson (2013) interviewed teachers and administrators of a district that made the switch due to financial reasons with robust goals: save $170,000 due to the switch (approximately 2% of the annual budget) and protect teachers and protect class sizes. Furthermore, the district pushed for a levy increase for added revenue to total nearly half a million in total budget adjustments. The goal was successful, other programs like teacher professional development were able to be maintained, and generally stakeholder satisfaction after the change remained high.

By way of contrast, Jennewein (2016) studied ADA expenditures for all Missouri schools that used the four-day schedule for the 2014-2015 school year compared with Missouri five-day schools. Jennewein (2016) used a *t*-test for comparison that produced a *p*-value of 0.416 and therefore concluded no significant savings were realized. However, the study used data from only the first year after switching to the four-day schedule. Moreover, it is unknown if the schools made financial savings a priority. Therefore, it is unclear if there would be greater savings with focused effort or longer duration of the schedule change (Jennewein, 2016).

There have been ramifications of less than anticipated savings. Disappointing savings was partly the reason a suburban school district in Idaho switched back to a

traditional calendar after realizing only a 1.6% savings despite other various positives, including increased student engagement and on-task behavior (Sagness & Salzman, 1993). However, Sagness and Salzman (1993) more heavily credited the switch back to the district's fumbling of garnering buy-in and implementation.

To summarize, typical savings can be lower than anticipated due to transportation and energy costs being a much smaller overall expenditure when compared to personnel; however, diligent districts have saved significant money (Beesley & Anderson, 2007; Hewitt & Denny, 2011; Plucker et al., 2012). Hewitt and Denny (2011) in their four-day research report found savings as little as 1.4% and as great as 18% of operating costs. Savings are further decreased when schools offer childcare, academic, or other programs on the off-day (Beesley & Anderson, 2007; Dam, 2006). Unfortunately, the districts that have realized the greatest savings do so at the expense of lost wages for positions that earn the lowest amount of money like custodians and bus drivers (Chmelynski, 2002). Sometimes savings found by the district are simply shifted to other places. For example, some parents must pay for a day of child care (Chmelynski, 2002). Despite savings often being smaller than expected, many rural districts have benefitted by offering additional programs or saving teacher jobs.

Student and Teacher Attendance. Many factors go into whether a school successfully meets its primary objective of educating students. Two factors are student and teacher attendance. Common sense may tell us that students will not learn if they are not at school. Moreover, common sense is confirmed by research studies that find student learning is improved when their professional teachers are present as opposed to even well-meaning substitutes (Anderson & Walker, 2012; Damle, 2009; Hanson II,

2014; Kronholz, 2013). Therefore, one of the best benefits to a four-day schedule is research showing an increase in attendance for both teachers and students.

A wide range of increase in attendance has been reported. One suburban Idaho district realized a 2% increase in student attendance (Sagness & Salzman, 1993), while some rural schools have experienced increases as much as 5.8% (Geranios, 2006). For teachers, the range is much more dramatic with a range of 2% in the aforementioned suburban Idaho district to 50% in more rural areas (Johnson, 1997). Dam (2006) suggests the sharper rises for rural districts may be due to the distances that need to be travelled to attend doctor, dentist, and other appointments. Many researchers have come to similar conclusions (Donis-Keller & Silvernail, 2009; Johnston, 1997; Featherstone, 1991; Yarbrough & Gilman, 2006).

Farris (2013) studied a small rural district in the western United States that began the four-day schedule in the 2005 school year. Farris found not only did teachers and students believe that attendance had increased, but student attendance did actually increase in the first year of four-day implementation by .78%. By year 7 of the four-day schedule, student attendance had increased 3.07% from implementation. Teacher data were not tracked in this study. Feaster (2002) took a more longitudinal look by comparing Custer School District's (SD) student attendance rates for the 1994-1995 school year (last year of five day schedule) and all available four-day school years at the time of the study (1995-2001). Like Farris (2013), student attendance was found to be higher the first year of implementation and continued to rise throughout usage, finishing at 98.2% (up from 95.2%). A more expansive study by Hale (2007) found 8 of 13 South Dakota four-day districts had increases in attendance for students.

Bell (2011) found school districts reap other attendance related benefits after switching to the four-day week. Studying one rural district in Georgia, administrator attendance was found to increase after switching to the four-day school week. Additionally, there are financial benefits for school districts when attendance is increased. When teachers are present more often, the school district saves money spent on substitute teachers (Beesley & Anderson, 2007; Nelson, 1983; Yarbourgh & Gilman, 2006). Increases in student attendance in many states, including Missouri, bring financial gains for districts due to its tie to funding formulas (Beesley & Anderson, 2007; Carter et al., 2013; Johnson, 2013).

Stakeholder satisfaction and morale. Morale is often broken down into group morale, sometimes called climate, and individual morale (Pendino, 2012). Group morale can be described as the group's attitudes and objectives, whereas individual morale is related to "ambitions, goals, and self-perception of individuals in specific situations (Evans, 1992, para. 44)." Furthermore, individual morale is affected by their environment, the related business climate, and their managers or bosses. According to Strasser (2014), teacher morale is a function of what is going on within the school district and how people are treated. Morale research has connected high morale to increases in effectiveness, attendance, and productivity, whereas low morale can lead to turnover, absenteeism, low performance and productivity, and disinterest in work (Bruce, 2003; Hacker, 2000; O'Toole & Lawler, 2006). Specifically in a school system, teacher morale is believed to bring greater success in productivity, student performance, and student outcomes (Anderson & Walker, 2012; Black, 2001; MacNeil, Prater, & Busch, 2009). Blame associated with low student test scores and changes to evaluation systems,

curriculum, and certification requirements are among various factors that have taken their toll on teacher morale (Noddings, 2014).

In other industries, such as manufacturing, the four-day work week has been studied extensively and shown to have a variety of benefits including a boost to morale. Moreover, strengthening of the American family, increased productivity, and a reducing in staff absenteeism are among other noted advantages (Nichols, 2005; Leiseth, 2008). These benefits are congruent with recent findings in four-day school week research. Perhaps school districts can use the four-day week to address morale issues and reap associated benefits. Farris in a 2013 case study of a four-day district found "an overwhelming theme among interviewees…that student and teacher morale was improved with the four-day school week schedule" (p. 54). One male teacher claimed the utility of the off-day directly impacted morale, stating "I think teacher morale is improved and there is less burn-out with the extra day to regroup" (Farris, 2013, p. 55). As previously stated, attendance increases for teachers, students, administrators, and other employees in four-day schools have been attributed to the utility of scheduling appointments and attending to personal matters on the off-day (Beesley & Anderson, 2007; Donis-Keller & Silvernail, 2009; Kordosky, 2011; Plucker et al., 2012). Additionally, some researchers have linked the increase in morale associated with the four-day week to the increased attendance (Anderson & Walker, 2015; Brewer, 2016; Pendino, 2012).

Conducting a study of a rural Georgia district that switched to the four-day schedule in 2009 due to budget cuts, Bell (2011) looked to determine the impact the schedule had on attendance and job satisfaction of teachers and administrators. The

attendance data showed a decrease in absences for teachers, administrators, and students after changing to the four-day week. A possible explanation could be the second half of Bell's study. Using the Teacher Job Satisfaction Questionnaire (TJSQ) developed by Lester (1982), Bell found significantly higher job satisfaction for the teachers and administrators after switching to the four-day week. The 66-item TJSQ is divided into nine subscales: supervision, colleagues, working conditions, pay, responsibility, work itself, advancement, security, and recognition. Teachers scored significantly higher job satisfaction rates as compared to normed means on all but one subscale (security) which Bell believed may have been explained by the uncertain state of the U.S. economy and its effects on the district. Administrator data showed a significantly higher level of job satisfaction after switching to the four-day school week in 7 of 9 categories. Furthermore, overall means indicated significant overall satisfaction for both teachers and administrators. In a study of a Missouri four-day school, 27 of the 36 participants responded that their morale had improved with the four-day school week. None of the participants responded that their morale had decreased. The same numbers were shown when participants were asked about their co-workers, with 27 responding others' morale had improved and zero responded others' morale had declined (Jennewein, 2016).

Other researchers have found increases to teacher morale after four-day school week implementation overwhelming (Donis-Keller & Silvernail, 2009; Juneau, 2009; Kordosky, 2011; Plucker et al., 2012; Sagness & Salzman, 1993). However, the ubiquitous research regarding increased teacher morale and the four-day week goes beyond teachers' flexibility for their personal life and teacher attendance. It extends to the four-day week's real advantage for teachers: having added time to improve their

passion, teaching (Dam, 2006; Fager, 1997; Featherstone, 1991; Rouse, 2006; Sagness & Salzman, 1993). For example, Sagness and Salzman (1993) found of teachers surveyed at an Idaho suburban school, 71% said they liked work better and an impressive 88% said they wanted the schedule to continue. Perhaps more telling were the teachers' reasons why. Eighty percent of teachers said they had greater opportunity to plan and develop instructional activities, and 67% said there was more time for renewal. Moreover, Kordosky (2011) noted: "Results of surveys of staff presented at an Oakridge school board meeting in 2010 indicated that 92% of all staff preferred the four-day week as compared to the five-day week because of the additional time allocated for the extraneous duties associated with education such as grading and preparation for the next school week" (p. 11). Some districts have capitalized on teachers' preference for the four-day schedule as a recruitment tool of quality teachers, particularly in cases where districts could not compete with surrounding districts' salary schedules. Moreover, districts switching to the four-day school week have experienced better retention with declines in departures (Ferak, 2006; Koki, 1992; Hale, 2007; Nelson, 1983; Rouse, 2006).

Staff members, such as hourly employees like cooks and janitors, may have skepticism initially to changing to the four-day school week. The main reason for the trepidation rests in how the district will make up for the lost hours. Districts handle this concern many different ways. Some districts switch to the four-day week because they are in a dire need to save money, so they cut workers hours. For example, a district in Oregon that switched to four-day was looking to cut a significant amount of money and saved about $250,000 of a $14 million dollar budget on classified employee cuts (Beesley & Anderson, 2007). An approach that adversely affects the lowest paid employees is not

needed or palatable for many districts; instead morale is viewed as more important (Keen, 2007; Sagness & Salzman, 1993). In fact, most districts in Colorado shifted hourly employees to 10-hour days, added additional responsibilities like supervision, or had workers such as janitors continue to work regular work weeks. (Carter et al., 2013; Dam, 2006; Kordosky, 2011). Typically, staff worry has been shown to subside after implementation and staff morale increases (Dam, 2006; Featherstone, 1991; Rouse, 2006).

Initial pushback followed by high levels of support of the four-day schedule after implementation is commonly experienced by districts (Donis-Keller & Silvernail, 2009; Chmelynski, 2003; Reeves, 1999). For example, surveying teachers, students, and parents, Dam (2006) found 80-90% favored continuation of the schedule. Dam (2006) concluded remaining opposition typically came from people not directly associated with the school (Blankenship, 1984; Grau & Shaughnessy, 1987; Hale, 2007; Leiseth, 2008; Nelson, 1983; Wilmoth, 1995). Perhaps the most all encompassing stakeholder study found support by all stakeholders in Custer, South Dakota, with the majority of students, parents, instructional staff, business and community members, and non-certified staff describing themselves as "extremely satisfied" with the four-day school week (Feaster, 2002). Hale (2007) confirmed this sentiment extending analysis to sixteen South Dakota four-day districts noting staff and student morale as among the most often reported advantages.

In 2008, Leiseth studied a small rural school in the upper Midwest. Leiseth (2008) surveyed community members, parents, teachers, and students over multiple years including the implementation year and year two of the four-day school week. Leiseth

(2008) concluded the switch was an overall positive impact noting increased morale and very high levels of satisfaction among all stakeholders. Only 14% of parents in 2006, the year of implementation, said they wished the school was still five days a week and 77% stated they believed their child liked the schedule. The data seemed to suggest parents underestimated their children's' preference for the schedule. Among students in middle school, 82% said they liked the schedule in 2006, which grew slightly to 84% in 2007. A more significant growth for high school students was present jumping from 77% in the implementation year to 90%. Notable things the students liked about the four-day week included being able to do homework on Friday (off-day), more family time, and belief that more material is covered and they are learning more. Students' main concern was how early the day started.

Student preference for the four-day week has manifested itself is some very positive ways for schools. Many researchers have found student discipline issues decrease for four-day districts when compared to the five-day school week (Beesley & Anderson, 2007; Chamberlin & Plucker, 2003; Chmelynski, 2002; Dam, 2006; Geranios, 2006; Koki, 1992; Litke, 1994). Kordosky (2011) believed the decline in student discipline issues may be due to students being more actively engaged and having less down time. Less down time is often a by-product as schools adjust to the new schedule and shorten free time, passing periods, lunch periods; Geranios (2006) and Litke (1994) noted such adjustments brought about declines in referrals. In rural Hawaii, referrals declined from 203 to 75 following implementation. Furthermore, school officials noted less vandalism and other problems associated with students previously milling around the school during a traditional schedule (Koki, 1992). This finding helps build the case

against some unsubstantiated fears including increased crime after four-day implementation (Beesley & Anderson, 2007; Donis-Keller & Silvernail, 2009; Koki, 1992; Kordosky, 2011). In some cases, student preference for the four-day schedule has helped decrease dropout rates. Lower dropout rates have been widely reported, including Grau and Shaughnessy (1987), who found a dropout rate for seven New Mexico four-day schools at only 3.3% compared to 8.1% for the rest of the state (Fager, 1997; Leiseth, 2008; Roeth, 1985). Conventional wisdom suggests the four-day school week and its links to improved student behavior, discipline, and attendance may lead to improved student achievement.

Student achievement. Most available research regarding the four-day school week is centered on student achievement. The earliest research found very little difference in student achievement between four-day schools and other districts. While more recent research has pointed to some significant differences, nearly all research agrees that with the four-day week there is no marked regression (Beesley & Anderson, 2007; Daly & Richburg, 1984; Dam, 2006; Donis-Keller & Silvernail, 2009; Fager, 1997; Grau & Shaughnessy, 1987; Johnston, 1997; McCoy, 1983; Reinke; 1987; Richburg & Sjogren, 1982).

McCoy (1983) in a study of New Mexico's four-day schools was the first to demonstrate that not only did schools not suffer as a result of changing to a four-day week, but some improved (Donis-Keller & Silvernail, 2009; Hewitt & Denny, 2011; Koki, 2002). Grau and Shaugnessy (1987), studying seven New Mexico school districts and 12 Colorado districts, found both benefited from a lower dropout rate with a four-day

week but concluded standardized test results were slightly mixed with no real difference in performance than their five-day counterparts.

Colorado is the state that most extensively uses the four-day schedule and thus has had the most studies of their academic performance. For example, Daly and Richburg (1984) studied five rural Colorado districts reviewing standardized test scores of a cohort of students over four years and across a single grade level for the same period; they found no statistical difference on test performance. A comparison by Lefley and Penn (2011) of 67 Colorado school districts operating the four-day school week and similar five-day counterparts found no significant difference on state assessments or academic growth. The growth was similar even when controlled for school size, including the one large four-day school in Denver. Domier (2009) compared four-day Colorado schools during 2005-2008 to similarly-sized five-day schools on the Colorado Student Assessment Program (CSAP) for 3rd grade students. No significant difference or relationship was found between school week length and the reading, math, and writing scores on the CSAP.

Even though most four-day districts are rural and, therefore, research on suburban four-day districts is rare, Sagness and Salzman (1993) studied a suburban four-day school district and surveyed 2,039 K-12 students, 492 parents, 103 teachers, and 85 support staff. They observed class time to measure engaged student time, analyzed student and teacher absenteeism data, and performed a cost factor analysis. Changes in achievement test scores were studied using a pre-post cohort design. Findings indicated student achievement increased at some grade levels while other grade levels remained mostly the same as in previous years. However, other outcomes of switching to the four-day week

included higher levels of student on-task behavior, less disruption of instructional time, sustained student engagement, a decrease in both teacher and student absences, and an approximate 1.6% savings in the budget, which, as suggested by multiple researchers, could have a positive academic effect over time (Anderson & Walker, 2015; Grau & Shaughnessy, 1987; Sagness & Salzman, 1993). Despite the various corollary benefits, the suburban Idaho district decided to switch back after only one year citing the lack of "key elements of systematic change" (Sagness & Salzman, 1993, p. 30).

In 2011, Watrous interviewed 20 teachers and reviewed standardized test scores at two rural high schools in Virginia to determine the impact of a four-day school week on student achievement. Instructional hours for five traditional years (2004-2009) were compared to one shortened year (2009-2010). Little correlation was found between the shortened calendar year and student achievement. The only statistically significant relationship was an increase in history pass rates after the change to the four-day school calendar. Teachers interviewed believed time management and focus was a factor in the successful implementation of the shortened calendar.

In an attempt to be more rigorous and comprehensive than previous four-day week student academic performance impact studies, Hewitt and Denny (2011) used a matched pair design of four- and five-day schools matched on the basis of enrollment and socioeconomic status. The student achievement scores compared included reading, writing, mathematics, and total battery score for elementary, middle, and high school levels. While at each level the five-day districts test scores were slightly higher, overall achievement was not significantly different. Writing scores for elementary students, the only area of significant difference, was higher for five-day schools than matched four-day

schools ($p < 0.05$). In the study over the longest period of time, Feaster (2002) examined 10 years of achievement data in Custer, South Dakota. Among mixed results, most of the students slightly exceeded the state average after implementation of the four-day week. Similar to other researchers, Feaster concluded, despite scores not being significantly different in many cases, scores were not hurt by the usage of the four-day week.

Only a few studies have uncovered negative academic effects with the use of the four-day week. One middle school in New Mexico, already on academic probation, experienced declined scores with the four-day week, which led the superintendent to seek a return to the traditional calendar (Richard, 2002). More concerning, Hedtke (2014) found over a three year period some four-day schools in South Dakota had more students move out of the advanced category into lower categories of proficiency than five-day counterparts. While this study only provided a simple numerical difference and not a level of significance, it does pose questions about the impact of the four-day school week on students at the ends of the academic spectrum – in this case more academically inclined, including gifted.

Some researchers, like Mitchell (2006), have suggested the four-day week brings about initial academic gains followed by hitting a ceiling or leveling off (Beesley & Anderson, 2007; Hale, 2007; Mitchell, 2006; Sagness & Salzman, 1993). More alarming than a leveling off, Tharp (2014) compared standardized test scores of four-day students with traditional schedule students in Montana and found significant increases in the first year of implementation followed by decreases, falling below their five-day counterparts' scores in subsequent years. In fact, the gap continued to grow year by year. Tharp (2014) suggested the initial increase may have been akin to the Hawthorne Effect. The

Hawthorne Effect is when a change is perceived positively at first but dwindles over time. More technically, it is a bias within research in which participants alter their behavior due to knowledge they are being studied (Hale, 2007; Tharp, 2014). Could the novelty of the four-day week wear off? Is it reasonable to believe students are performing better on a test after a year of school that would directly affect their ability to perform on that test? Tharp argues when schools switch to the four-day week, the pressure or even controversy associated with such a different approach may bring about a temporary heightened sense of importance for teachers and students. While no known research seeks to answer this question directly, as mentioned previously Leiseth (2008) did find sustained satisfaction among all stakeholders, which even improved over a two-year period. Furthermore, some achievement scores Leiseth examined contrasted starkly from the Hawthorne Effect, showing an initial dip in reading and math scores upon four-day week implementation followed by a sharper increase the second year. Ultimately, the time frame in Leiseth's study is too short to address such a question, and instead corresponds with Tharp's suggestion for studies over longer periods.

There is a growing body of research that has shown a variety of academic improvements for districts using the four-day week. Plucker et al. (2012) suggest achievement gains evidenced in studies like Anderson and Walker (2012) may be due to positive by-products on instruction like teachers teaching more efficiently, believing they were able to deliver more instruction, and fewer interruptions. For example, a district in Idaho for the first time met all NCLB benchmarks following a change to the four-day school week (Beelsey & Anderson, 2007; Geranios, 2006). Furthermore, some evidence suggests four-day schools have students performing better on college entrance exams.

Chmelynski (2003) reported ACT scores at Merryville High School in Louisiana increased from 18.7 during the four years prior to implementation to a score of 20 after implementation. Another finding to note, Chmelynski (2003) found the number of honor roll students had doubled.

Surveying 84 four-day districts, Wilmoth (1995) found only 6% of the districts reported a decrease in standardized test performance since implementation, whereas 68% reported an increase. Anderson and Walker (2012) compared state assessment scores of 4^{th} and 5^{th} grade Colorado students in four-day schools to those students in five-day schools from across the state. Anderson and Walker (2012) found a positive relationship to students' performing advanced or proficient in math and reading. Richards (1990) compared nine rural school districts in New Mexico that had been on a four-day week over an eight-year period with nine similar five-day counterparts for grades five and eight on a total battery achievement test. The four-day students overall scored significantly higher ($p < .01$) than the five day week students; however, when scores were sorted by grade and year, a smaller difference was found in favor of four-day ($p < .065$).

Yarbrough and Gilman (2006) compared achievement data on the Comprehensive Test of Basic Skills in spring 2004 and 2005 for Webster County Public Schools in rural western Kentucky after four-day implementation with scores from spring 2002 and 2003 before implementation. The district consisted of a total of 1,800 students spread out over four K-8 schools and one high school. The district was mostly low income and had switched to the four-day week as a response to falling revenue from population decline due to the closing of several small businesses. Comparing student scores for grades 3 and 9 in reading, math, and language, Yarbrough and Gilman (2006) found scores in all

subjects increased significantly but noted scores had been improving for some time before the study, leading them to conclude the four-day week "did not negatively affect student achievement and probably contributed to higher assessment scores" (p. 84). While evidence is mixed, recent research is more promising with regard to student achievement and the four-day school week. However, most researchers concur with Dam (2006) who concludes research in this area is limited by its ability to control all the variables involved.

Other benefits, concerns, and challenges. The bulk of four-day related research is focused on student achievement or budgetary impact and is quantitative in design. A smaller amount of research is qualitative or mixed in methodology and focused on stakeholder perceptions of the schedule change and, therefore, yielded mostly anecdotal data. The latter research has revealed additional challenges, which districts have found are mostly misperceptions, and a few subtle benefits.

Transportation benefits. Financial savings are often the reason districts, mostly rural, consider the four-day week. Chief among cost savings anticipated are fuel costs for transportation with multiple studies reporting transportation cost reductions ranging from 10% to 23% (Beesley & Anderson, 2007; Fager, 1997; Ferak, 2006; Geranios, 2006; Koki, 1992). Furthermore, some of the transportation related savings are not realized immediately. Kordosky (2011) reported four-day districts save additional money on bus maintenance. Moreover, Kordosky says the set-up of the four-day schedule easily gives administrators the ability to use "piggy-back" bus routes for athletic events, without disrupting academic time, to greatly reduce bus mileage. According to Kordosky,

maintenance and mileage savings are realized by the district whether they maintain their own buses, lease, or outsource bus services.

Off-day benefits. The off-day, whether it is Monday or Friday, has other benefits besides transportation savings for the district. According to Kordosky (2011), districts can avoid delaying some facility projects and maintenance. The off-day may be better suited to perform some tasks that require students not to be in the building (e.g. plumbing that requires turning off water supply). Furthermore, it may help the district use their own maintenance and custodial people to perform jobs instead of outsourcing. Also, administrators can use the flexibility provided by the off-day to easily make up school days missed due to weather without lengthening the school year. An added benefit to such an approach is the make-up day is more likely to be before end of year achievement testing, thus being more valuable academically (Blankenship, 1984; Donis-Keller & Silvernail, 2009; Hale, 2007).

Academic time and participation. In four-day schools, protection of academic time can be accomplished by scheduling extracurricular activities on the off-day (Delisio, 2005; Donis-Keller & Silvernail, 2009; Fager, 1997; Feaster, 2002; Featherstone, 1991; Hale, 2007). Hale (2007) found many four-day districts attempt to schedule the bulk of their activities with the off-day in mind and have an increase in student participation in extracurricular activities. Other researchers have noted increased extracurricular participation (Anderson & Beesley, 2007; Donis-Keller & Silvernail, 2009; Fager, 1997; Feaster, 2002; Featherstone, 1991). According to Kordosky (2011), increased involvement associated with the four-day schedule extends to parents as well. Not only are parents more involved with the school district, but families benefit from having

increased family time due to the regular longer weekends (Kordosky, 2011; Richard, 2002; Sagness & Salzman, 1993).

Kordosky benefits. When writing *The Four-Day Week Less is More*, Kordosky (2011) examined many benefits and challenges to the four-day schedule. Kordosky's (2011) final conclusion, implied in the title, is the four-day schedule provides more for students, including quality instruction time. He claims this is accomplished by providing consistency within the schedule. Kordosky (2011) writes:

> Even though districts and schools claim to be a five-day week it is not uncommon for parents to complain that it seems, "The kids are never in school." The reason for this perception is the number of "half days" and full-days that students are not in school while teachers and staff are performing duties other than actually teaching. Days that students are not in school at all on a five-day school week or are sent home after lunches include the following reasons: (1) in-service days (students typically home all day; usually three or more per year), (2) grading days (typically four days per year), (3) holidays (usually 6 per year), (4) conference days (usually 4 per year, and as many as 6 per year), (5) work days (usually 4 per year, but as many as 7 per year), and (6) Curriculum days (usually 2 per year, but as many as four per year) (p. 30).

Kordosky (2011) goes on to provide evidence for his assertion by giving the example of a current four-day district, Oakridge School District (Oregon), that before implementation proposed a school calendar that had very similar calendar characteristics as above. Kordosky concludes with this thought: "On a five-day week you send kids home so teachers can do extra work. On a four-day week you bring teachers in on the fifth day,

and don't send kids home" (p. 31). In summary, the four-day school week has been shown to protect instructional time while providing consistency for all stakeholders, which aids not only the educational process, but also other logistical concerns for families like childcare.

Childcare concerns and solutions. While financial savings is the most common initiator of a district considering the four-day week, by far the foremost community concern that must be overcome concerns childcare on the off-day (Keen, 2007). Districts have alleviated this concern in a variety of ways. Some districts have provided optional childcare on-site. Others have provided training for high school students to help create a larger pool of options for parents (Blankenship, 1984; Donis-Keller & Silvernail, 2009; Fager, 1997). However, in Murray, Nebraska, the superintendent reported some students left the district due to childcare issues when the district changed to the four-day district; however, the enrollment gained from excitement about the change that made the enrollment numbers a wash (Beesley & Anderson, 2007; Ferak, 2006). Also concerning childcare, a decrease in latch-key children is associated with the four-day week as the extended four-day coincides more with the typical workday (Beesley & Anderson, 2007; Jennewein, 2016; Kordosky, 2011).

Overall, the majority of research has shown fears about off-day childcare are unwarranted as various solutions can be used after implementation (Dam, 2006; Featherstone, 1991; Geranios, 2006; Johnson, 1997; Kordosky, 2011). For instance, Jennewein (2016) cited "School District D" in Missouri that before implementation developed a latch key program to offer parents. The district would provide care until six o'clock on days school was in session as well as off-day care. Through a parent survey,

School District D found only four interested parents. An additional note, after implementation the district successfully changed the program to help remediate and enrich learning for struggling elementary students (Jennewein, 2016; Rardon, 2010). Other research has cited school districts, like one in South Dakota, providing remediation opportunities for students on their off-day (Chmelynski, 2003; Donovan, 2005; Hale, 2007). Chmelynski (2003) even noted districts using remediation time on the off-day to motivate at-risk kids. Another childcare related common concern is food on the off-day. No known research addresses this issue; however, Kordosky (2011) suggested districts who anticipate this to be a concern could address the issue by either opening up the district's kitchen to volunteers or implementing a "snack pack" program.

Student fatigue. If childcare is the most common concern for a community regarding a change to the four-day school week, perhaps the second is student fatigue, particularly for younger students. Many schools attempt to address this concern with plans by either placing the bulk of the academic work in the earlier parts of the day or spacing it out with corresponding breaks (Blankenship, 1984; Delisio, 2005; Chmelynski, 2008; Hale, 2007; Donis-Keller & Silvernail, 2009; Ferak, 2006; Kordosky, 2011). Some researchers have suggested this is only a perception problem and students adjust over time and may even be fresher due to the long weekend (Beesley & Anderson, 2007; Sagness & Salzman, 1993; Featherstone, 1991). For example, in a survey of parents and students before and after implementation of the four-day schedule, Leiseth (2008) found the perception of fatigue for both dropped over time.

Professional development and the four-day school week. The four-day school week may be uniquely able to address professional development and school improvement

issues in the United States (Blackadar & Nachtigal, 1986; Donis-Keller & Silvernail, 2009; Hanson II, 2014; Yarbrough & Gilman, 2006). In 2009 the National Staff Development Council (NSDC) conducted a study comparing teacher professional development in the United States with other countries. Among the many shortcomings of American teacher professional development, the report noted professional learning opportunities were too often short-term and did not foster professional collaboration. By contrast, other high performing nations have programs that provide time that is built into the teachers' work day for ongoing, intensive professional development and collaboration (Darling-Hammond et al., 2009). The resource of time is critical to the functions of a learning institution. In fact, nine of the reviewed studies found professional development programs with longer durations were associated with teacher change and increased student learning (Darling-Hammond et al., 2009). Too often in the United States, even the best professional development efforts are stifled by the lack of time provided (Darling-Hammond et al., 2009; Gulamhussein, 2013; Guskey & Yoon, 2009).

The NSDC suggests teachers need close to 50 hours of professional development for skill improvement that impacts student learning (Darling-Hammond et al., 2009). Some research has suggested that particular subjects, for example science, may require 80 hours or more of professional development to be effective (Corcoran, McVay & Riordan, 2003). The Learning First Alliance doesn't make a distinction for the subject, but instead suggests all "teachers need at least three hours per week or 80 to 100 hours per year of collaboration, research and observation of other master teachers for quality professional development to make an impact on student learning " (Learning First Alliance, 2000, p. 9).

Some researchers have suggested traditional school schedules, due to inflexibility, are inadequate in providing the needed professional development and collaboration time, leading teachers to sacrifice personal time, which may be promoting burnout (Abdal-Haqq, 1996; Carter et al., 2013; Hanson II, 2014; National Education Commission on Time and Learning, 1994). However, four-day school research has provided a long track record of various case studies in which teachers, administrators, and researchers have suggested the alternative schedule is more conducive for quality professional development and, therefore, improved student learning (Blackadar & Nachtigal, 1986; Carter et al., 2013; Donis-Keller & Silvernail, 2009; Hanson II, 2014; Harp, 1995; Jennewein, 2013; Johnson, 2013; Plucker et al., 2012; Roeth, 1985; Yarbrough & Gilman, 2006). This utility of the four-day schedule has led some communities to consider the four-day school week. Roeth (1985) surveyed 50 school administrators about their school's transition and use of the four-day school week. Forty percent of the participants indicated that professional development was one of their top five reasons for making the switch. Recently, at least one school in South Dakota changed to the four-day school week due to its potential improvements to professional development (Hanson II, 2014).

In the early 1980's, a research project was conducted by the National Institute of Education (NIE) to explore improving student achievement through efficient use of teacher and student time. The Cotopaxi (CO) and Westcliffe School Districts (CO), which were included in one of four projects selected by the NIE, were both unique to the project due to their recent implementation of the four-day school week. The project's contemporary research base, named Effective Schools Research, was school

improvement literature from Mid-continent Regional Educational Laboratory (McREL) that focused largely on professional development and collaboration. Due to the financial savings and flexibility of the four-day week's off-day, the Cotopaxi and Westcliffe School Districts successfully shifted time and transportation savings directly to professional development, common planning, and support groups. Teachers indicated the time given for planning, collaboration, and professional development programming established a climate of change, and they wanted to continue the revised schedule (Blackadar & Nachtigal, 1986; Donis-Keller & Silvernail, 2009). Furthermore, in a report on the project, Blackadar and Nachtigal (1986) concluded teachers were not only pleased with the increased time spent on professional development programming, but were able to recall specific content presented and had changed some of their instructional methods and strategies.

Later in the 1990s, Harp (1995) noted professional development time was increased in schools utilizing the four-day school week along with time for reflection and strategic lesson planning. Continuing to the early 2000s, Yarbrough and Gilman (2006) reported on Western County Public School system in Kentucky, which made the switch to the four-day week, like many others, for financial savings. Yarbrough and Gilman (2006) noted in addition to financial savings, "we have found that this schedule offers some unexpected benefits and creates few problems" (p. 82). Western County used the off-day to schedule faculty meetings, collaborative team meetings, individual planning time, lesson preparation sessions, and various other professional development opportunities. Based on interviews with teachers, Yarbrough and Gilman (2006) concluded the more efficient use of planning time and professional development created a

more effective learning environment. For example, teachers stated they "have (more) connected instruction and planning" (Yarbrough & Gilman, 2006, p. 83).

In Missouri, Rardon (2010) reported the Lathrop School District was able to schedule larger clumps of professional development time on off-days for students, and the time was more organized and efficient. Johnson (2013) in a case study of a Midwest school district that had just implemented the four-day week found professional development hours increased from 44 hours to over 100 hours during the school year. While teachers reported the professional development was much improved before Christmas, they noted there was a quality decline in the second semester. According to Johnson (2013), administrators could have done a better job, particularly in the second semester, using the extra hours on other needed tasks (e.g. curriculum pacing and alignment). Furthermore, the district needed to do a better job at receiving staff input on professional development offerings (Johnson, 2013).

These implementation woes are confirmed by various other researchers. Moreover, it has been noted teachers need preparation training before implementation of the four-day week for help adjusting instructional methods and curriculum (Bennett, 2005; Brunjes, 1996; Donis-Keller & Silvernail, 2009; Hanson II, 2014; Juneau, 2009; Plucker et al., 2012). Unfortunately, many times when districts switch to the four-day week, it is done so in a rush due to financial hardships. Roeth (1985) found many times implementing happens in as little as four months.

While the studies mentioned have provided anecdotal evidence that the four-day school week may be conducive to quality professional development, only one known study has directly examined this idea. In a multisite case study, Hanson II (2014)

collected interview data from 10 South Dakota four-day superintendents using semi-structured questions based on the McREL Professional Development Audit. In addition, district demographics and district artifacts (e.g. planning documents and school calendars) were collected. One potential issue with the reliability of the study was provided from those documents. Hanson II (2014) found a wide range, as low as two and as high as 20, of professional development days on the districts' calendars. Furthermore, the off-days were used in a variety of combinations of full days off for both teachers and students, interventions for students, partial days of professional development for teachers and full days of professional development for teachers. However, Hanson II (2014) reported "all superintendents stated there were benefits of the four-day week in the design and implementation of their professional development program no matter what type of schedule the district implemented with the 'Friday No School (off-day)'" (p. 69).

Overall, Hanson II (2014) found superintendents' perceptions of the quality of their professional development programs were positively impacted by the four-day schedule due to the schedule's structure and flexibility. Superintendents spoke about the frustrations with the lack of time within a traditional five-day for implementing new initiatives and related in-services. By contrast, Hanson II (2014) reported "when asked if the four-day week structure allowed time for teachers to participate in professional development, the overwhelming response was yes" (p. 71). Also, superintendents responded the four-day week allowed more time to focus on goals of the district and needs of the teachers, protected instructional time by using off-days for professional development, and helped teachers acquire new instructional skills. Superintendents also believed they were better able to capitalize on various data. For instance, teachers were

able to collaborate more and tailor instruction based on student data. Also, administrators were better able to use teacher needs to drive professional development offerings. Other benefits superintendents claimed included teachers collaborating without giving up some of their time in the evenings and being freed up to focus on instruction during the week, knowing they had time for planning, collaboration, and grading on the off-day. Some districts reported the benefit of added time to support new teachers through increased mentoring. Moreover, superintendents claimed the four-day week boosted teacher morale. To conclude, Hanson II (2014) wrote "all study participants saw opportunities in the four-day week as a method to maximize the time their students have a highly qualified teacher providing instruction in the classroom" (p. 72).

While Hanson II (2014) studied superintendents' perception of professional development quality, teacher perceptions were not studied. Administrators may be equipped to recognize the advantages of the four-day school week's flexible schedule, but may not be as good at determining the quality of the professional development offerings as teachers. Further, the McREL study measures effective professional development traits, but did not examine if professional learning is taking place. Professional learning as opposed to specific professional development traits is what is currently mandated by school improvement legislation and suggested by leading organizations like Learning Forward. Therefore, a gap remains in the research base regarding the impact of the four-day school week schedule on teacher professional learning.

Professional Development Research and Learning Forward

Effective professional development is vital to ensure equity in education by providing all students with quality learning opportunities from quality teaching (Archibald, Coggshall, Croft, & Goe, 2011; Learning Forward, 2011; Zepeda, 2012). School districts can use professional development to improve teacher practices and student achievement (Darling-Hammond et al., 2009; Desimone, Porter, Garet, Yoon, & Birman, 2002; Garet, Porter, Desimone, Birman, & Yoon, 2001; Hirsh & Killion, 2009; Togneri & Anderson, 2003; Yoon, Duncan, Lee, Scarloss, & Shapley, 2007). In fact, Togneri and Anderson (2003) found even in some of the toughest, poverty-stricken districts, focused professional development can improve instruction and student outcomes. Without effective professional development, many researchers have suggested school improvement is impossible (Fullan, 2001; Guskey, 2009; Hall, 2015; Smylie, 2014). In 2009 Guskey concluded, "it is probably safe to say, in fact, that no improvement effort in the history of education has ever succeeded without thoughtfully planned and well-implemented professional development activities designed to enhance educators' knowledge and skills" (p. 226). However, the education field has been marred for far too long with generic and isolated professional development lacking the time, depth, and proper delivery to impact teachers and student outcomes (Desimone, 2011; Guskey, 2000; Knight, 2009; Meister, 2010; Neufeld, 2016; Patton & Parker, 2015; Yager, 2013).

Reeves (2010) noted there is a big disconnect from what teachers need and expect from teacher professional development and what they receive. For example, recently studying teachers' perceptions of professional development, Glynne (2015) confirmed

this sentiment reporting, "teachers expressed that too many topics are covered in professional development, the topics are covered superficially, and the topics do not align with their (teachers') needs" (p. 45). Patton and Parker (2015) found the major driver in professional development is often not teacher needs or student learning, but instead, a single idea or piece of equipment. According to Knight (2009), these "traditional" approaches to professional development can be worse than nothing at all because teachers leave frustrated and disappointed. In fact, Darling-Hammond et al (2009) reported most teachers thought professional development was totally useless. Furthermore, teachers believe not enough time, resources, and follow-up will be allocated for professional development to be successful (Grimm, Kaufman, & Doty, 2014; Meister, 2010; Mosakowski, 2015; Neufeld, 2016; Patton & Parker, 2015; Yager, 2013).

Perhaps much of teacher cynicism is derived from being excluded in professional development planning (Grimm et al., 2014; Meister, 2010). Sparks and Hirsch (2000) affirmed this idea when they concluded teachers' knowledge, ability, desires, and needs are disregarded in planning professional development and instead teachers are treated as interchangeable parts. Tragically, the lack of support, complexity of today's educational system, and dissatisfaction teachers feel has led to an attrition epidemic with nearly 50% of teachers leaving within five years (Ingersoll, 2003). Fortunately, Markow, Macia, and Lee (2013) found, despite teacher satisfaction at an all-time low, the rates are higher in schools with quality professional development. For teachers to view professional development as effective, it must be sustained over time, engage them in active learning, and allow them to collaborate, which confirms the general consensus among researchers on effective professional development practices (Archibald et al., 2011; Darling-

Hammond et al., 2009; Guskey & Yoon, 2009; Widener, 2014). Unfortunately, instead of the 40 to 100 hours of professional development needed for impactful growth, teachers on average receive only sixteen (Darling- Hammond et al., 2009; Cracco, 2015; Loveless, 2013).

Professional development theory and practice gap. Guskey (2009) argued there is a gap between theory and practice of teacher professional development citing multiple roadblocks. Guskey (2009) claims leaders' "haphazard planning of most professional development further hinders sound investigation" (p. 226) because evaluation and data collection procedures are often ignored or are afterthoughts. Furthermore, studying teacher professional development can be difficult for researchers because it often takes considerable time, and schools are notorious for implementing multiple changes simultaneously. Guskey (2009) illustrates the point this way:

> Most schools today, for example, are applying standards-based curricula; differentiating instruction; developing formative assessments; adapting classroom walk-throughs; altering homework policies; and revising grading and reporting practices. Isolating the effects of any innovation and its accompanying professional development activities can be extremely challenging, regardless of the research design (p. 226).

Guskey (2009) concludes these issues have manifested themselves by limiting the amount of research that examines the effectiveness of particular professional development programs on student achievement directly (Guskey, 2009; Yoon et al., 2007; Zepeda, 2012).

In fact, Yoon et al. (2007) examined more than 1,300 studies of professional development programs impact on student achievement and found only nine met the What Works Clearinghouse evidence standards. Despite the small number of rigorous studies, similar characteristics were present. The studies that impacted student achievement consisted of at least 30 contact hours, had significant follow-up, were often job-embedded, and specific to the teacher and their content (Yoon et al., 2007). More recently, Blank and de las Alas (2009) conducted a meta-analysis of 16 studies of professional development and its impact on student achievement in math and science. Like Yoon et al. (2007) before it, Blank and de las Alas (2009) found common features of effective professional development emerged like having a strong focus on pedagogy, being content-specific, and providing follow-up support instead of promoting a particular program or design.

Common features of effective professional development. To close the gap between research and practice, Hattie (2012) and Desimone (2009) have advocated for a common language be used when evaluating, researching, and practicing professional development and its impact on teacher practice and student learning. Moreover, Desimone (2009) suggested the existing body of research demonstrates consistent core features of effective professional development. Many other researchers have noted much of professional development research has yielded lists of "best practices" of effective professional development as opposed to evaluation of particular programs and that studying those lists may guide leaders and policy (Birman, Desimone, Porter, & Garet, 2000; Borko, 2004; Darling-Hammond, Hyler, & Garnder, 2017; Garet et al., 2001; Guskey & Yoon, 2009; Timperley, Wilson, Barrar, & Fung, 2007; Zepeda, 2012).

These "best practice" studies often focus on improvement in teacher practice. Consistent features can be found on many of these lists, which are also very similar to the aforementioned rigorous student achievement linked studies. For example, Garet et al. (2001) in a study of 1,027 math and science teachers found six features of professional development that had significant positive effect on teacher's knowledge, skills, and change in practice. Some examples include a focus on content knowledge, opportunities for active learning, and a significant duration of activity. A longer study in 2002 by Desimone, Porter, Garet, Yoon, and Birman came to similar conclusions. Desimone et al. (2002) conducted a three-year longitudinal study of the effects of professional development on teachers' instruction. Studying 207 teachers in 30 schools, they found changes in teacher practice occurred when professional development had a focus on content, instructional practices, and had active learning opportunities.

In 2011 reviewing literature of studies examining high quality professional development characteristics, Archibald et al. (2011) noted five consistent characteristics that are all congruent with the findings of Garet et al. (2001) and Desimone et al. (2002). Those five consistent characteristics of high quality professional development were: (a) alignment with school goals, state and district standards and assessments, and other professional learning activities including formative teacher evaluations, (b) focus on core content and modeling of teaching strategies for the content, (c) inclusion of opportunities for active learning of new teaching strategies, (d) provision of opportunities for collaboration among teachers, (e) inclusion of embedded follow-up and continuous feedback (Archibald et al., 2011, p. 3).

Partnering with the Center for Public Education, Gulamhussein (2013) set out to provide a research-based answer for districts seeking to structure their professional development to effectively change their teaching practice and improve student learning. Gulamhussein (2013) concluded there are five principles needed for effective professional development. The first principle was effective professional should be ongoing and of significant duration. In fact, multiple studies confirm this principle suggesting as many as 50 hours may be needed for a new strategy to be learned, practiced, mastered, and successfully implemented in class (French, 1997). Next, teacher support during the implementation stage is needed to help address challenges. For example, Knight and Cornett (2009) found teachers who had coaching available after an introductory workshop were significantly more likely to use what they had learned. Third, teachers' initial exposure to a skill needs to be active using active designs like role-playing, live modeling, and classroom observations. Emphasizing modeling as perhaps the most effective active design, Gulamhussein (2013) identified modeling as principle four. The final and fifth principle stated is professional development should be focused on content specific to a teacher's discipline and not generic.

In a recent attempt to identify features of effective professional development from more rigorous studies, Darling-Hammond, Hyler, and Gardner (2017) reviewed 35 studies from the past three decades that had shown a positive link between teacher professional development, practices, and student outcomes. The studies were experimental or comparison group design or analyzed student outcomes with controls for context and student characteristics. After coding the results, Darling-Hammond et al. (2017) found seven shared features including: (a) is content-focused, (b) incorporates

active learning utilizing learning theory, (c) supports collaboration, typically job-embedded contexts, (d) uses models and modeling of effective practice, (e) provides coaching and expert support, (f) offers opportunities for feedback and reflection, and (g) is of sustained duration (para. 5).

Professional development lessons from abroad. In 2009 Darling-Hammond, Wei, Andree, Richardson, and Orphanos commissioned by the National Staff Development Council, since renamed Learning Forward, published a landmark report on professional development in the United States and abroad. The report found many deficiencies in typical professional development in the United States. including a lack of dedicated time and resources including funding. Also, domestic professional development practices tend to lack depth, support, and active engagement leaving teachers dissatisfied and discouraged. However, as noted by Darling-Hammond et al. (2009), in many ways countries abroad are much better at professional development and can help guide research, policy, and practice.

Upon reviewing international professional development practices, Darling-Hammond et al. (2009) concluded "the evidence is clear that teachers in other nations are significantly more likely to visit classrooms of teachers in other schools, collaborate frequently on issues of instruction, and participate in collaborative research" (p. 15). Other high performing countries approach teacher development as a continuum and have incentives including pay increases as commonplace. Furthermore, in countries like Singapore and China, there is an expectation of advancement through different career stages including the attainment of specific skills. Teachers also benefit from peer leadership opportunities (Darling-Hammond, 2017).

Other effective professional development practices that were found to be common place in other countries included: (a) ample time for professional learning structured into the teachers' work lives (job-embedded), (b) beginning teachers receive extensive mentoring and induction supports, (c) widely encouraging teachers to participate in school decision-making, and (d) governments providing significant levels of support for additional professional development (Darling-Hammond et al., 2009).

Timperley, Wilson, Barrar, and Fung (2007) found similar advancements among other countries when they performed a meta-analysis on 97 international studies of effective professional development including many from New Zealand. Among the seven common elements that were found include providing plenty of time, engaging teachers in the learning process, and providing job-embedded collaborative opportunities. Furthermore, the study noted a focus on pedagogy and content specific learning opportunities (Timperley et al., 2007). Although Darling-Hammond et al. (2009) found domestic professional learning practices are lagging behind some high performing countries, the common structural features of Timperley et al. (2007) and Darling-Hammond et al. (2009) serve as affirmations of a long line of similar domestic research.

As noticed by Guskey and Yoon (2009), such work abroad and domestic research of "best practices" corroborates the position taken by Learning Forward that "the most effective professional development comes not from the implementation of a particular set of 'best practices,' but from the careful adaptation of varied practices to specific content, process, and context elements" (p. 497). According to Reeves (2010), a new theory of professional learning is not needed, but instead "a practical mechanism" to turn established theory into reality. To fix professional development, Reeves (2010) suggests

among other things, Learning Forward's Professional Learning Standards may be used as a guide to improve legislation and future practice.

Learning Forward and advocacy. The National Staff Development Council (NSDC), now known as Learning Forward, was created in 1969 when a gathering of 15 staff developers discussed issues like individualizing staff development, evaluating training programs, and funding sources ("Our History," 2017). Since then, the organization has grown to more than 7,000 members ("Our History," 2017) with the mission to build "the capacity of leaders to establish and sustain highly effective professional learning" ("Vision, Mission, Beliefs," 2017, para. 1). According to Mizell (2010) Learning Forward is a "professional organization that provides resources and learning opportunities for educators to develop the knowledge and skills they need to organize effective professional development" (p. 10). Learning Forward's strategy to carry out its mission includes building the capacity of leaders, advocating for policies that strengthen the field of professional learning, and working to define effective professional development including creating its Standards for Professional Learning ("Vision, Mission, Beliefs," 2017).

Learning Forward's work of defining explicitly what effective professional development is has been a continual improvement process based on research developments within the field (Hirsh, 2009). Perhaps the greatest shift came in 2010 in conjunction with the NSDC changing its name to Learning Forward, which was meant to help signify a growing international presence and a stronger focus on educator learning to support student learning ("Our History," 2017). Although the organization's official definition still uses the term "*professional development*," a clear emphasis in research and

associated Learning Forward literature began to focus on the idea of *professional learning* (Glynne, 2015). Mizell, Hord, Killion, and Hirsh (2011) described the usage of *learning* instead of *development* as a way to signal "the importance of educators taking an active role in their continuous improvement" and not being treated by school systems as "passive recipients of information" (p. 11). According to Hirsh (2009), "the new definition of professional development is a moral imperative. The inequity in teaching quality and educational resources across classrooms, schools, and districts denies some students the opportunities for academic success" (p. 11).

Using its definition of professional development as a guide, Learning Forward has advocated for changes in the last two reauthorizations of the Elementary and Secondary Education Act and impacted the reform of 2015 rather significantly ("ESSA and Professional Learning," 2017). While No Child Left Behind (NCLB), the reauthorization of the Elementary and Secondary Education Act in 2001, brought many historic reforms including a call for high quality professional development, the language associated with the definition was thought by many to still need work ("ESSA and Professional Learning," 2017; Glynne, 2015; Zepeda, 2012). Even though the legislation called for high quality professional development, professional development in schools remained inadequate (Zepeda, 2012). Glynne (2015) suggested the focus on high quality professional development instead of professional learning may have been to blame. In 2015 the latest reauthorization, renamed Every Student Succeeds Act (ESSA) by the Obama Administration, revised the definition of professional development from suggestions made by Learning Forward ("ESSA and Professional Learning," 2017). Based on Learning Forward's research backed suggestions, ESSA added professional

development must be "sustained, (not stand-alone, 1-day, and short-term workshops), intensive, collaborative, job-embedded, data-driven, and classroom focused (Every Student Succeeds Act, 2015)." Furthermore, the law added additional language to emphasize educators should collaboratively identify their needs locally based on the needs of their students, be reflective, and be in a cycle of continuous improvement ("ESSA and Professional Learning," 2017; Greene, 2015).

Learning Forward Standards for Professional Learning

The field of education over the last two decades has been using standards-based reform, for both curriculum content and student performance, in an attempt for increased accountability, clarity, and improved instruction (Hamilton, 2008; Mosakowski, 2015; Shepard et al., 2009; Simon, Foley & Passantino, 1998). However, some have argued an unintended consequence from the standards-based reform movement has been increased inequity for low-achieving students (Darling-Hammond, 2004). Since the movement's inception, many have suggested standards-based professional development can provide similar benefits and even improve the movement's negative effects (Darling-Hammond, 2004; Collins, 1999; Blank 2013). For example, Blank (2013) concluded standards-based professional development ensures teachers have deep subject knowledge and effective teaching practices. According to Learning Forward (2011), "When professional learning is standards-based, it has a greater potential to change what educators know, are able to do, and believe" (p. 43). Perhaps most importantly like stated above, standards-based professional development may be integral to ensuring equity (Darling-Hammond, 2004).

Beginning in 1994, Learning Forward (at the time named NSDC) first developed Standards for Professional Learning for middle school, followed by versions for high

school and elementary just a year later. Since then, research guided revisions have been made, including the most recent edition completed in 2011 ("Our History," 2017). Learning Forward created Standards for Professional Learning to outline "the characteristics of professional learning that lead to effective teaching practices, supportive leadership, and improved student results ("Standards for Professional Learning," 2011). Furthermore, Learning Forward has used its Standards for Professional Learning to "strengthen and document the impact of professional learning" and advocate for research based policies and legislation ("Vision, Mission, Beliefs," 2017, para. 4). The Standards, like Learning Forward's definition of professional development, "emphasize the importance (of) results-oriented, collaborative, job-embedded professional development" (Roy, 2010, p.3)."

In some ways, the Standards for Professional Learning are serving as the "practical mechanism" called for by Reeves (2010) to turn professional development theory into reality, as evidenced by 44 states that have either adopted the Standards or used Learning Forward consulting services ("Our Impact," 2017). According to Mosakowski (2015), Learning Forward's Standards for Professional Learning enable "professional developers to have a strategic delivery plan that has a targeted audience as well as specific achievement, assessment, and implementation goals" (p. 3). To put it another way, those who advocate for effective professional development are equipped with research back structures and processes to implement. Furthermore, standards-based professional learning may create a shared vocabulary within the field and help align professional learning to other reforms, which researchers have suggested is crucial for sustained school improvement (Archibald et al., 2011; Desimone, 2011). While many

have noted teacher frustration with traditional professional development offerings, Killion and Kennedy (2012) believe educators appreciate continuous improvement cycles when the process has a direct link to student needs, teacher needs, teacher expectations, and subject content as suggested by Learning Forward's Standards.

Learning Forward's Standards for Professional Learning are: learning communities, leadership, resources, data, learning designs, implementation, and outcomes ("Standards for Professional Learning," 2011). The Standards are organized in three categories: Context, Process, and Content (Roy, 2010). According to Hirsh and Killion (2007), it is important all three types of standards are incorporated simultaneously to achieve optimal results. Each research based standard is preceded by a common stem built upon the five core beliefs of Learning Forward: (a) professional learning that improves educator effectiveness is fundamental to student learning, (b) all educators have an obligation to improve their practice, (c) more students achieve when educators assume collective responsibility for student learning, (d) successful leaders create and sustain a culture of learning, and (e) effective school systems commit to continuous improvement for all adults and students ("Vision, Mission, Beliefs," 2017).

Context Standards. The Context Standards answer the "who, where, when, and why" questions of professional learning. To put it another way, they "address the organization, system, and culture in which new learning will be implemented" (NSDC, 2001, p. 2). The Context Standards include the Learning Communities, Leadership, and Resource Standards.

Learning Communities. "Professional learning that increases educator effectiveness and results for all students occurs within learning communities committed

to continuous improvement, collective responsibility, and goal alignment" ("Standards for Professional Learning," 2011, para. 1).

According to Lieberman, Miller, Roy, Hord, and Von Frank (2014), the definition of professional learning communities has moved past "ongoing groups who meet regularly for the purposes of increasing their own learning and that of their students (p. 1)" and become a way schools reform by improving and professionalizing teaching, advancing learning for all students, and changing the discourse regarding accountability within education. Learning communities, or professional learning communities (PLCs) as they are often referred, are extremely effective at improving schools because they focus priorities on teacher and student learning by encouraging a cycle of collaboration, experimentation of practice, and reflection (Lieberman et al., 2014).

For example, McLaughlin and Talbert (2006) studied 22 high schools in Michigan and California and found when districts used learning communities where teachers collaborated around teaching and learning, the teaching was more likely to be based on the belief that all students were capable of learning, student engagement was a focus, and student learning was enhanced. In a much broader mixed study, Bolam et al. (2005) surveyed 393 schools and conducted 16 case studies and found student learning was not only the foremost concern for people working in PLCs, but research has shown a more positive correlation to both student achievement and professional learning the more developed the PLC is. Focusing on a single learning community, Grossman, Wineburg, and Woolworth (2001) studied a high school English and history department that collaborated. Grossman et al. (2001) found there were distinct stages of growth and as they moved through those stages the members of the learning community experienced

improved conflict resolution skills and support of experimentation of various teaching strategies.

To create, manage, and sustain a PLC effectively, these four key operational processes must be in place: optimizing resources and structures, promoting individual and collective learning, explicit promotion and sustaining of an effective PLC, and leadership and management (Bolam et al., 2005). Even though research has shown it takes three to five years to fully implement, Learning Forward has suggested effective PLCs will enable a school to enter a cycle of continuous improvement (Learning Forward, 2011; Lieberman et al., 2014). The cycle includes the following steps: (a) use data to determine student and educator learning needs, (b) identify student and aligned educator learning goals, (c) develop educators' knowledge and skills, (d) select and implement new practices, (e) use new strategies with local support, (f) monitor and redefine implementation, (g) evaluate results (Learning Forward, 2011).

While effective PLCs have common characteristics, go through similar stages of development, need structures to thrive, and adopt similar process, they vary depending on each PLC's particular context and setting and therefore must be flexible (Bolam et al., 2005). It is critical to have ongoing monitoring and evaluation for the PLC to sustain effectiveness. Like research regarding effective professional development, a growing body of evidence is providing lists containing the characteristics of effective professional learning communities. This manifestation of lists may be due to the difficulty in isolating any particular practice within context (Lieberman & Miller, 2011; Lieberman & Miller, 2014). Being familiar with these lists can aid leaders in evaluating and adapting their districts PLCs more effectively.

For example, according to Talbert (2010, p. 257) four such conditions of an effective professional learning community are: (a) norms of collaboration, (b) focus on students and their academic performance, (c) access to a wide range of learning resources for individuals and the group, and (d) mutual responsibility for student growth and success. Reviewing multiple studies, Lieberman and Miller (2011) provided the following essential practices that are common in successful PLCs: (a) meet regularly and take the time to build collegial relationships based on trust and openness, (b) work hard to develop a clear purpose and a collective focus on problems of practice, (c) engage in observation, problem solving, and mutual support, advice giving, and peer teaching and learning, (d) create routines and rituals that support honest talk, (e) purposefully organize and focus on activities that will enhance learning for both the adults and students in the school, (f) use collaborative inquiry to stimulate evidence-in-formed conversations, (g) develop a theory of action, and (h) develop a core set of strategies for connecting their learning to student learning (p. 19).

Professional learning communities have their share of challenges to be successful, including the associated shifting of control and embracing of norms and rules, but perhaps the greatest is the issue of time. Researchers agree large amounts of time are needed to develop an authentic learning community (Grossman et al., 2001; Lieberman & Miller, 2014). Lieberman & Miller (2014) noted many teachers are already bogged down with the daily challenges of teaching and can find the prospect of attending an additional meeting overwhelming. Often, schools struggle to restructure their schedule to find a common meeting time (Lieberman & Miller, 2014). The four-day school week may be uniquely able, due to its flexibility with the off-day, to better incorporate PLCs.

However, no known study has examined four-day schools' usage of learning communities, their commitment to improvement, their collective responsibility, or their goal alignment.

Leadership. "Professional learning that increases educators effectiveness and results for all students requires skillful leaders who develop capacity, advocate, and create support systems for professional learning" ("Standards for Professional Learning," 2011, para. 1).

School leaders have long been expected to manage schools, limit disruption, and watch over student behavior. While those things have persisted, the advent of more prevalent technology and education reforms that emphasize high stakes testing and accountability have made the job more complex and held teachers more accountable (Louis, Hord, & Frank, 2017). According to Kotter (2012), leaders should also set the vision, align others to it, and inspire teachers to overcome obstacles. Furthermore, administrators are increasingly expected to be a leader of instruction. Instructional leadership, according to Hattie (2009), is a leader that creates a "learning climate free of disruption, a system of clear teaching objectives, and high expectations for both student and teacher learning" (p. 83). This includes practices like expecting all of classroom time to be engaging for students or writing learning objectives on the board for all to see. While the responsibility of leaders has evolved, their impact on student learning has remained critically important. For instance, recently Leithwood, Louis, Anderson, and Wahlstrom (2004) reviewed a broad range of research to understand the links between leadership and student learning. Leithwood et al (2004) concluded there is evidence that leadership is second only to classroom instruction in contribution strength to student

learning at school. Moreover, when schools are in failing circumstances, effective leadership can have the greatest impact to implement needed large-scale reform.

Conducting a meta-analysis of 5,000 studies on the effects of leadership on student achievement dating back to 1970, Waters, Marzano, and McNulty (2003) also found a significant relationship between leadership and student achievement. Of those 5,000 studies, 70 met the McREL's criteria for design, controls, data analysis, and rigor. Waters et al. (2003) concluded between leadership and student achievement there is a substantial effect size of .25. Among the 21 factors examined, situational awareness and ability to be a change agent were among the factors found to have the greatest effect on student achievement (Waters, Marzano, & McNulty, 2003).

As stated, much of research agrees on the importance of leadership on student learning and that the role of leadership is becoming more complex and demanding (Leithwood et al., 2004; Louis et al., 2017; Waters et al., 2003). This added complexity and increased workload has resulted in calls for more distributed leadership. Consequently, administrators in recent years are much more likely to share leadership and delegate responsibility (Louis et al., 2017; McCombs & Marsh, 2009). This trend has carried out logistically with the formation of teacher teams and professional learning communities, which has been a positive in terms of schools transforming into more efficient learning organizations (Louis et al., 2017; Suanders, Goldenberg, & Gallimore, 2011). Additionally, Louis et al. (2017) suggest steps to better lead in today's environment include focusing on daily work and not things like high stakes testing, actively and constantly taking stock of the rate of learning that is taking place, and when change is needed employing effective change strategies.

To most effectively impact student learning, modern leadership must be about more than just the principal alone. Administrators must look to build the capacity of leadership of teachers (Elmore, 2000; Hall, 2015). According to Elmore (2000), building capacity is specifically needed to address problems associated in the current era of standards-based reform. While standards-based reform is simple in concept, adding structure for accountability for student learning, it highlights specific logistic problems with scale and context. To put it simply, to move an entire system in a specific direction over time, leadership must be shared and not the responsibility of one person. This high leverage concept, called distributed leadership, can bring about large scale improvement quickly because it brings "concerted action among people with different areas of expertise and a mutual respect that stems from an appreciation of the knowledge and skill requirements of different roles" (p. 36). Distributed leadership is not an attempt to shirk responsibility, but instead a more effective use of the capacity of expertise already in the system by creating the expectation individuals must share their practice and engage in critiquing one another for improvement (Elmore, 2000).

York-Barr and Duke (2004) noted teachers are assuming more leadership functions within schools. For example, teachers can serve as head of department and have some control over resources. Also, they can serve as union representatives, curriculum specialists, coaches, or mentors. Furthermore, some districts have teachers help with evaluation and management responsibilities. This trend is congruent with teachers' view, as they believe leadership should be a collaborative effort (Boyd & McCoy, 1995). York-Barr and Duke (2004) found, like administrative leadership findings, research literature says context, collaborative practice, and relationships are

among the top factors as to how successful a teacher leader is. Like traditional leadership from administrators, Saunders, Goldenberg, and Gallimore (2009) found long term sustainability of improvement with distributed leadership was dependent upon coherency and district vision alignment. Also, Saunders et al. (2009) concluded grade level teams were more effective the stronger the partnership with administration.

Regarding professional development planning, it is imperative the school administrator is actively part of the planning and implementation of staff development for it to be effective, as they are expected to set the direction of the agenda (Reeves, 2009). This does not mean they have to be experts in everything or the focal point of any particular offering. Again, research has shown that teachers need to be in partnership when planning professional development for optimal results (Hunt, 2005; Mosakowski, 2015). Blase and Blase (1999) concur with the belief that teachers and administrators should partner in shared planning and leadership, particularly with regard to professional development, implying a better learning organization is the result. No known study examines the four-day school week and leadership development.

Resources. "Professional learning that increases educator effectiveness and results for all students requires prioritizing, monitoring, and coordinating resources for educator learning" ("Standards for Professional Learning," 2011, para. 1).

The marshaling of resources in a school district extends beyond books to include equipment, technology, space, staff, funding, access to ideas, time, and other materials (Hall, 2015; Killion & Hirsh, 2013). Unfortunately, distribution of resources within U.S. schools has long lacked innovation and equity (OECD, 2011; Miles & Darling-Hammond, 1998; Miles, Sommers, Roy, & Frank, 2016). For instance, typically a large

portion of the funding mechanism in U.S. schools is dependent on local taxation tied to housing costs, which is believed to contribute to concentrations of disadvantaged pupils in poorly resourced schools. By contrast, more advantaged students in more affluent areas are more likely to have better qualified full-time teachers (OECD, 2011). To make matters worse, recent economic conditions have directly impacted resources within schools in the form of budget cuts (Mosakowski, 2015). These budget cuts, have already impacted scarce teacher professional development funds, which have historically been as low as 2% of the overall budget (Archibald et al., 2013; Chambers, Lam, and Mahitivanichcha, 2008; Killion & Hirsh, 2013). In fact, unlike many other high performing countries, U.S. teachers are more likely to bear much of the cost of professional development in the form of travel, workshop fees, or college expenses without reimbursement (Darling-Hammond et al., 2009).

While professional development funding needs to be substantial and sustained, simply throwing money at the issue will not solve everything as there is a limit to what money alone can do (Odden, Archibald, Fermanich, & Gallagher, 2002). Instead, researchers have suggested U.S. schools need to do a better job of employing effective professional learning strategies and prioritizing all available resources (Abdal-Haqq, 1996; Darling-Hammond et al., 2009; Odden et al., 2002; Hall, 2015; Miles & Darling-Hammond, 1998). While some researchers have offered various frameworks for resource allocation planning, it is imperative teachers' input is considered most effective, particularly with professional development (Busick, 1994; Mosakowski, 2015; Odden et al., 2002). Miles et al. (2016) suggested school districts should methodically perform a map analysis which includes tracking cost, purpose, targets, and delivery method for

impacting professional growth, teachers' time, teacher salary increases, and teacher support functions.

Teacher support function activities, like curriculum mapping or development, account for a small amount of spending for a district but has the potential to be a high leverage opportunity to improve teaching effectiveness (Miles et al., 2016). Other cost effective, high leverage opportunities for districts include capitalizing on the teacher expertise within their district in the form of mentorship, coaching, collaboration, and other job-embedded opportunities (Darling-Hammond et al., 2009; National Education Comission of Time and Learning, 1994). Other high performing countries have used more collaborative and job-embedded practices for some time, which has begun to translate to the United States. For example, in 2013 Education Resource Strategies (ERS) found that not only do high performing schools in the United States provide teachers with more job-embedded opportunities, but more non-instructional hours in various forms including planning and professional learning. This finding was consistent among both public and a charter schools studied (Education Resource Strategies, 2013).

While the most modern, research-based professional learning practices require adjustments to many resources within schools, perhaps one of the most challenging for districts is time. Teachers, and thus students, are victims of inflexible school schedules. Any professional development time or collaboration time has traditionally been expected to occur before or after school, in the summer, and thus on teachers' personal time. Sometimes, districts expect teachers to use preparation or planning periods for collaboration, which cuts into time they need for other tasks (Abdal-Haqq, 1996). According to Abdal-Haqq (1996), such intrusions contribute to teacher burnout. Barkley

(1999) claimed schools must rescue teachers from the "fatalistic thinking" that they do not have enough time and use innovation to produce the blocks of time needed for teachers to do their jobs. Stigler and Heibert (1999) agreed that schools have failed teachers by expecting teachers to be collaborative, but most of their contracted school day is spent alone in their classrooms.

Fortunately, according to Miles et al. (2016), an increasing number of schools are tackling how they allocate their time so they can better support both student and teacher learning. They list and describe six ways schools have rearranged or added time to support collaborative learning, which include banking time, buying time, reorganization of time, reconfiguring of instructional time, using existing time more effectively, and using resource staff or specialists. Raywid (1993, p. 33) took a simpler approach suggesting three potential solutions: (a) adding time by extending the day or year, (b) extracting time from the existing schedule, and (c) altering staff utilization patterns. The four-day school week could potentially address all of these resource related issues including professional development time, collaboration time, and budget issues. Unfortunately, most four-day research is limited to budget impact.

Process Standards. The Process Standards answer the "how" question of professional learning. In other words, they are the way in which educators acquire and ensure competency in new and more effective practices (Hall, 2015; Hirsh & Killion, 2007; Widener, 2014). The Process Standards are Data and Learning Designs.

Data. "Professional learning that increases educator effectiveness and results for all students uses a variety of sources and types of student, educator, and system data to

plan, assess, and evaluate professional learning" ("Standards for Professional Learning," 2011, para. 1).

For the Standards for Professional Learning to meet their goal of guiding educators to professional learning experiences that increase effectiveness and student learning, relevant data must be used for planning, assessing, and evaluating (Guskey, Roy, & Frank, 2014; Learning Forward, 2011). According to Guskey, Roy, and Frank (2014), while there is essentially an infinite amount of data, data itself is neither good nor bad. It is simply meaningful or useful based on "the context in which it is gathered, processed, and applied" (Guskey et al., 2014, p. 2). Moreover, in order to best use data to guide professional development and support, it is important that data are reliable and appropriate. For example, due to differences that may lie in the group of students one teacher might have, it may be unfair to compare scores teacher to teacher. Instead, growth measures are typically more appropriate than static measures (Torgesen, Meadows, & Howard, 2006).

Also, data must be current. A common mistake made by districts is taking old reliable data, like that of standardized testing, and making major decisions months later when it is less appropriate. Hargreaves and Shirley (2009) call this an educational autopsy. On the other hand, Dufour (2003) describes successful data usage in a school as one that engages leaders and teams of teachers in a continuous cycle of improvement based on analyzing data, identifying strengths and weaknesses, and working together to support and make appropriate adjustments. In other words, data-driven decisions can be a catalyst for a learning organization by producing baseline data that helps define growth and drives improvement by aiding future planning (Collins, 1999; Mosakowski, 2015).

Essentially, the effective use of pertinent data is the fuel that drives professional learning communities to continuous improvement (Davies, 2015; Reeves, 2010). According to Mishkind (2014), PLCs are highly effective at leveraging data particularly when they share the same students and thus have familiarity to adapt to each student's needs. This can include working together to provide extra time for students to work on a particular skill. Data can also be used for backwards planning, both in the classroom and in professional learning. First, educators can use data to identify student learning needs. From these needs, they can work backwards to meet those needs, including altering instruction methods and, when needed, providing training for teachers (Killion & Kennedy, 2012).

According to Learning Forward (2011), the relationship between professional learning and student results is a continuous pathway to improvement that is powerful when used either forwards or backwards. Such a comprehensive approach to professional learning uses both teacher and student data. Teacher and student data can be gathered at a classroom or school level. The classroom level, which is most commonly used for professional learning, is data that is closest to the student. This level of data includes assessments of all types (Guskey et al., 2014). By contrast, school level data includes items like teacher and student attendance, teacher schedules, free and reduced lunch population. Teacher data at the classroom level consists of any analysis of particular strategies, activities, or materials used (Guskey et al., 2014). Data from teacher evaluations can be used by administrators to provide feedback and guide future professional development.

Data gathered from student performance can include standardized testing, summative benchmark assessments, and a wide range of formative assessments. Teachers can use the data obtained to check student mastery of standards or to determine if pacing is on track. Student performance data can help guide and focus professional development and teacher support by describing areas of instruction that need to be improved and by providing differentiated training for teachers. This can be particularly helpful when teachers look to target or test specific new methods. Using student outcome data to set priorities for more effective professional development is linked to increased student performance due to its targeting at specific teacher and student needs (Garet et al., 2001; Torgesen et al, 2006). Studying 30 schools in five states, Desimone, Porter, Garet, Yoon and Birman (2002) found professional development focused on instructional practices were much more likely to be used by the teacher in their classroom. Furthermore, professional development on a specific teaching practice, like one addressing needs identified from data, where more likely to be used. According to Griffith, Kimmel, and Biscoe (2010), data can be used to close achievement gaps by tailoring professional development and instruction to specific student needs, citing evidence from at-risk preschoolers in Oklahoma whose teachers were able to quickly identify and accelerate their growth.

An often forgotten step with regard to professional learning and data is evaluation. Evaluation of professional development from data is a must, according to Guskey (2000), to ensure improvement. It is important while evaluating teacher professional development that data be used to measure teacher or student growth associated with programming as opposed to meaningless data like attendance alone.

Moreover, Guskey (2000) suggests teacher happiness with a particular program as less important than outcomes. While there are studies related to the four-day week and data, the typical data examined are either standardized test results or are related to the impact on the budget. No known study examines how effectively four-day schools utilize data in professional learning planning, assessment, or evaluation.

Learning Designs. "Professional learning that increases educator effectiveness and results for all students integrates theories, research, and models of human learning to achieve its intended outcomes" ("Standards for Professional Learning," 2011, para. 1).

A large consensus among researchers exists that supporting teacher growth through effective professional learning makes schools more effective learning environments for teachers and students (Darling-Hammond et al., 2002; Darling-Hammond et al., 2009; Drago-Severson, Roy, Frank, 2015; Fullan, 2005). Too often, the design for professional learning for educators has been driven by convenience or the latest fad. The result is typically a one-size-fits-all approach that does not provide what teachers need or does not even meet the expectations of the types of learning experiences expected for our students. Recent changes in legislation (e.g. No Child Left Behind and Every Student Succeeds Act) and instructional shifts (e.g. Common Core) are requiring changes to the professional learning experiences typically offered to educators (Killion, 2012).

The Learning Design Standard is about teachers within a district and targeting how they learn with the eventual outcome being better opportunities for students (Hall, 2015). Where outdated ineffective professional learning leaves educators trying to figure out how to transfer tidbits of knowledge into their daily practice (Killion, 2012), the

Learning Design Standard calls for an intentional integration of theory and research to act as the "bridge between planning and implementation" (Drago-Severson et al., 2015, p. 39). Teachers, like students, are more likely to learn when they are engaged, find something relevant, collaborate, have learning opportunities specifically for them, are able to reflect on their learning, and are provided follow-up support when needed (Hall, 2015; Penuel, Fishman, Yamaguchi, & Gallagher, 2007). For example, Penuel, Fishman, Yamaguchi, and Gallagher (2007) surveyed 454 science teachers about their professional development and found teachers' perceptions about the coherence and relevance of their professional development experiences directly impacted their learning and implementation. Furthermore, Penuel et al. (2007) found the kind of professional development activity they were engaged in impacted their level of implementation. In a larger study of over 1,000 teachers, Garet, Porter, Desimone, Birman, and Yoon (2001) found implementation was impacted not only by features and design of professional development, but also by the span and follow-up support provided. Garet et al. (2001) did affirm the Penuel et al. (2007) findings that the form of the learning activity impacted implementation.

Before leaders can select the best learning design possible, they must consider the characteristics of the adult learners themselves, their comfort, familiarity, and capacity with the topic, the amount of expected change, and the resources available (Drago-Severson et al., 2015). While many of these planning considerations are similar to lesson planning for students, leaders would be remiss not to consider things that are unique to adults. For example, Drago-Severson et al. (2015) note constructive-developmental theory from Robert Kegan has some merit regarding adult learning, namely that "adults

make meaning at a given point and over time" (p. 56). Furthermore, adults benefit from having follow-up support and reflection. Two ways adults are very similar to student learners is the great benefit realized by varying learning experiences and promoting active engagement (Drago-Severson et al., 2015).

In addition to knowing the intended outcome and the characteristics of the adult learners involved, leaders must consider what characteristics of the learning designs are most effective. According to Easton (2008), powerful learning designs have three qualities: (a) they arise from real work going on in the classroom or schools, (b) they focus on what is happening with learners, and (c) they are generally collaborative. These types of activities are sometimes referred to as job-embedded and considered to be "a powerful lever to advance student learning" (Croft, Coggshall, Dolan, Powers, & Killion, 2010, p. 13). Croft, Coggshall, Dolan, Powers, and Killion (2010) stated job-embedded professional development refers to "teacher learning that is grounded in day-to-day teaching practice and is designed to enhance teachers' content-specific instructional practices with the intent of improving student learning" (p. 2).

Typically, job-embedded professional development deals with authentic and immediate problems, is collaborative in nature, and consists of teachers finding and trying solutions as part of a continuous cycle of improvement (Croft et al., 2010; Hawley & Valli, 1999). According to Saunders et al. (2009), schools are more commonly looking to employ collaborative teams to initiate cycles of improvement with student learning as the major focus during professional development time. Killion (2012) stated such a process includes "examining data, setting goals, identifying learning foci, engaging in learning, implementing learning, analyzing results of implementation, evaluating the

learning process, and repeating the cycle again multiple times during a single school year" (p. 22). In summary, to effectively follow the learning design standard, leaders must look to integrate theory and research regarding adult learners. Perhaps Killion (2013b) summarized it best in stating, "The design of learning influences its outcomes, particularly when the design incorporates core elements of effective learning such as practice, feedback, and sustained support" (p. 12). No known study examines how four-day schools integrate theories, research, and models of human learning to achieve adult and student learning other than generic notations of professional development occurring on the off-day.

Content Standards. The Content Standards answer the "what" question of professional learning and consist of the Implementation and Outcomes Standards ("Standards for Professional Learning," 2011). The Content Standards address the knowledge and skills educators need to ensure student success and the school's ability to build a climate of support and fidelity in approaching new practice (Hall, 2015; Hirsh & Killion, 2007; Mosakowski, 2015).

Implementation. "Professional learning that increases educator effectiveness and results for all students applies research on change and sustains support for implementation of professional learning for long-term change ("Standards for Professional Learning," 2011, para. 1)."

Despite a growing understanding of the characteristics of effective professional learning, schools are still challenged with implementing and sustaining the change required (Martin & Kragler, 2009). Implementation is perhaps the most critical part of school change and improvement (Fullan, Hord, & Frank, 2015). In fact, Hall (2015)

emphasized the importance of implementation calling it the "fidelity to which professional learning results in the desired outcomes through the process of adult learning" (p. 38). However, professional learning and teacher practice in the classroom has long been disconnected, which has been referred to as the "black box" by Fullan (2008).

To open up the black box, leaders must set a clear and comprehensive vision with an understanding of appropriate strategies (Hall, 2015). For example, Robinson (2011) found a significant effect size (0.42) on student achievement when leaders were able to establish clear and connected goals and expectations. Some researchers believe educators may have enough goals, but fail to consider what is needed to create an environment of change (Fullan, 2008; Hall, 2015; Hirsh, 2012; Reeves, 2009). In fact, Hirsh (2012) stated that without considering the change process, "the best we can accomplish are powerful visions and plans that live in notebooks rather than transformation of practices for educators for all students" (para. 5). Moreover, failure to implement appropriate strategies speaks to the difficulty of the task and the lack of time teachers have to collaborate and wrestle with the daily realities involved (Elmore, 2002; Reeves, 2009).

The importance of creating a context conducive to change was highlighted when Hord and Roussin (2013) identified the six research-based strategies for implementation. In fact, according to Fullan et al. (2015), resistance to change is often why professional development falls flat. In particular, teachers are more receptive to change when presented with demonstrations and modeling of proposed changes (Mosakowski, 2015). Hattie's (2009) landmark meta-analysis that identified high impact teaching practices in an easy to compare way using effect sizes may be the best possible resource for

administrators. The clarity and credibility provided by Hattie may help aid teachers in taking risks and be more willing to change while likely having the most effect on student outcomes (Fullan, Hord, & Frank, 2015).

Robinson (2011) found when leaders were able to lead teacher learning, student achievement was impacted at an effect size of 0.84. Participating with teachers in the professional development process, along with providing opportunity for teacher-to-teacher collaboration, may be the keys to the environment needed for efficient implementation (Fullan et al., 2015). Sometimes, closing the implementation gap can be as simple as providing time and support. For instance, in a 2000 study Supovitz and Turner found science teachers were more likely to implement inquiry-based teaching practice and investigative classroom culture when they received an increased quantity of professional development. Supoviz and Turner (2000) also found that professional learning aimed at individual teacher's content area had a powerful impact on change in practice. Ultimately, moving from professional learning to implementation requires change. An environment conducive to change is collaborative in nature, grounded in research, and given plenty of support including time. The four-day school week could offer the benefit of large blocks of collaborative professional learning time by targeted utilization of the off-day, which could help schools support and sustain the change environment needed for effective implementation. However, no known studies have examined the four-day week and implementation of professional learning.

Outcomes. "Professional learning that increases educator effectiveness and results for all students aligns its outcomes with educator performance and student curriculum standards ("Standards for Professional Learning," 2011, para. 1)."

According to Desimone (2011), "Learning Forward's outcomes standard emphasizes that teacher learning should be focused on subject-matter content and how students learn that content, and consistent with the individual, school, and district factors that shape teachers' work lives" (p. 63). Desimone's (2011) assertion that content-based professional development is effective is built upon multiple works including that of Garet et al. (2001), which found content-based professional development improved teaching for both math and science teachers. Regarding the outcome standard, the consistency part of Desimone's claim is really the core issue. Although Killion (2012) uses the term *coherence*, the same idea is highlighted when stating, "when professional learning is disconnected from the goals of school systems, schools, and educators, it has little opportunity to improve results. Aligning the outcomes of professional learning with the outcomes expected for students and educators and weaving strong coherence into the system through this alignment means that efforts are all focused on the same end results – effective educators and successful students" (p. 23).

Coherence, or the alignment of professional learning outcomes with educator performance standards and student learning outcomes has been shown to be prominent among high quality professional learning programs (Blank, de las Alas, & Smith, 2007; Lindsey, Lindsey, Hord, & Frank, 2016). For example, Blank, de las Alas, and Smith (2005), funded by a grant from the Council of Chief State School Officers (CCSSO), studied 25 professional development initiatives across 14 states that were nominated for their innovation and quality. The vast majority of the programs were found to practice what is recognized by researchers as modern quality professional development practices, such as having a content focus, using active learning strategies, collective participation,

sufficient time allotted, and using evaluation of the programming. Additionally, Blank de las Alas, and Smith (2007) found in nearly all programs rated that there was a high level of coherence between the professional development program, alignment to "highly qualified" teachers under NCLB, alignment to state content standards, and local curriculum standards and materials. Such coherence has been found to create a supportive environment in improved teaching practices, school system change, and long-term sustainability of improvement (Grant, Peterson, & Shojgreen-Downer, 1996).

When professional development lacks coherence, teachers face the confusing circumstance of receiving mixed messages. To combat such confusion and help ensure coherence, leaders may implement professional learning communities (Hall, 2015). Furthermore, leaders working with professional learning communities may be the key to linking curriculum, standards, and professional learning opportunities through the process of backwards mapping (Davies, 2015; Lindsey et al., 2016). Despite Learning Forward's Professional Learning Standards being an interdependent cyclical system of improvement by nature, according to Lindsey et al. (2016), the Outcome Standard through backwards mapping can be used as the starting point. Lindsey et al. (2016) summarize saying "we begin with the end—which relies also on Resources, Leadership, and Learning Community to support Learning Designs and Implementation to realize the Outcome" (p. 48). No known study examines the alignment of outcomes with educator performance and student curriculum standards for four-day schools.

Summary

A few innovative, mostly rural school districts facing budget constraints have used a four-day school week as a cost saving measure dating back to the 1970s. Each

major economic downturn has brought expansion of the alternative schedule, including in Missouri during the recession of 2007. While battling issues, districts across the United States are also attempting to meet additional mandates from legislation. Beginning with No Child Left Behind (2002) and expanding under the Every Student Succeeds Act (2015), a greater emphasis has been placed on quality teacher professional development, which among other things is often more time intensive. Learning Forward, the nation's largest and most influential professional learning organization has played a key advocacy role in the legislative changes. Using the latest research on effective teacher professional development practices, Learning Forward has created the Standards for Professional Learning to guide school districts in providing teachers opportunities to develop their knowledge, skills, and practices to help students perform at higher levels.

Although much of the four-day school research is narrowly focused on budget savings or student achievement, some promising corollary benefits like the schedule's flexibility may aid districts in addressing goals beyond budgets to more essential issues like teacher professional learning. This study extended the research base of the four-day school week beyond budgets and student achievement to teacher professional learning in an effort to understand the schedule's broader impact and utility. Chapter Three describes the methods used in the study. Chapter Four presents the findings of the study. Chapter Five lists the implications of the study and makes recommendations for districts considering the schedule and future research.

CHAPTER THREE: METHODOLOGY

Introduction

The role of quality professional learning for teachers has become a top priority due to legislative changes including the Every Student Succeeds Act (ESSA). Research has shown a lack of dedicated time is among the issues that hinder effective professional learning. While the four-day school week is typically used to address budget issues for rural schools, the schedule's flexibility may be uniquely able to aid professional learning efforts. The purpose of this study was to determine the differences between professional learning practices in Missouri's four- and five-day schools. The researcher obtained permission (See Appendix A) from the professional learning association, Learning Forward, to collect survey data using their Standards Assessment Inventory (SAI) (See Appendix B). Eighteen Missouri four-day schools and twenty-one comparable five-day schools based on size, RPDC region, and free and reduced lunch population were included in the study.

Main Research Question

What differences are there in professional learning practices as defined by Learning Forward's Standards of Professional Learning for schools in Missouri that have students in attendance four days per week versus those who attend five days?

Subset Research Questions

1. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Learning Communities** Professional Learning Standard?

2. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Leadership** Professional Learning Standard?
3. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Resources** Professional Learning Standard?
4. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Data** Professional Learning Standard?
5. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Learning Designs** Professional Learning Standard?
6. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Implementation** Professional Learning Standard?
7. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Outcomes** Professional Learning Standard?

Hypotheses

1. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Learning Communities** Professional Learning Standard.

2. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Leadership** Professional Learning Standard.
3. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Resources** Professional Learning Standard.
4. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Data** Professional Learning Standard.
5. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Learning Designs** Professional Learning Standard.
6. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Implementation** Professional Learning Standard.
7. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Outcomes** Professional Learning Standard.

Participants

Twenty-five schools in Missouri were identified as four-day schools for the 2017-2018 school year from a report posted on the Missouri Department of Elementary and Secondary Education (DESE) website ("District and School Information," 2017). Seven schools beginning their first four-day year in 2017-2018 were excluded. The remaining

18 schools were included in the study and comprised of 14 pre-K or K through 12 and four pre-K or K through 8 schools. Twenty-one comparative five-day schools were identified that were within 200 students enrolled and within 20% identified free and reduced lunch. Special schools were excluded as possibilities for comparison (e.g. juvenile schools or gifted schools). Furthermore, comparative five-day schools were required to be located in the same RPDC geographic location as their four-day counterparts.

The individual participants in this study were public school teachers in the state of Missouri. Within the 18 four-day schools, approximately 869 teachers were invited and 93 actually participated for a participation rate of 10.7%. Within the 21 comparative five-day schools, approximately 1221 teachers were invited and 66 actually participated for a participation rate of 5.4%. Therefore, a total of 2090 Missouri teachers received the survey via forwarded email from their administrator with 159 participating for a total participation percentage of 7.6%. Of the approximately 2090 Missouri teachers that received the survey via forwarded email from their administrator, 415 viewed the email. Furthermore, 255 teachers started the survey, 96 teachers dropped out of the survey, which constitutes a completion percentage of 62.4%. All demographic information and survey responses were secured and password protected with Question Pro software. Question Pro software has built-in safeguards to ensure the study remained safe and confidential.

Ethical considerations were made to ensure there was no risk for participants including anonymity and confidentiality from whom research data were collected. An email was sent to all invited to participate explaining the purpose of the study, its

significance, and a commitment to share the results with participants. Also, both anonymity and confidentiality were addressed. Teachers received the initial invitation email and corresponding survey link from the contact administrator at each participating district. The contact administrator was instructed to forward the invitation to all full-time teachers at their district. All teacher responses remained anonymous and confidential throughout the entire process.

Research Setting

All participants in this study were from the state of Missouri. Demographic questions for individual participants included type of school in which they teach (e.g. four-day or five) and how many years they have taught. If the individual participant indicated they taught at a four-day school, an additional question regarding how the district used the off-day was included. All individual participant demographic questions were included to aid the researcher to further analyze the data.

Research Design

A quantitative research design was utilized for this study using both descriptive and inferential statistics. In accordance with the guidelines of Southwest Baptist University, a review was conducted by the Research Review Board to ensure participants were adequately protected. There was minimal to no risk to participants in this study. Information regarding the purpose of the study, voluntary participation, anonymity, and confidentiality was provided in the email invitation to participate (See Appendix C). An administrator at each district was contacted by the researcher to gain permission and serve as a distributor of the survey via email. Teachers were given the opportunity to accept or decline participation by clicking the embedded link in the email. Teachers were

not personally identified in the study. Furthermore, individual districts were not identified in this study. After receiving Research Review Board approval, data were collected. Within the 18 four-day schools, approximately 869 teachers were invited and 93 actually participated for a participation rate of 10.7%. Within the 21 comparative five-day schools, approximately 1221 teachers were invited and 66 actually participated for a participation rate of 5.4%. Therefore, a total of 2090 Missouri teachers received the survey via forwarded email from their administrator with 159 participating for a total participation percentage of 7.6%. Of the approximately 2090 Missouri teachers that received the survey via forwarded email from their administrator, 415 viewed the email. Furthermore, 255 teachers started the survey, 96 teachers dropped out of the survey, which constitutes a completion percentage of 62.4%.

The researcher chose to use Question Pro software to create the online surveys. The survey questions were taken from Learning Forward's 50 questions Likert type Standards Assessment Instrument (SAI) with slightly modified demographic questions (See Appendix B). Permission to use Learning Forward's SAI instrument was obtained before data collection (See Appendix A). The researcher initiated distribution of the survey on February 28, 2018, by contacting administrators and sending invitation emails. Two weeks later, the researcher contacted the administrators via email to request a reminder email be forwarded. Finally, one week later on March 15, 2018 the window for survey participation was closed after three weeks and no further responses were collected. The researcher used Question Pro to store data.

Sampling Selection

Of the 25 schools in Missouri using the four-day school week for the 2017-2018 school year, 18 schools were included that were comprised of 14 pre-K or K through 12th grade and 4 pre-K or K through 8th grade schools. The 7 schools excluded were all schools that were in their first year of the four-day schedule. Purposive sampling was used to find comparable five-day schools due to the very large population (Etikan, Musa, & Alkassim, 2016). Twenty-one five-days schools were identified for comparison by being within 200 students enrolled, within 20% free and reduced lunch population, and within the same RPDC region. One additional excluding factor were schools established to serve a special population (e.g. juvenile schools or gifted schools).

Instrumentation

Learning Forward, the nation's largest and most influential professional learning organization, created the Standards Assessment Inventory (SAI) survey instrument to measure teachers' perceptions to provide data on the quality of professional learning at the school level. The researcher obtained permission to use the SAI (See Appendix A) with only a few slight modifications to the demographic information to better fit the aim of this study. For example, it was necessary for participants to indicate whether they worked at a four- or five-day school for separation of the data associated with the independent variable. The demographic information served as the second and final part of the survey to encourage completion and help eliminate survey fatigue.

The first part of the survey consisted of the fifty SAI Likert items measuring how well the district adheres to Learning Forward's Standards for Professional Learning. This part was broken into seven sections, each containing seven to eight questions that

corresponded to the seven standards: (a) Learning Communities, (b) Leadership, (c) Resources, (d) Data, (e) Learning Design, (f) Implementation, and (g) Outcomes. The instrument used a five-point Likert scale with potential responses: (1) Never, (2) Seldom, (3) Sometimes, (4) Frequently, (5) Always, and (6) Don't Know.

The technical report prepared by AdvancED, aided by over 2,300 educators from 121 geographically diverse schools, provided strong support of the 7-factor model, construct validity, and reliability. Regarding reliability, the SAI exhibited a composite score of 0.99, well above the acceptable levels. Also, each subscale coefficient was greater than 0.90. Resources and Learning Designs scored 0.93, Learning Communities scored 0.97, Leadership scored 0.98, and all remaining subscales scored 0.99. Construct Validity was measured using a Comparative Fit Index (CFI). The CFI has an acceptable fit threshold of 0.95. All subscales met this threshold as did the one factor model (0.995). The CFI for the Leadership subscale was 0.998. Implementation and Outcomes scored 1.000. The remaining subscales scored 0.999 (Denmark & Weaver, 2012). Furthermore, the SAI has served as an instrument extensively in other studies.

Data Analysis

The data for this study were collected via an email version of Learning Forward's Standards Assessment Inventory (SAI) survey using Question Pro software and then transferred to Statistical Package for the Social Sciences (SPSS) for statistical analysis. Demographic data were analyzed to describe the characteristics of the participants in this study. Descriptive statistics were used to analyze all components of the survey. Each subsection of the SAI survey corresponded to one of the Standards for Professional Learning and also corresponded to one of the research questions for this study. Hence,

each subsection is a separate dependent variable. The independent variable in this study was the type of school (e.g. four-day or five-day). Further analysis included the inferential statistic independent sample two-tailed *t*-test adjusted for unequal sample sizes was conducted on each of the seven standard subsections as well as for each of the survey's individual items at the $p < 0.05$ level.

Summary

Chapter Three presented the details of this study's methodology. This included the research questions and hypotheses, participants, research design, instrumentation, and data analysis. In Chapter Four the researcher will present the findings of the study. Chapter Five will provide a summary, conclusions, and recommendations.

CHAPTER FOUR: DATA ANALYSIS

Introduction

Research has suggested quality professional learning for teachers plays a critical role in successful educational reform (Archibald et al., 2011; Darling-Hammond et al., 2009; Desimone, 2011). Learning Forward, the nation's leading professional learning organization, has successfully advocated for changes to the Every Student Succeeds Act (ESSA) to reflect the most up-to-date professional learning research ("ESSA and Professional Learning," 2017). Despite these changes, a lack of dedicated time is among the issues that continue to hinder effective professional learning and a frustration for teachers (Glynne, 2015; Mosakowski, 2015; Reeves, 2010). While the four-day school week is typically used to address budget issues for rural schools, the schedule's flexibility may be uniquely able to aid professional learning efforts. Currently, there is a lack of research on the four-day school week and its impact on professional learning. The purpose of this study was to determine the differences between professional learning practices in Missouri's four- and five-day schools. The researcher sought to identify the differences between four- and five-day schools' professional learning practices as identified by Learning Forward's Standards for Professional Learning.

In Chapter Three, the researcher detailed the methodology of the study including participants, the research setting, research design, sampling selection, instrumentation, and data analysis. The final survey results were uploaded into SPSS and Microsoft Excel software programs for analysis. Descriptive statistics were used to present the data in an easy to understand format. Inferential statistics were applied to infer what the data revealed about the given population. Data will be presented in this chapter to identify the

differences in four- and five-day school's professional learning practices. The following research questions were addressed:

Main Research Question

What differences are there in professional learning practices as defined by Learning Forward's Standards of Professional Learning for schools in Missouri that have students in attendance four days per week versus those who attend five days?

Subset Research Questions

1. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Learning Communities** Professional Learning Standard?
2. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Leadership** Professional Learning Standard?
3. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Resources** Professional Learning Standard?
4. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Data** Professional Learning Standard?
5. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Learning Designs** Professional Learning Standard?

6. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Implementation** Professional Learning Standard?
7. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Outcomes** Professional Learning Standard?

In an effort to answer the research questions, the following null hypotheses were investigated:

Hypotheses

1. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Learning Communities** Professional Learning Standard. The researcher did find a significant difference; therefore, the null hypothesis is rejected.
2. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Leadership** Professional Learning Standard. The researcher did find a significant difference; therefore, the null hypothesis is rejected.
3. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Resources** Professional Learning Standard. The researcher did not find a significant difference; therefore, the null hypothesis is accepted.
4. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Data**

Professional Learning Standard. The researcher did find a significant difference; therefore, the null hypothesis is rejected.

5. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Learning Designs** Professional Learning Standard. The researcher did not find a significant difference; therefore, the null hypothesis is accepted.
6. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Implementation** Professional Learning Standard. The researcher did not find a significant difference; therefore, the null hypothesis is accepted.
7. H_0: There is not a significant difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Outcomes** Professional Learning Standard. The researcher did not find a significant difference; therefore, the null hypothesis is accepted.

Summary of Methods

Missouri four-day schools included in the study have used a four-day calendar for a minimum of two years. Missouri five-day schools were selected utilizing purposive sampling. Inclusion in the sample required the school to have the following criteria: schools must have been comparable to one of the four-day schools with enrollments within 200 students and must have had a free and reduced lunch count that was within a similar 20% range. Comparative five-day schools also were required to meet the criteria of being within the same RPDC geographic region as their four-day counterparts. Special schools, like those for the gifted or juvenile schools, were excluded for comparison.

The researcher first contacted administrators to ask permission to survey their teachers. Upon permission, an email was sent to the administrator to be forwarded to teachers (See Appendix C). The email contained an introduction, instructions, confidentiality and consent information, and a link to the survey which was administered using Question Pro online survey utility. Sixteen of the 18 Missouri four-day schools that met the aforementioned criteria agreed to participate. Twenty-one of 24 comparative five-day schools contacted agreed to participate. Upon closing of the three-week survey window, all responses were downloaded to Microsoft Excel for analysis. Quantitative analysis was used investigate each of the subset research questions by conducting independent sample *t*-tests to determine the statistically significant differences between teachers' perception of Missouri's four- and five-day schools' professional learning practices. To address the main research question more comprehensively, an open-ended question posed only to the four-day teachers was coded for themes for positive traits of four-day schools' professional learning practices.

Participation and Completion

Administrators from Missouri four- and five-day schools that met the study criteria were contacted by phone for permission to include their teachers in the study. Upon permission, the contacted administrator was sent an email to be forwarded to all teachers that included an invitation to participate. Some administrators were unavailable or did not answer initially. Two subsequent attempts were made by phone on the following two business days. If the second attempt by phone was missed, an email was sent explaining the project and asking permission to send the survey invitation email for forwarding. If by the fourth business day contact was not made by phone or email, the

school was replaced in accordance with the criteria described. If the administrator declined participation, the school was replaced in accordance with the criteria described.

Data Presentation

There were approximately 869 teachers at the 16 participating Missouri four-day schools that received the survey via forwarded email from their administrator. Ninety-three teachers completed the survey for a participation percentage of 10.7%. There were approximately 1221 teachers at the 21 participating Missouri five-day schools that received the survey via forwarded email from their administrator. Sixty-six teachers completed the survey for a participation percentage of 5.4%. Therefore, a total of 2090 Missouri teachers received the survey via forwarded email from their administrator with 159 participating for a total participation percentage of 7.6%. Of the approximately 2090 Missouri teachers that received the survey via forwarded email from their administrator, 415 viewed the email. Furthermore, 255 teachers started the survey for a completion percentage of 62.4%.

The researcher was granted permission (See Appendix A) to use Learning Forward's Standards Assessment Inventory (SAI) survey instrument (See Appendix B), which was designed to measure teachers' perceptions to provide data on the quality of professional learning at the school level. Additionally, permission was granted to make modifications to the demographic questions to better reflect the purpose of this study. The part of the SAI survey instrument used consisted of 50 Likert items measuring how well the district adheres to Learning Forward's Standards for Professional Learning. This part was broken into seven sections, each containing seven to eight questions that corresponded to the seven standards: (a) Learning Communities, (b) Leadership, (c)

Resources, (d) Data, (e) Learning Design, (f) Implementation, and (g) Outcomes. The instrument used a five-point Likert scale with potential responses: (1) Never, (2) Seldom, (3) Sometimes, (4) Frequently, (5) Always, and (6) Don't Know.

Independent sample two-tailed *t*-tests adjusted for unequal sample sizes were used to determine if there was a significant difference between four- and five-day school teachers' perceptions of their school's professional learning practices on each of the seven standards as a whole and for each individual item at the statistical significance level of $p < 0.05$ per the typical education research standard (Pelham, 2013). Despite a lower than desired participation rate ($N = 159$), this study noted statistically significant differences between some of the four- and five-day schools professional learning practices. However, these results are limited in the ability to be generalized due to the smaller sample size.

Descriptive Statistics

Near the end of the survey, participants indicated whether they taught at a four-day or five-day school and their levels of teaching experience. The results are displayed in Table 1.

Table 1

Participants Level of Teaching Experience (*N* = 159)

Characteristic	*N*	%
Four-day teachers		
First year	7	4
2-7 years	25	16
8 or more years	61	38
Five-day teachers		
First year	3	2
2-7 years	16	10
8 or more years	47	30

The total number of participants was 159. Of those 159 participants, 93 were teachers at a Missouri four-day school. The four-day teachers included seven first-year teachers, 25 teachers with two to seven years experience, and 61 teachers with eight or more years of experience. The number of Missouri five-day school participants was 66 with three first-year teachers, 16 teachers with two to seven years experience, and 47 teacher with eight or more years experience.

Teachers at four-day schools were asked an additional question at the end of the survey to indicate the way their district used the off-day as it related to professional development. The participants were given three choices to choose from: (a) approximately one teacher workday/professional development day per month, (b) approximately every other off-day is used as a teacher workday/professional development day per month, or (c) nearly every student off-day is used as a teacher workday/professional development day. The results are presented in Table 2.

Table 2

Four-day School Professional Learning Related Usage of the Off-day (N = 93)

Characteristic	*N*	%
Approximately 1 teacher workday/professional development day per month	65	70
Approximately every other off-day is used as a teacher workday/professional development day per month	28	30
Nearly every student off-day is used as a teacher workday/professional development day	0	0

Seventy percent of the four-day teacher participants indicated their school spent approximately one of the available off-day as a teacher workday/professional development day per month. The remaining 30% indicated their school used approximately every other off-day as a teacher workday/professional development day per month. No four-day teachers reported their district used every student off-day as a teacher workday/professional development day.

Inferential Statistics

Independent sample two-tailed *t*-tests adjusted for unequal sample sizes were used as an inferential statistical method to infer what the data revealed about the given population. The *t*-tests were used to determine if there was a statistical difference between four- and five-day school teachers' perceptions of their district's implementation of the seven professional learning standards set forth by Learning Forward. In addition, each of the fifty items was analyzed for any significant differences. The next seven sections were organized directly by way of the research questions and the related *t*-tests designed to answer those questions.

Research Questions

RQ1: What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the Learning Communities Professional Learning Standard?

The first section of the survey contained seven Likert items and measured the teachers' perceptions of their district's implementation of the Learning Communities Professional Learning Standard. An independent sample two-tailed *t*-test adjusted for unequal sample sizes was conducted to determine if there was a significant difference at the $p < 0.05$ level. The results are below in Table 3.

Table 3

Independent Sample t-test of All Learning Communities Professional Learning Standard Items

	Four-day teachers		Five-day teachers		
	M	*SD*	*M*	*SD*	*p*
Learning Communities Professional Learning Standard	4.60	1.44	4.27	1.41	0.00*

* $p < 0.05$.

There was a significant difference in the scores of four- and five-day teachers' perceptions of their district's implementation of the Learning Communities Professional Learning Standard. Additionally, each individual item from the Learning Communities section was tested for significant difference using independent sample two-tailed *t*-tests adjusted for unequal sample sizes at the $p < 0.05$ level. Of the seven items, two came back significantly different as seen in Table 4.

Table 4

Independent Sample t-tests of the Learning Communities Section Individual Items

	Four-day teachers		Five-day teachers		
	M	*SD*	*M*	*SD*	*P*
Learning Communities Standard Item 4: In my school, some of the learning community members include non-staff members, such as students, parents, community members.	3.94	1.55	3.27	1.60	0.01*
Learning Communities Standard Item 6: In my school, learning community members demonstrate effective communication and relationship skills so that a high level of trust exists among the group.	4.68	1.24	4.27	1.30	0.05*

* $p < 0.05$.

Both items that were found to have a significant difference by the researcher were scored higher by four-day teachers. While the other five items did not show a significant difference, they were all rated higher by four-day teachers. These results noted that four-day teachers were more likely to include non-staff members, such as students, parents, and community members in their learning communities. Additionally, the data noted that four-day school teachers indicated effective communication was demonstrated and there was a high level of trust within the learning community.

RQ2: What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the Leadership Professional Learning Standard?

The next section of the survey contained seven Likert items and measured the teachers' perceptions of their district's implementation of the Leadership Professional Learning Standard. An independent sample two-tailed *t*-test adjusted for unequal sample

sizes was conducted to determine if there was a significant difference at the $p < 0.05$ level. The results are below in Table 5.

Table 5

Independent Sample t-test of All Leadership Professional Learning Standard Items

	Four-day teachers		Five-day teachers		
	M	*SD*	*M*	*SD*	*p*
Leadership Professional Learning Standard	5.10	0.99	4.89	1.07	0.00*

* $p < 0.05$.

There was a significant difference in the scores of four- and five-day teachers' perceptions of their district's implementation of the Leadership Professional Learning Standard. Additionally, each individual item from the Leadership section was tested for significant difference using independent sample two-tailed *t*-tests adjusted for unequal sample sizes at the $p < 0.05$ level. Of the seven items, one came back significantly different as seen in Table 6.

Table 6

Independent Sample t-tests of the Leadership Section Individual Items

	Four-day teachers		Five-day teachers		
	M	*SD*	*M*	*SD*	*p*
Leadership Standard Item 3: My school's leaders advocate for resources to fully support professional learning.	5.20	0.89	4.82	1.21	0.03*

* $p < 0.05$.

The item found to have a significant difference by the researcher was scored higher by four-day teachers. The result noted that according to their teachers, four-day school

leaders were more likely to advocate for resources to fully support professional learning. While the other six items did not show a significant difference, they were all rated higher by four-day teachers.

RQ3: What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the Resources Professional Learning Standard?

The third section of the survey contained seven Likert items and measured the teachers' perceptions of their district's implementation of the Resources Professional Learning Standard. An independent sample two-tailed *t*-test adjusted for unequal sample sizes was conducted to determine if there was a significant difference at the $p < 0.05$ level. No significant difference was found in the scores of four-day teachers' perceptions of their district's implementation of the Resources Professional Learning Standard ($M = 4.62$, $SD = 1.33$) and five-day teachers' perceptions of their district's implementation of the Resources Professional Learning Standard ($M = 4.52$, $SD = 1.22$) as indicated by the *p*-value being > 0.05. In addition, each individual item from the Resources section was tested for significant difference using independent sample two-tailed *t*-tests adjusted for unequal sample sizes at the $p < 0.05$ level. While no items were found to have a significant difference, items 1, 2, 3, and 7 were rated higher by four-day teachers.

RQ4: What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the Data Professional Learning Standard?

The fourth section of the survey contained eight Likert items and measured the teachers' perceptions of their district's implementation of the Data Professional Learning

Standard. An independent sample two-tailed *t*-test adjusted for unequal sample sizes was conducted to determine if there was a significant difference at the $p < 0.05$ level. The results are below in Table 7.

Table 7

Independent Sample t-test
of All Data Professional Learning Standards Items

	Four-day teachers		Five-day teachers		
	M	*SD*	*M*	*SD*	*p*
Data Professional Learning Standard	4.36	1.50	4.06	1.44	0.00*

* $p < 0.05$

There was a significant difference in the scores of four- and five-day teachers' perceptions of their district's implementation of the Data Learning Standard. Additionally, each individual item from the Data section was tested for significant difference using independent sample two-tailed *t*-tests adjusted for unequal sample sizes at the $p < 0.05$ level. Of the eight items, one came back significantly different as seen in Table 8.

Table 8

Independent Sample t-tests of the Data Section Individual Items

	Four-day teachers		Five-day teachers		
	M	*SD*	*M*	*SD*	*p*
Data Standard Item 2: In my school, teachers have an opportunity to evaluate each professional learning experience to determine its value and impact on student learning.	4.46	1.42	4.00	1.39	0.04*

* $p < 0.05$.

The item found to have a significant difference by the researcher was scored higher by four-day teachers at $p < 0.04$. The result indicated teachers in a four-day school have more of an opportunity to evaluate each professional learning experience to determine its value and impact on student learning. While the other seven items did not show a significant difference, they were all rated higher by four-day teachers.

RQ5: What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the Learning Designs Professional Learning Standard?

The fifth section of the survey contained seven Likert items and measured the teachers' perceptions of their district's implementation of the Learning Designs Professional Learning Standard. An independent sample two-tailed *t*-test adjusted for unequal sample sizes was conducted to determine if there was a significant difference at the $p < 0.05$ level. No significant difference was found in the scores of four-day teachers' perceptions of their district's implementation of the Learning Designs Professional Learning Standard ($M = 4.41$, $SD = 1.34$) and five-day teachers' perceptions of their district's implementation of the Learning Design Professional Learning Standard ($M = 4.39$, $SD = 1.30$) as indicated by the *p*-value being > 0.05. Additionally, each individual item from the Learning Designs section was tested for significant difference using independent sample two-tailed *t*-tests adjusted for unequal sample sizes at the $p < 0.05$ level. Despite the standard as a whole not revealing a significant difference between four-day and five-day teachers, one of seven individual items did show a significant difference as seen in Table 9.

Table 9

Individual Survey Items with Significant Differences as Found by Independent Sample t-tests

	Four-day teachers		Five-day teachers		
	M	*SD*	*M*	*SD*	*p*
Learning Designs Standard Item 6: In my school, teachers have opportunities to observe each other as one type of job-embedded professional learning.	4.42	1.34	3.89	1.46	0.02*

* $p < 0.05$.

The item found to have a significant difference by the researcher was scored higher by four-day teachers at $p < 0.02$. The result indicated that teachers in four-day schools have more opportunities to observe each other a type of job-embedded professional learning. While the other six items did not show a significant difference, items 1, 4, and 7 were rated higher by four-day teachers.

RQ6: What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the Implementation Professional Learning Standard?

The sixth section of the survey contained seven Likert items and measured the teachers' perceptions of their district's implementation of the Implementation Professional Learning Standard. An independent sample two-tailed *t*-test adjusted for unequal sample sizes was conducted to determine if there was a significant difference at the $p < 0.05$ level. No significant difference was found in the scores of four-day teachers' perceptions of their district's implementation of the Implementation Professional Learning Standard ($M = 4.67$, $SD = 1.42$) and five-day teachers' perceptions of their

district's implementation of the Implementation Professional Learning Standard (M = 4.55, SD = 1.37) as indicated by the p-value being > 0.05. In addition, each individual item from the Implementation section was tested for significant difference using independent sample two-tailed t-tests adjusted for unequal sample sizes at the $p < 0.05$ level. While no items were found to have a significant difference, items 1, 2, 3, 5, and 7 were rated higher by four-day teachers.

RQ7: What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the Outcomes Professional Learning Standard?

The last section of the survey contained seven Likert items and measured the teachers' perceptions of their district's implementation of the Outcomes Professional Learning Standard. An independent sample two-tailed t-test adjusted for unequal sample sizes was conducted to determine if there was a significant difference at the $p < 0.05$ level. No significant difference was found in the scores of four-day teachers' perceptions of their district's implementation of the Outcomes Professional Learning Standard (M = 4.75, SD = 1.25) and five-day teachers' perceptions of their district's implementation of the Outcomes Professional Learning Standard (M = 4.63, SD = 1.18) as indicated by the p-value being > 0.05. In addition, each individual item from the Outcomes section was tested for significant difference using independent sample two-tailed t-tests adjusted for unequal sample sizes at the $p < 0.05$ level. While no items were found to have a significant difference, all items except item 2 were rated higher by four-day teachers.

Open-ended Question Analysis

For the four-day school participants, the survey concluded with a question asking the teachers to identify the best aspect of their school's professional development program. This qualitative data were organized and analyzed using the Bogdan and Biklen Constant Comparative Analysis (Bogdan & Biklen, 2007) by color coding the responses for recurring themes and patterns. The results are displayed in Table 10.

Table 10

Best Aspects of Four-Day Schools' Professional Development Program (*N* = 66)

Coded Themes	Number of Responses Mentioned	% of Responses
Time – ongoing, more effective/efficient, more flexible, better structure. Allows for processing, planning, and applying	23	34.8
Collaborative – opportunity to plan, communicate, and share data together	16	24.2
Student achievement and success is a priority in the planning and delivery of professional development	13	19.7
Professional development is aligned, driven by data, driven by evaluation	10	15.2
Professional development options are differentiated	9	13.6
Administration listens, participates, provides leadership and support including needed resources	9	13.6
Teacher input considered when professional development is planned	8	12.1
Negative response – Professional development is sit and get and not applicable to me	3	4.5

Common themes that appeared when analyzing the four-day school participants' responses about their current professional development program included: increased and better use of time, opportunities for collaboration, focus on student achievement and success, use of data and evaluation to drive focus of professional development,

differentiation in professional development, support from administration, and opportunity for teacher input on professional development offerings. Professional development provided in a "sit and get" format lacking application for each teacher was the only negative theme that emerged. Increased time with a structure that allowed for processing, planning, and applying skills was the most dominant theme followed by collaboration allowing teachers more opportunities to plan, communicate, and share data.

Overall Results

This study included 93 four-day school teacher participants and 66 five-day school teacher participants in an effort to determine significant differences in professional learning practices of four- and five-day schools. Although the response rate is lower than desired, this study noted statistically significant differences among teachers working in four-day school settings as compared to those working in five-day school settings in three of the seven standards assessed on the Learning Forward Professional Learning Standard Assessment Inventory (SAI). The three significant Professional Learning Standards included: (a) Learning Communities, (b) Leadership, and (c) Data. The results of individual survey items indicated four-day schools perceived their learning communities as effective at communication, building teacher peer relationships, and demonstrating high levels of trust. These findings were supported by the open-ended responses, which noted increased collaboration was a prevalent theme and that teachers in four-day schools indicated they had opportunities to plan, communicate, and share data together. Also, four-day school teachers noted their learning communities were significantly more likely to include non-staff members such as parents or students.

Four-day teachers reported their leaders are significantly more likely to support their professional development needs by advocating for resources to fully support professional learning. This finding is corroborated by multiple open-ended responses that indicated leaders use teacher input to marshal various professional development resources. Furthermore, four-day teachers indicated they are significantly more likely to be given the opportunity to evaluate their professional learning program and its value and impact on student learning. Although the Learning Design Standard as a whole did not show a significant difference, one item led to the finding that four-day teachers are significantly more likely to have opportunities to observe each other as one type of job-embedded professional learning.

In other open-ended responses, teachers seem to suggest that increased flexibility of professional learning time in a four-day schedule allowed for better professional development alignment with their needs and an increased focus on student learning. Overall, results from the survey standard sections, individual items, and open-ended responses seem to suggest the four-day schedule allows for some improved professional learning practices with no significant findings in favor of the traditional schedule.

Summary

This chapter provided the findings of the study. The survey results of the 159 participants were analyzed descriptively and inferentially. First, descriptive statistics were reported to give the make-up of four-day and five-day participants, their level of teaching experience, and four-day schools' usage of the off-day. The participants included 93 Missouri four-day school teachers and 66 Missouri five-day teachers. Next, inferential statistics consisting of independent sample two-tailed *t*-tests adjusted for

unequal sample sizes were used to determine statistical significance between four- and five-day teachers' perceptions of their district's implementation of the seven professional learning standards set forth by Learning Forward as well as each individual item. A significant difference was found for three of the seven standards. Therefore, three of the seven null hypotheses were rejected including research questions one, two, and four. Last, an open ended question posed to four-day school participants was analyzed using Bogdan and Biklen's Constant Comparative Analysis to identify positive traits of four-day schools' professional development programs. The most dominant theme included increased time, the structure of which allowed for processing, planning, and applying new skills. Also, opportunity to collaborate was a persistent theme. Chapter Five will provide a summary and conclusions of the research study. In addition, recommendations for policy, practice, and future research will be presented.

CHAPTER FIVE:

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Introduction

Due to the critical role professional learning plays in successful educational reform, Learning Forward has successfully advocated for changes to legislation reflect the most up-to-date professional learning research (Archibald et al., 2011; Darling-Hammond et al., 2009; Desimone, 2011; "ESSA and Professional Learning," 2017). Notwithstanding, a lack of time for professional learning is a source of frustration for teachers and one of the greatest obstacles to school district professional development success (Glynne, 2015; Mosakowski, 2015; Reeves, 2010). Recently in Missouri, schools have begun to implement the four-day schedule in an attempt to address budgetary issues. However, the schedule's flexibility may have additional benefits including a positive impact on professional learning. Currently, there is very little research on the four-day school week and its impact on professional learning practices. The purpose of this study was to determine the differences between four- and five-day schools professional learning practices as identified by Learning Forward's Standards for Professional Learning. To do so, the following research questions were addressed:

Main Research Question

What differences are there in professional learning practices as defined by Learning Forward's Standards of Professional Learning for schools in Missouri that have students in attendance four days per week versus those who attend five days?

Subset Research Questions

1. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Learning Communities** Professional Learning Standard?
2. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Leadership** Professional Learning Standard?
3. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Resources** Professional Learning Standard?
4. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Data** Professional Learning Standard?
5. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Learning Designs** Professional Learning Standard?
6. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Implementation** Professional Learning Standard?
7. What is the difference in the perception of teachers in four- and five-day schools regarding their district's implementation of the **Outcomes** Professional Learning Standard?

Conclusions based on the findings discussed in Chapter Four were provided along with professional implications for practice. Then, recommendations for future research were suggested in an effort to expand the body of education literature related to the four-day school week and professional learning. Chapter Five will conclude with a summary.

Conclusions

Interest and usage of the four-day school week has grown mainly as a cost-saving measure for rural schools. While some research has suggested there may be other benefits to the four-day schedule, very little research exists on professional learning in four-day schools. Recently, policymakers have shifted education reform legislation to include stipulations on professional learning practices. An added benefit for schools considering the four-day schedule may be its impact on professional learning. Despite a lower than desired participation rate below 30% ($N = 159$), this study noted statistically significant differences between some of the four- and five-day schools' professional learning practices. While the ability to generalize the results is somewhat limited, the findings still provide important insights into possible professional learning opportunities in four-day schools. These findings have been synthesized into the following five conclusions:

1. The four-day schedule can help create an effective structure for professional learning communities and can possibly aid in fostering a continuous cycle of instructional improvement. Four-day teachers indicated there is a high level of communication and trust among their professional learning communities. In open-ended responses, some of the four-day teachers directly linked the amount and arrangement of collaborative time provided by the off-day as a reason for the

increased communication. According to Talbert (2010) and Lieberman and Miller (2011, 2014), these are among the essential practices for successful learning communities. Furthermore, four-day teachers reported the off-day provides them enough time in their learning communities to effectively use data and evaluation as a way to determine and align student and educator learning needs. Learning Forward (2011) has identified these as important traits of learning communities that enable schools to effectively implement the process of referred to as "cycle of continuous improvement."

2. The larger blocks of professional development time available in four-day schools were perceived by teachers in those districts as key resources for promoting professional learning. Researchers have identified time as one of the most important factors in ensuring learning communities are authentic (Grossman et al., 2001; Lieberman & Miller, 2014). Lieberman and Miller (2014) noted the daily challenges of teaching as well as attending additional meetings can be overwhelming. Schools often struggle to find common meeting times and are forced to use methods like "early-outs," "late-starts," or half-days, which can be inconvenient and counterproductive to student learning. In open-ended responses, the most dominant theme that appeared from four-day teachers responses was the impact of time provided by the off-day on their professional development. One response reported specifically how much easier the usage of the off-day is for professional development for teachers and parents as opposed to shortened or altered traditional schedules. The participant went on to note the entire day set aside for professional development enabled a completely focused agenda, free

from distractions, which not only makes it more effective and efficient, but also allows for reflection and evaluation of the professional development each time. Another participant stated if their district ever reverted back to a traditional schedule, they would advocate for full-day professional development days due to its increased effectiveness as opposed to "early-outs" or "late-starts."

3. The study findings indicated a four-day schedule possibly enables professional development programs to positively impact student learning. Teacher responses in four-day schools indicated high levels of collaboration and communication, two indicators identified in the literature review that may have a positive effect on student achievement (Bolam et al., 2005; McLaughlin & Talbert, 2006). According to McLaughlin and Talbert (2006) this impact is even greater when collaboration is centered on student learning, which is often the case in four-day schools as indicated by 20% of teacher open-ended responses. Additionally, this study found four-day teachers are significantly more likely to evaluate their professional learning experiences on the basis of their value and impact on student learning.
4. The findings in this study seem to suggest the four-day school week enables leaders to more effectively create support systems for professional learning, particularly by advocating for resources in response to input received from teachers. A dominant theme from open-ended responses indicated four-day school leaders are using the off-day as an opportunity to retrieve teacher input to align district goals, teacher needs, and student learning, which affirms the findings of many researchers (Blasé & Blasé, 1999; Busick, 1994; Hunt, 2005;

Mosakowski, 2015; Odden et al., 2002). When discussing essential leadership practices, Elmore (2000) defined relying on teacher input as distributed leadership. One four-day teacher's response directly credited this idea as the best trait of their professional development explaining their administrators have created leadership teams of teachers at each level to help evaluate and decide on the professional development needs for their building.

5. Teachers in four-day schools are significantly more likely to participate in the job-embedded practice of peer observation as a type of professional learning. Studies have shown job-embedded professional learning experiences can be powerful leverage on student learning (Croft et al., 2010). On the surface, the utility of the off-day provided by the four-day school week doesn't seem to be connected with during-the-week, authentic, job-embedded professional learning experiences. However, some researchers have suggested job-embedded practices are more common when effective collaborative learning teams are present (Croft et al., 2010; Hawley & Valli, 1999; Saunders et al., 2009). Both quantitative findings and open-ended responses associated with this study strongly suggest four-day schools' learning communities are highly collaborative. In addition, some open-ended responses seem to indicate the time available on the off-day for teachers to complete other essential tasks like planning enable them to use their prep time through the week in more creative ways, which may include peer evaluations.

Professional Implications

Conclusions from this study provided implications for future leadership practice related to professional learning as it is implemented in four-day schools. A total of five professional implications were recognized and noted below:

1. The first professional implication noted from the findings of the study indicated the potential of the four-day schedule as a means for implementing an effective continuous cycle of improvement as an ongoing professional learning strategy. Four-day school leaders could look to focus some of the off-day professional development time on the process/cycle of using data to align student and teacher learning needs with district goals. Also, leaders may find it useful to review Learning Forward's steps for a continuous cycle of improvement. Learning Forward (2011) identified seven steps which include: (a) use data to determine student and educator learning needs, (b) identify student and aligned educator learning goals, (c) develop educators' knowledge and skills, (d) select and implement new practices, (e) use new strategies with local support, (f) monitor and redefine implementation, and (g) evaluate results.
2. Another implication for professional practice included administrators' considering the usage of larger blocks of professional development time for a more effective professional development program. Common current practice for creating professional development and collaboration time often included "early-outs" or "late-starts." This study affirms previous research suggesting these approaches to release time for teacher planning are less effective than creating larger blocks of time for teachers to have in-depth conversations and planning sessions (Darling-

Hammond et al., 2009; Grossman et al., 2001; Lieberman & Miller, 2014). Building on the previous implication, the larger blocks of time associated with the four-day schedule may allow schools to better utilize the continuous cycle of improvement described by Learning Forward.

3. To ensure a high level of impact on student learning, school administrators in four-day school settings have an increased opportunity to foster high levels of communication and collaboration among the teachers, staff, students, and parents in their learning communities (Bolam et al., 2005; McLaughlin & Talbert, 2006) with an intentional focus on student learning (McLaughlin & Talbert, 2006). School leaders should also strongly consider asking stakeholders to continually evaluate their professional learning experiences as a method to measure off-day professional development opportunities and to intentionally determine the impact this professional learning is having on student learning.
4. School leaders in four-day schools should consider using off-day time as a means for collecting teacher input and including these professionals in making decisions related to district goals, teacher needs, and student learning (Blasé & Blasé, 1999; Busick, 1994; Hunt, 2005; Mosakowski, 2015; Odden et al., 2002). Previous research noted that teachers have more support for district and building initiatives when they are empowered and included in decision-making processes (Elmore, 2000; Kotter, 2012). Teachers could be grouped into teams at various building levels or by subject as a form of distributed leadership to effectively collaborate with the purpose of aligning curriculum, analyzing data to determine the learning needs of students, and then identifying the appropriate instruction for individual

groups of children (Bolam et al., 2005; Darling-Hammond et al., 2009; Elmore, 2000; Lieberman & Miller, 2011, 2014).

5. Teachers in four-day schools potentially have the advantage of more job-embedded professional development as a powerful leverage on student learning by using the off-day to free-up prep time through the week to be used for other research-based professional learning opportunities like peer observation. Peer observation has been noted as a tool in which teachers can provide support for each other to improve instructional practice (Croft et al., 2010, Darling-Hammond et al., 2009). The off-day could also be used as an opportunity for teachers to review a lesson with peers that had been taped from a previous week. School leaders might consider a four-day school week schedule as a possibility for creating more options for these types of collaborative supports.

Recommendations for Future Research

Very little previous research exists on four-day schools and professional learning. Findings in this study regarding the professional learning practices of four-day schools have brought to light questions that permit further research. The following recommendations will extend this study and add to the body of four-day school research.

1. Since there is a small number of Missouri four-day schools and the number of participants overall was small, it is recommended that this study be replicated to include a larger sample size of participants. Due to the limited number of Missouri four-day schools similar research should be conducted which expands the population to four-day schools in multiple states.

2. The researcher recommends replicating the study while including a demographic component that breaks down how long the participants' school has participated in the four-day scheduling. In Missouri only recently have schools begun using the schedule, and some professional development practices, like learning communities, typically improve the longer they are implemented. Expanding the study to include the state of Colorado may be particularly helpful as that state has the longest and broadest usage of the schedule.
3. Future study of learning designs used by four-day schools should be explored due to the four-day schedule's larger blocks of professional development. Specific usage of the off-day related to professional development design is largely unexamined in existing literature. Expanding the research base in this way may help four-day leaders plan more effective professional learning with adult learners in mind. Furthermore, if the off-day does allow for more effective learning designs, traditional five-day schools may consider finding larger blocks of time for their professional development.

Summary

Recent changes to education reform legislation have recognized the importance of professional development and placed a focus on its quality through additional mandates. Many of the needed practices for quality professional learning demand a concentration of resources including time and money. Due to budget shortfalls, some rural districts have implemented a four-day school week to make ends meet. Due to the unique time structure associated with the four-day schedule, the four-day school week may be uniquely able to aid in quality professional learning efforts. However, very little research

exists on four-day professional learning practices. The primary research question addressed differences in professional learning practices as defined by Learning Forward's Standards for Professional Learning. In order to answer the primary research question, a subset of research questions examined each of the practices associated with the seven standards. A review of literature regarding the history of the four-day school week, associated advantages and challenges, professional development research, and Learning Forward's Standards for Professional Learning, served as the theoretical framework.

Budget challenges coupled with legislation mandates regarding professional learning quality remain as issues schools must face. Previous research has shown the four-day school week may help districts address the former. Before this study, very little research existed regarding the four-day school week and professional learning practices. The key insight of this study was the four-day school week may help schools improve some of their professional learning practices, largely due to the unique arrangement of professional development time on the off-day.

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Appendix A

Permission To Use Survey

September 2, 2016

Michael Lewis
11606 Highway 32
Lebanon, MO 65536

Dear Michael,

Learning Forward grants you permission to use the Standards Assessment Inventory (SAI) in your doctoral research at Southwest Baptist University as an instrument to compare the professional learning practices of four- and five-day schools in Missouri.

Please ensure that this credit line appears in your work in reference to the SAI:

"Used with permission of Learning Forward, www.learningforward.org. All rights reserved."

Good luck with your research.

Sincerely,

Tom Manning
Associate Director of Consulting and Networks, Learning Forward
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Dallas, Texas 75252
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tom.manning@learningforward.org

Appendix B

Standards Assessment Inventory (SAI)

SURVEY ITEMS

All items in the SAI use the following Likert scale items as responses:

- Don't know
- Never
- Seldom
- Sometimes
- Frequently
- Always

	Learning Communities
1	My school system has policies and procedures that support the vision for learning communities in schools.
2	Learning communities in my school meet several times per week to collaborate on how to improve student learning.
3	Learning community members in my school believe the responsibility to improve student learning is shared by all stakeholders, such as all staff members, district personnel, families, and community members.
4	In my school, some of the learning community members include non-staff members, such as students, parents, community members.
5	My school's learning communities are structured for teachers to engage in the continuous improvement cycle (i.e., data analysis, planning, implementation, reflection, and evaluation).
6	In my school, learning community members demonstrate effective communication and relationship skills so that a high level of trust exists among the group.
7	All members of the learning communities in my school hold each other accountable to achieve the school's goals.

	Leadership
8	My school's leaders provide teachers with equitable resources to support our individual and collaborative goals for professional learning.
9	My school's leaders are active participants with other staff members in the school's professional learning.
10	My school's leaders advocate for resources to fully support professional learning.
11	My school's leaders regard professional learning as a top priority for all staff.

12	My school's leaders cultivate a positive culture that embraces characteristics such as, collaboration, high expectations, respect, trust, and constructive feedback.
13	My school's leaders speak about the important relationship between improved student achievement and professional learning.
14	My school's leaders consider all staff members capable of being professional learning leaders.

	Resources
15	Practicing and applying new skills with students in my classroom are regarded as important learning experiences in my school.
16	Teachers in my school are involved with monitoring the effectiveness of the professional learning resources.
17	Professional learning expenses, such as registration and consultant fees, staff, and materials, are openly discussed in my school.
18	In my school, time is available for teachers during the school day for professional learning.
19	Teachers in my school are involved with the decision-making about how professional learning resources are allocated.
20	Professional learning is available to me at various times, such as job embedded experiences, before or after-school hours, and summer experiences.
21	Teachers in my school have access to various technology resources for professional learning.

	Data
22	Some professional learning programs in my school, such as mentoring or coaching, are continuously evaluated to ensure quality results.
23	In my school, teachers have an opportunity to evaluate each professional learning experience to determine its value and impact on student learning.
24	In my school, various data such as teacher performance data, individual professional learning goals, and teacher perception data, are used to plan professional learning.
25	My school uses a variety of student achievement data to plan professional learning that focuses on school improvement.
26	In my school, teachers use what is learned from professional learning to adjust and inform teaching practices.
27	My school uses a variety of data to monitor the effectiveness of professional learning.
28	A variety of data are used to assess the effectiveness of my school's professional learning.
29	In my school, how to assess the effectiveness of the professional learning experience is determined before the professional learning plan is implemented.

	Learning Designs
30	In my school, teachers' backgrounds, experience levels, and learning needs are considered when professional learning is planned and designed.
31	The use of technology is evident in my school's professional learning.
32	Teachers in my school are responsible for selecting professional learning to enhance skills that improve student learning.

33	Professional learning in my school includes various forms of support to apply new practices.
34	In my school, participation in online professional learning opportunities is considered as a way to connect with colleagues, and to learn from experts in education.
35	In my school, teachers have opportunities to observe each other as one type of job-embedded professional learning.
36	Teachers' input is taken into consideration when planning school-wide professional learning.

	Implementation
37	A primary goal for professional learning in my school is to enhance teaching practices to improve student performance.
38	Teachers in my school receive on-going support in various ways to improve teaching.
39	My school has a consistent professional learning plan in place for three to five years.
40	My school's professional learning plan is aligned to school goals.
41	In my school, teachers individually reflect about teaching practices and strategies.
42	Professional learning experiences planned at my school are based on research about effective school change.
43	In my school, teachers give frequent feedback to colleagues to refine the implementation of instructional strategies.

	Outcomes
44	Professional learning at my school focuses on the curriculum and how students learn.
45	Professional learning in my school contributes to increased student achievement.
46	Professional learning experiences in my school connect with teacher performance standards (e.g., teacher preparation standards, licensing standards, etc.).
47	All professional staff members in my school are held to high standards to increase student learning.
48	In my school, professional learning supports teachers to develop new learning and then to expand and deepen that learning over time.
49	Student learning outcomes are used to determine my school's professional learning plan.
50	My professional learning this school year is connected to previous professional learning.

* Almost done!

How many years have you taught school?

- O This is my first year
- O 2-7 years
- O 8 or more years

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* **Do you teach at a school that is considered a four-day or five-day per week school?**

- O four-day school
- O five-day school

Which statement most closely represents the way your four-day district uses the traditional fifth-day (off-day)?

- O Approximately 1 teacher workday/professional development day per month
- O Approximately every other off-day is used as a teacher workday/professional development day per month
- O Nearly every student off-day is used as a teacher workday/professional development day

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(Last Question!) What do you think is the best aspect of your school's professional development program?

Appendix C

Email Invitation to Participate with Informed Consent

Dear Colleagues,

My name is Michael Lewis and I am a doctoral candidate at Southwest Baptist University. I am conducting research comparing the professional learning practices of four-day schools in Missouri with five-day schools. In this study, I am surveying teachers. As a teacher myself, I understand how busy you are! Please know the mostly **Multiple Choice/Likert Survey** should take **about 10 minutes** of your time and your participation will be greatly appreciated!

The survey is completely anonymous and voluntary. Your privacy is very important. You may choose to withdraw from the study at any time and there is no penalty should you choose to do so. **Your completion of the survey will indicate your consent to participate and permission to use the information you have provided in the study**. Please click the link below to participate:

https://professionallearningmo.questionpro.com

This project has been reviewed and approved by the Research Review Board of Southwest Baptist University. The committee believes that the research procedures adequately safeguard participant's privacy, welfare, civil liberties, and rights.

For questions about your participation or to receive a copy of the results of the study, please contact me at michaelericlewis14@gmail.com.

Thank you for your consideration and time.

Michael Lewis