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Melissa (Mitz) Dawn Stephens

*University of the Cumberlands*, mitzi.stephens@mccreary.kyschools.us

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**The Effects of Poverty on the Reading Achievement and Vocabulary Development  
of Students in Economically Disadvantaged Elementary Schools**

Melissa (Mitzi) D. Stephens

Submitted to the Faculty of the Graduate School

in Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy Leadership


University of the Cumberland

July 2022

### Approval for Recommendation

This dissertation is approved for recommendation to the faculty and administration of the University of the Cumberlands.

Dissertation Chair:

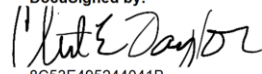
DocuSigned by:  
  
81EF591D184342F...

Dr. Jacob Bryant

Dissertation Evaluators:

DocuSigned by:  
*Jason Creekmore*  
978B766F9E2943A...

Dr. Jason Creekmore

DocuSigned by:  
  
8C53E495244041B...

Dr. Clint Taylor

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### **Abstract**

This study focuses on the impact of poverty on student achievement in reading and the vocabulary development of students in rural elementary schools. It provides research through the literature review on the impact administrator and teacher leadership has on poverty as it relates to student achievement. The United Nations Development Programme (2020), reported that people are multi-dimensionally poor, experiencing deprivation in health, education, and living standards. The only way to combat poverty is through education (World Vision, 2021). Because of the challenges poverty induces in today's educational system, there is a greater demand for higher standards and a more diverse educational system. Therefore, educators must exhibit transformational leadership skills and pedagogical knowledge to help students become successful (Pushpandam & Mammen, 2020). This study connects to leadership by exploring the way quality leadership is particularly important for both principals and teachers in schools serving students living in poverty. For this quantitative study, the population group consisted of elementary students in the third, fourth, and fifth grades within a specific geographic region in Southeastern Kentucky. Stratification of the initial population was conducted to determine which schools have a high poverty rate based on the percentage of students receiving free or reduced lunch based on Kentucky Department of Education and USDA (2021) guidelines. Archival K-Prep and MAP data were used as comparison points between poverty and non-poverty students. By understanding the correlation between poverty and student achievement educators, as transformational leaders, can implement instructional strategies and instructional programs that enhance student achievement.

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## **Chapter One**

### **Introduction**

#### **Overview**

Poverty is one of the most insidious antagonists of the United States because it strikes at the heart of our country: the American family. Census Bureau data (2020) showed that more than 37 million Americans lived at or below the federal poverty line, which accounts for 11.4% of the population, an entire percentage point higher than it was in 2019 (Pascale, 2021). However, the federal poverty line, as a tool of measurement, does not adequately depict the story of poverty in the U.S (Pascale, 2021). Pascale further noted “that half of U.S. families struggle to make ends meet. They are part of what is known as the "uncounted majority," people who have trouble paying essential bills even though their incomes are not low enough to meet the official federal poverty threshold, which is currently \$26,200 for a family of four or \$12,760 for an individual” (Pascale, 2021, para. 1). Many children in the United States are from socio-economically disadvantaged families (Starr, 2015). From 2006 to 2013, students from low-income homes increased from 42 to 51% (Walker, 2015). Starr (2015) stated that 21 states have a high number of low-income students.

Poverty affects children in various contexts at home, in school, and their neighborhoods (American Psychological Association (APA), 2016). Furthermore, children in poverty pose a significant challenge for schools (Ng & Rury, 2006). Barbarian and Aikins (2015) recommended that research is needed on the links between teachers' expectations and children's learning outcomes within the first two years of schooling. Teachers are viewed as the most important contributors to students' achievement because they have a direct role in the learning process and direct interaction with their students (Barbarin & Aikins, 2013). By designating time for

professional learning communities, teachers will have opportunities to reflect on their interactions with children and how their beliefs about children affect the interactions and outcomes. As Barbarin and Aikin (2015) asserted, better academic outcomes would result when classrooms are rich with instructional materials, and teachers have high expectations of their students and are adequately prepared to teach.

Furthermore, teachers' beliefs and expectations influence student performance (Barbarin & Aikens, 2015). This study focuses on the impact of poverty on the reading achievement and vocabulary development of students in rural elementary schools. The literature review provides research on leadership, the perceptions of poverty by administrators and classroom teachers, and the impact of poverty on early reading literacy and vocabulary development. This chapter outlines the background and statement of the research problem as well as the purpose of the study, and the research questions upon which it was based. In addition, the rationale and significance of the research, assumptions, limitations, and delimitations of the study, as well as definitions of key terms are noted.

### **Background and Problem Statement**

In the past, it has been assumed that public schools are failing due to poor student performance (Ravitz, 2011, as cited in SerVaas, 2011, see Appendix E). Standardized tests are usually the only indicator the public uses when deciding whether or not a school is successful (Ravitz, 2011, as cited in SerVaas, 2011, see Appendix E). To say these data are not strong indicators of student success would be inaccurate. In some states, workforces have been reduced and underperforming schools have been closed due to standardized test scores and legislative mandates (Ravitz, 2011, as cited in SerVaas, 2011, see Appendix E). Although inadequate classroom instruction has been linked to low student performance, situational and generational

poverty may be more indicative in causing student failure in America (Ravitz, 2011, as cited in SerVaas, 2011, see Appendix E). In an attempt to combat the impact of poverty on student achievement, government initiatives such as the 1965 Elementary and Secondary Education Act and its successor, the No Child Left Behind Act of 2001, attempted to enforce academic accountability by mandating that schools show adequate yearly progress (AYP), which is the measure by which student performance is determined. Both of these reform mandates act like anti-poverty programs because both are implicitly based on the assumption that a higher level of educational achievement is the vehicle by which low-income families can escape poverty (Anyon & Greene, 2007)

Viadero (2007) points out that the law illuminates social inequalities that might once have gone unnoticed because it is now a requirement that schools improve test scores each year by focusing on gap groups such as students of a low-socioeconomic status. Conversely, Viadero (2007) noted that the measure contains inherent penalties that could negatively impact the academic outcomes for children facing such barrier to learning as poverty. In order to revamp NCLB, the Every Student Succeeds Act was enacted in 2015 to remove the most controversial aspects of the legislature. Although the new law retains some aspects of NCLB, it responds to key criticisms, such as relying too much on standardized tests to determine student achievement (Lee, 2015). Although the federal government provides a broad accountability framework, for the most part school accountability has been transferred from the federal government to the states, which are required to set school goals and evaluate their performance (Lee, 2015).

The underlying issue of poverty does not appear to be improving. White reported that “Census Data (2021) indicates that, although the unemployment rate fell and more states relaxed restrictions on business operations, the poverty rate hit a pandemic high of 11.7% which is an

entire percentage point higher than it was in early 2020” (White, 2021, para. 1). White (2021) further argues that for some of the most disenfranchised populations, the rate of poverty in March 2021 was even higher. There was an increase in childhood poverty to 17.4% with less-educated individuals holding only a high school education or less rising to 22.2% (White, 2021). This decrease in education is an issue because education is the cornerstone of society. It is imperative that the hemorrhagic effect poverty has on families must be staunched in order to preserve the social and financial success of our nation.

### **Purpose of the Study**

The purpose of this study is to investigate the effect poverty has on the vocabulary development and reading achievement of elementary students. Poverty is a persistent factor that plagues the United States and specifically impacts southeastern Kentucky. School districts in this region consistently have high student populations with low socio-economic status and qualify for free and reduced lunch. Decades of educational reform have attempted to put educational policies in place to promote student achievement and reduce the achievement gap between specific populations of students, including race, gender, and those considered at-risk and economically disadvantaged.

Research seems to indicate a strong correlation between the socio-economic status of a student and academic achievement. The effects of poverty are many and have a detrimental impact on the rural communities across our nation, but nowhere is more evident than in school districts, whose primary job is to educate our youth and provide them with the skills and abilities needed to compete in a global 21<sup>st</sup>-century workforce. Culturally speaking, southeastern Kentucky has a long history of systemic poverty and inadequate education. Therefore, it is imperative for administrators and teachers to possess transformational leadership skills to

provide a school climate and culture that is conducive to breaking down the educational barriers of poverty and provide an environment that is rich in instructional strategies and innovative programs that help students from impoverished areas obtain the skills necessary for academic success.

This quantitative comparative design study examined archival data of student achievement in reading and vocabulary as indicated on Kentucky's K-Prep assessment among rural elementary schools in southeastern Kentucky, as well as examined the impact administrative and teacher leadership has on student achievement. The categorical independent variable of poverty will be established via the federal government's definition of free and reduced lunch. The dependent variables of this comparative design will be the analysis of K-Prep reading scores and the vocabulary sub-score of MAP Reading data. The grade levels analyzed include the third, fourth, and fifth grades. Additional research was conducted to determine any association between poverty and student achievement and what research says about the role administrative and teacher leadership plays in combatting poverty.

### **Significance of the Study**

This quantitative study provides elementary schools located in high poverty areas with an analysis of the correlation between poverty and student achievement, specifically as related to reading achievement and vocabulary development. Any disparity created through childhood poverty gives rise to an examination of data to determine whether or not poverty creates an inconsistency in academic performance in schools with many students with a low socio-economic status. Marquis-Hobbs (2014) reported that “when a student's basic needs of food, safety, and clothing are a constant source of anxiety and trauma, that stress directly impacts the ability to learn (para. 9). The concept framed in this study is that the characteristics of



generational poverty impact a child's ability to thrive academically. As asserted by Hernandez (2011), students living in abject poverty are not achieving a comparable academic level to those not living in poverty on a consistent basis. In addition, Hernandez (2011) further noted that there is a higher rate of absenteeism and a lower rate of academic achievement for children of a low socio-economic status. Furthermore, students from high-poverty families who begin kindergarten with low vocabulary tend to retain this deficiency throughout their educational years (Rathbun et al., 2005). There have been many studies done regarding this gap in achievement over years (Cunningham, 2006; Cutts, 1963; Donahue et al., 1999), with many techniques evaluated in an attempt to alleviate this gap (Baumann & Kame'enui, 2004; Graves, 2006; Marzano et al., 2001; Nagy & Herman, 1987; Scott et al., 2008; Taylor & Pearson, 2002; Thompson & Frager, 1984; Wagner et al., 2007). As noted in Poverty Facts and Figures (2011), only 2% of third-grade students never living in poverty and reading at the appropriate grade level fail to graduate from high school within the proper time-frame. Conversely, 26% of third-grade students living in poverty and not reading at the appropriate grade level fail to graduate within the proper time-frame. Therefore, Hernandez (2011) concludes that poverty impacts and affects educational outcomes.

As schools across the nation strive to provide instructional strategies and educational programs to increase student achievement, it is imperative that educators understand the phenomenon of poverty and its negative impact on the lives of the students and families they serve. Approximately one-third of children in America attend schools in rural areas or small towns (Strange, 2011, p. 8). Educational issues such as underachievement and a high dropout rate are typical results of poverty (Irvin, 2011). Young people living in poverty deal with a myriad of issues. Among them are malnourishment, homelessness, underage pregnancies, and

drug addiction as well as the unemployment of their parents (Johnson, 1991). Johnson (1991) further noted that the longer they are exposed to this lifestyle, the more susceptible they are to perpetuate these same characteristics, and the cycle of poverty continues. As a result, they are often unprepared for life as adults because of the negative impact such issues cause (Knapp et al., 1990). Therefore, the goals of the study informs future decisions regarding the use of funding, instructional strategies, and the implementation of educational programs to address the effect of poverty on our nation's schools.

### **Research Questions**

In order to guide the research and align statistical tests, the following research questions were developed to facilitate the study of the impact of poverty on student achievement. This quantitative study examined whether differences existed between the categorical independent variable of poverty, with the dependent variables of the K-Prep reading scores and vocabulary sub-scores applied to student achievement within rural elementary schools. Data collected includes archival data regarding reading achievement and vocabulary development as indicated on Kentucky's K-Prep assessment as reported on the School Report Card of participating schools. Dependent Variables one and two included archival data gathered from these district's school report cards. Moreover, with the understanding that poverty negatively impacts student achievement, each research question explored the gap in research that prompted this study in the efficacy of a student's ability to achieve when affected by poverty. The following research questions and hypotheses guided this causal-comparative study to investigate if, and to what degree, there are statistically significant differences in students' reading and vocabulary achievement in high-poverty schools.

RQ1: Is there a statistically significant difference in grades three, four, and five reading achievement among students living in poverty and those not living in poverty as measured by Kentucky's K-PREP assessment.

$H_{01}$ : There is not a statistically significant difference in grades three, four, and five reading achievement among students living in poverty and those not living in poverty as measured by Kentucky's K-PREP assessment.

$H_{a1}$ : There is a statistically significant difference in grades three, four, and five reading achievement among students living in poverty and those not living in poverty as measured by Kentucky's K-PREP assessment.

RQ2: Is there a statistically significant difference in grades three, four, and five vocabulary achievement among students living in poverty and those not living in poverty as measured by Measures of Academic Progress assessment.

$H_{02}$ : There is not a statistically significant difference in grades three, four, and five vocabulary achievement among students living in poverty and those not living in poverty as measured by Measures of Academic Progress assessment.

$H_{a2}$ : There is a statistically significant difference in grades three, four, and five vocabulary achievement among students living in poverty and those not living in poverty as measured by Measures of Academic Progress assessment.

The sample populations used in this research project are similar in demographics, socio-economic status across the region, which allows for the generalization of the findings to be made across school districts within poverty areas because the dependent and independent variables are

comprable. Moreover, using these familiar variables supports the proper alignment of the problem, purpose, research questions, hypotheses, and theoretical foundations utilized in this study.

### **Theoretical Framework**

The elementary years are extremely significant in students' academic progress in the area of reading achievement, particularly in the area of vocabulary development. As students progress through the elementary grades, "the learning emphasis shifts from learning to read to reading to learn" (Hernandez, 2011, p. 4). However, although all children have the ability to learn, not all students have the opportunity to learn due to circumstances beyond their control. Hart and Risley (1995) found a 32 million word gap in the vocabulary of students considered at-risk or from high-poverty homes. It is a well-documented fact that students who live in poverty enter school academically behind other more affluent peers.

Teachers have the ability to take on a leadership role in assessing the needs of students and designing and implementing curriculum and instruction in the classroom setting to address gaps in student knowledge. As outlined in her book *A Framework for Understanding Poverty* (2003), Ruby Payne's work is often utilized in teacher professional development. Teachers often have a very negative perception of students living in poverty and the abilities of those students (Johnson, 2015). Gorski (2008) states that such characteristics are often referred to as the "culture of poverty" and feels that there is a distinct mindset by teachers that promotes the belief that people in poverty share a set of beliefs that defines them as a group and a "culture." Anthropologist Lewis (1966) popularized this concept in the 1960s, wherein he theorized that 20% of the poor shared over fifty traits, including "orality," "a weak ego structure," "strong present-time orientation," "a sense of resignation and fatalism," "helplessness and inferiority,"

and a "high tolerance for psychological pathology" (p. 23). He theorized that these traits were transmitted cross-generationally within families and prevented individuals from taking advantage of economic opportunities. In essence, Lewis (1966) put forth the concept that "the culture of poverty is not just a matter of deprivation or disorganization, a term signifying the absence of something" (p. 19). Lewis (1966) further postulated that it was a "culture in the traditional anthropological sense in that it provides human beings with a design for living, with a ready-made set of solutions for human problems, and thus serves a significant adaptive function" (p. 19). This style of life transcends national boundaries. "Wherever it occurs, its practitioners exhibit remarkable similarity in the structure of their families, interpersonal relations, spending habits, value systems, and their orientation in time" (Lewis, 1966, p. 19).

Banks (2001) noted that the cultural deprivation and culture of poverty explanation has re-emerged today as "children-at-risk." Herrnstein and Murray (1994) theorize that low-income and ethnic-minority students do not achieve at high levels because of genetics but can overcome their family and community limitations if provided with early-childhood experiences to counteract the cultural deprivation associated with the culture of poverty phenomenon. Counter arguments to the culture of poverty theory argue that inner-driven individualized orientation contributes to poverty (Mead, 2020). Oppong (2022) compares it to the "psychological theory of internal locus of control, which relates to the extent to which individuals attribute success or failures to inner dispositions or situational factors such as luck or powerful others" (p. 227), also known as external locus of control. Individuals with an internal locus of control often correlate their accomplishments in life to their efforts and often find a link between their actions and consequences, whereas individuals with an external locus of control attribute their destiny to the environment, circumstances, and people (Oppong, 2022).

Payne (2003) asserted that children growing up in a culture of poverty fail because they have been taught the "hidden rules of poverty," but not the hidden rules of being middle class. As noted in Eric Jensen's book *Teaching With Poverty In Mind* (2009), the successes and failures of students are constantly on the minds of their teachers; therefore, if things are not going well in the classroom, they feel guilt and shame because they feel like they are failing their students. Jensen (2009) further postulates that emotional and mental needs come first with students as well. Students who live in poverty are often under chronic stress, which in turn has a direct impact on their coping abilities, behavior, memory and IQ and often can impact their development and function (Jensen, 2009). For example, "in any given year, more than half of all poor children deal with evictions, utility disconnections, overcrowding, lack of a stove or refrigerator, compared with only 13 percent of well-off children" (Lichter, 1997; Jensen, 2009, p. 24). Some students do not have appropriate coping mechanisms, and because of intense and chronic exposure to stress, they shut down and fail to thrive (Jensen, 2009). "Unpredictable stressors severely impact the brain's capacity to learn and remember" (Yang et al.; Jensen, 2009, p. 25).

Educational leaders have the ability to influence change in the lives of students by being transformational leaders. This study connects to leadership by exploring the way in which teachers use diagnostic tools to assess student needs and then become transformational leaders by taking a proactive approach to adjusting classroom instruction accordingly. The impact this leadership has on the culture and climate of the school setting can ultimately transform even the lowest socio-economic school settings into one of positive achievement and overall student success. According to Rogalsky (2009), "It is imperative that educators are informed about the structural causes of poverty. Pedagogical interventions should focus on educating teachers about

the influences of deindustrialization, classism, racism, and disproportionate educational funding upon their students' educational outcomes" (p. 198).

Due to the current emphasis on school accountability, leadership is especially important, and as such, an important area of focus for researchers (Stewart, 2006). It is of importance because school leaders usually establish the norm by which other staff members adhere to, which impacts the school atmosphere and climate (Cohen et al., 2009). One of the most prominent leadership styles is transformational leadership (Moolenaar et al., 2010). A transformational leader can be defined as one who unites staff in pursuing goals aligned to their vision and have the ability to motivate and focus on long-term goals, as well as unite staff who do not have buy-in (Burns, 1978). In addition, Sergiovanni (2007) claimed that transformational leaders were able to provide clear and succinct goals, which unite all involved parties and foster commitment. All that is needed to increase commitment and motivation is for the leader to understand teachers and empower them (Leithwood & Jantzi, 2005; Marks & Printy, 2003; Sergiovanni, 2007). Transformational leadership impacts schools in many ways. Hallinger and Heck (1998) outline such things as a commitment to change, teachers' perceptions of the school climate, academic outcomes, and the organization's overall structure as critical components to student academic success. Transformational leadership ideology is often observed in high-performing schools, accentuating the belief that it is the most effective form of leadership (Finnigan & Stewart, 2009).

There is a greater demand for higher standards and a more diverse educational system in today's educational system, which demands teachers to exhibit leadership skills and pedagogical knowledge to help students become future leaders (Pushpandam & Mammen, 2020). Teachers become transformational leaders by implementing school and district assessment tools as a

diagnostic means of determining the needs of students and then having the leadership necessary to adjust instruction accordingly. Assessing the needs of students and designing instructional practices that enhance student achievement connects to the greater field of leadership by showing initiative in developing the skills necessary to better the lives of their students. They utilize their knowledge about childhood development to assess their abilities and address their gaps in knowledge. Educators must first understand the problems posed by poverty and how such limitations impact learning and academic achievement. Emergent readers develop during early childhood, beginning at infancy, toddler stage, and preschool enrollment. Children from high-poverty homes have little exposure to the initial basic reading skills such as print awareness, letter knowledge, and phonological awareness because they do not get as much exposure to language as their peers from a higher socio-economic background.

By understanding the correlation between poverty and student achievement, especially in vocabulary development and reading achievement, educators, as transformational leaders, can implement instructional strategies and instructional programs that can enhance a student's ability to read and decode language, thereby improving vocabulary development. An educator's leadership role in developing the instructional practice utilized in the education of students is the catalyst that can either enhance or inhibit future success. In this particular study, the data collected regarding the perception of teachers in regards to the correlation between poverty and vocabulary development will enable them to make decisions that successfully transform their classrooms and, ultimately, their school into a place where students are successful.

The eradication of the achievement gap between poverty and non-poverty students is of paramount importance if every child is to achieve the inherent right to become an adult proficient reader. Reading is the foundation upon which all learning occurs. This study attempted to



analyze the relationship between poverty and student achievement in vocabulary and reading to assist in eliminating the achievement gap caused by this social injustice in order for all students to reach their full potential through effectual education. This is a significant implication because students from high-poverty households are transformed from an increased vocabulary development, which impacts their ability to read successfully. Such academic success allows these students to become proficient members of society.

### **Limitations of the Study**

Limitations are an inherent part of any study completed at educational institutions. Such elements are beyond experimental control (Simon & Goes, 2013). The following limitations were inherent in this study:

1. This study used archival data to draw correlations and comparisons. Due to the Covid-19 pandemic, current K-Prep assessment data has been negatively impacted due to the majority of students attending in the virtual setting without direct daily instruction from their teacher.
2. The Covid-19 pandemic negatively impacted direct classroom instruction further inhibiting student achievement. Therefore, the most recent relevant data available for analysis was during the 2018-2019 school year.
3. The inability to control external factors and variables affecting student achievements, such as attendance, behavior, motivation, and life events, may influence student success (Banerjee & Chaudhury, 2010).
4. There was very little current data available on the correlation between poverty and student achievement as it pertains to reading achievement and vocabulary

development, resulting in a gap in the literature and research available on the subject and indicating a need for further studies in this area.

5. Because the qualifying data, as noted on the KDE website, qualified all of the districts used in the study at 100 percent, the study utilized each of the district's percent of directly certified students, which is used to qualify the entire district for free-reduced price lunches. These direct certification percentages serves as the basis for KDE's qualifying data report.
6. There is not a vocabulary sub-score in the area of reading on the K-Prep assessment. Therefore, archived MAP data were used to analyze vocabulary development.
7. Archived data for School B.1 and School B.2 were combined by KDE during the 2017-2018 school year making it difficult to differentiate data for the third grade over the five-year time-period for which data were analyzed.

### **Assumptions**

The following assumptions were accepted:

1. Quantitative methodology was suitable for the problem being investigated for this study.
2. Archival data collected were an accurate depiction of student achievement in reading.
3. Archival data collected were an accurate depiction of student achievement in vocabulary.
4. This causal-comparative quantitative study reported results and made assumptions about any differences or lack of differences found to exist without determination of cause and effect (Hudson & Llosa, 2015).

5. Dependent variables for this study were measurable, i.e., student achievement in reading and vocabulary, and the process used to measure these variables were valid and reliable.
6. The research literature accurately demonstrated correlations between poverty and student achievement in reading and vocabulary.
7. The sample size was sufficient, and the statistical tests (*t*-tests) were appropriate to determine whether significant differences existed in the population.
8. The theoretical framework outlining poverty and its impact on children correlated to academic achievement in reading and vocabulary.
9. The result is meaningful to the educational community, specifically school districts in high-poverty areas.

### **Definitions**

The following definitions are commonly associated with poverty, emergent literacy, and vocabulary development and are intended to assist the reader in understanding the purpose and intent of this study.

*Alphabet knowledge*: The recognition of the names and sounds associated with printed letters (Moats, 2010).

*Emergent literacy concepts about print*: The knowledge of print conventions utilized when we reading such as moving on the page from left to right, front to back, top to bottom, and emergent literacy concepts such as book cover, title, author, illustrator, text (Clay, 2010).

*Conventional literacy skills:* Skills such as decoding, oral reading, fluency, reading comprehension, writing, and spelling. Such skills are typically taught in elementary and secondary classrooms (Barnett et al., 2009).

*Conventional literacy skills:* Reading and writing skills developed from the foundational reading and writing skills from birth to age five (National Institute for Literacy, 2008).

*Decoding:* The ability to apply knowledge of letter-sound relationships and word patterns to pronounce and read written words correctly (Clay, 2010).

*Early childhood:* The period from birth to eight years old that begins the foundation for future learning (Adedokun, 2013).

*Early literacy skill acquisition:* Acquisition of reading beginning at about age five to seven, after a child has entered Kindergarten (Snow et al., 1998).

*Early literacy:* Skills that begin to develop prior to and during the preschool years. Such skills as alphabet knowledge, phonological awareness, letter writing, print knowledge, and oral language (Barnett et al., 2009).

*Emergent literacy:* Comprises the skills, understanding, and attitudes that young children demonstrate before receiving formal reading and writing instruction (Bridges, 2013)

*Emergency literacy concepts about print:* The knowledge of print conventions, i.e., when we read, we move on the page from left to right, front to back, top to bottom, and emergent literacy concepts, i.e., book cover, title, author, illustrator, text (Clay, 2010).

*Expressive language* refers to one's ability to create a spoken message that others will understand (Moats, 2010).

*Intergenerational poverty:* Children growing up in low-income families learn to adapt to the values and norms that they replicate in their own lives (Sush & Heise, 2014).

*Language*: Refers to the content of what is spoken, written, read, or understood (Moats, 2010).

*Literacy*: The ability to read for knowledge, write logically, and comprehend the written words (Adedokun, 2013).

*Literacy skills*: More mature skills such as decoding, oral reading, fluency, reading comprehension, writing, and spelling. Such skills are typically taught in elementary and secondary classrooms (Barnett et al., 2009).

*Oracy*: Fluency in listening and speaking or the combination of receptive and expressive language (Carlo & Begochea, 2011).

*Oral language*: The ability to produce or comprehend spoken language, including vocabulary and grammatical structures (Moats, 2010).

*Phonological awareness*: The ability to detect, manipulate, or analyze the auditory aspects of spoken language. This includes the ability to segment words and syllables, isolate phonemes, and manipulate them to produce new sounds (Rice, 1989).

*Poverty*: People whose income is deemed insufficient to afford basic needs such as food, shelter, clothing, and other essentials are classified as poor (Jensen, 2009).

*Receptive language*: Refers to one's ability to comprehend someone else's speech or gestures (National Institute of Literacy, 2009).

*Socio-economically disadvantaged students (SES)*: Children's families with incomes below the federal poverty threshold that does not meet their basic needs (Jiang et al., 2016).

*Speech*: Refers to the sounds forming words and spoken language (Moats, 2010).

*Syllable*: A part of a word that contains a vowel, or in spoken language, a vowel sound, such as in the word pa-per, which contains two syllables (Cunningham, 2011).

*Title I campus or district:* Socio-economic level of a school or district may be estimated by the percentage of the enrollment qualifying for federal lunch subsidies (Snow et al., 1998).

### **Summary**

According to Rice (1989), children living in poverty often enter school lacking in language acquisition. Research shows that poor oral language and vocabulary development have been linked to low academic achievement (Castro et al., 2011; Dickinson et al., 2006; Kaiser & Roberts, 2011; Law et al., 2011). Because federal policies and state requirements mandate that all students learn to read by the end of third grade (USDE, 2002), educators must find ways to ensure all students receive a quality education. Vocabulary is fundamental to reading instruction and must be comprehensively taught using techniques that are conducive to interpersonal discourse resulting in positive, profound, thought-provoking dialogue (Qian, 2002; Rupley & Nichols, 2005). Payne (2005) reported that students of poverty require a significant relationship to acquire new knowledge. This is because these students typically begin formal schooling behind their more affluent peers in vocabulary development (Hart & Risley, 2003).

Chapter One introduced the problem and identified the need to conduct this study. In doing so, Chapter One presented the issue, outlined the problem statement and the purpose of the study, and listed any relevant research questions. In addition, the theoretical framework was discussed, definitions related to this study were introduced, and assumptions were explored. The scope and limitations of the study were also addressed. The ultimate goal of this comparative study was to examine the correlation between poverty and student achievement in reading and vocabulary and to explore the impact of transformational leadership in impacting a school's ability to overcome such barriers to learning.

Chapter Two contains a comprehensive review of the literature relevant to this study. This chapter included a complete summary of research and literature pertaining to the disadvantage of socio-economically challenged students and the impact of poverty on these students was included. In addition, research regarding the misconceptions held by teachers who teach within high-poverty school districts was also examined, along with the challenges faced by these teachers. The literature review correlated the consequences of living in poverty and its impact on learning and teaching. The critical need for early vocabulary development and sound instructional practices in literacy and vocabulary acquisition was also determined.

As outlined in Chapter Three, Methodology and Procedures includes an in-depth discussion on the research methods utilized to address the research topic put forth in this dissertation. Chapter Three focuses on the description of the population sampling and instrument selection for use in the research. It addresses the appropriateness of the design and includes data collection, data analysis, and methods of interpretation. Chapter Four includes a quantitative analysis of the data and, summarize the answers to the research questions, examines and explores the problems and conjectures associated with the research. Chapter Five discusses the findings, asserts the link to the literature reviewed, outlines any limitations discovered from the research, provides implications for practice, and discusses future research.

## Chapter Two

### Review of Literature

#### Introduction

The purpose of this quantitative study was to review the literature associated with and the research related to the reading achievement and vocabulary development of elementary children in high poverty areas and teachers' perceptions of how poverty affects literacy development in these students. Educational surveys repeatedly report that a substantial proportion of economically disadvantaged children often show difficulty learning to read and write in their early childhood years (Carroll, 1987; NAEP, 1985). Often referred to as the "fourth-grade slump," it culminates when many low-income children fall below expected achievement in reading, particularly in vocabulary (Chall & Snow, 1988). Vocabulary deficits have been linked to difficulties in reading comprehension experienced in low-income children during their middle school years (Chall & Jacobs, 1996). More specifically, further research indicates that these children are developmentally far behind their peers in recognizing abstract, academic, literary, and uncommon words (Chall & Jacobs, 1996; Snow, 1991).

There has been a push from the workforce to produce college and career-ready students, prompting educators to revamp curriculum and instruction in the K-12 curriculum and develop high-quality early childhood programs to give children the skills necessary to achieve academically. According to research, the developmental needs of four-year-olds are vastly different than those in kindergartners or upper elementary schools. A study measuring the quality of preschool classrooms indicates the importance of understanding curriculum specific to improving students' academic and social outcomes and supporting developmentally appropriate interactions between students and teachers (Mashburn et al., 2008).



This chapter provides a comprehensive review of the literature related to this study topic. It will give an overview of poverty as well as highlight educational reforms that have attempted to address the plight of students that are disadvantaged in our schools, consisting of students of low socio-economic status, students with learning disabilities, students who belong to minorities, speak English as a second language, and transient students. In addition, it will address the theoretical framework to support the proposed phenomenon, such as teacher perceptions toward students of poverty and teacher leadership as a means to combat the problem. Implications of the research and a summary concludes this chapter.

### **Understanding the Phenomenon of Poverty**

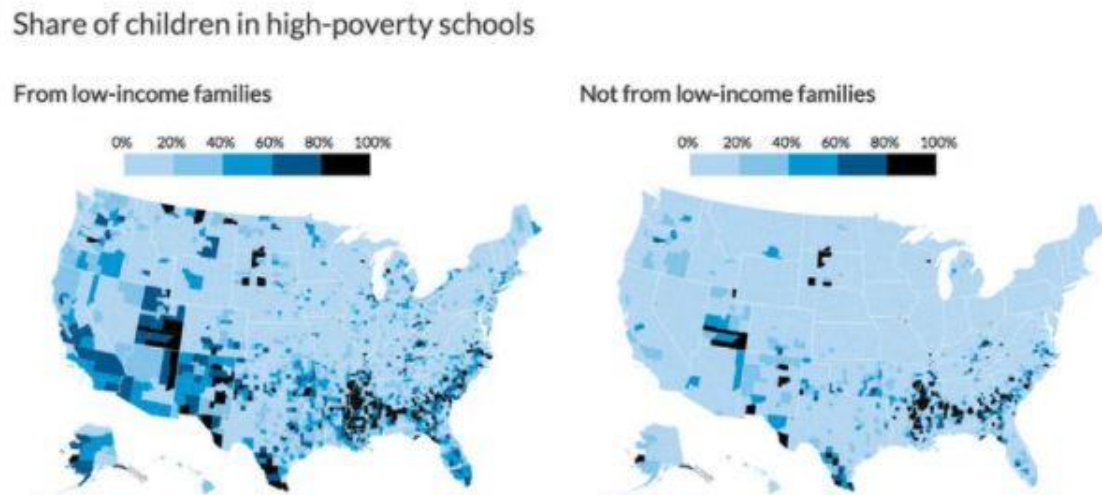
The A. E. Casey Foundation (2008) reported that since the mid-1990s, between 1994 and 2000, the child poverty rate fell by 30 percent. This was the largest decrease in child poverty since the 1960s. Since 2000, however, improvements have stalled. In fact, the child poverty rate has increased by 6 percent, meaning 1 million more children in poverty in 2006 than in 2000. (p. 34)

The United States Census (2019) reported that 34 million people were living in poverty. Poverty itself is an essential indicator of economic wellbeing and is often used to identify communities that are in need and helps to identify families that are eligible for various government programs (U.S. Census, 2020). There is an irrevocable tie between U.S. public schools and the neighborhoods in which they are located. Misra (2015) emphasized how essential it was to realize that students who grow up in economically segregated, low-income neighborhoods encounter a myriad of disadvantages such as underfunded schools, lack of resources and opportunities afforded their more affluent peers, which results in poor academic performance and ultimate inability to thrive and be successful. According to data analysis researcher Reed Jordan

(2015), about 40% of low-income students go to high-poverty schools, whereas only about 6% go to low-poverty schools. For students above the low-income threshold, the exact opposite holds true. Only 6% go to high-poverty schools, whereas 37% go to schools with a more affluent economic base and resources. The maps below (see Figure 1), released by the Urban Institute (Reed, 2015), illustrate the stark contrast. The one on the left shows the proportion of low-income students attending high-poverty schools across the country, while the one on the right shows the proportion of students at these schools who are not from low-income families. The conclusion is obvious: there is a concentrated disadvantage for students in high-poverty schools because they are less likely to receive resources to meet their needs to help them achieve academic success.

### Figure 1

*Reed Jordan/Urban Institute*



It is more critical than ever for higher education institutions to prepare teachers with solid instructional skills that will enable them to work with the nation's youngest children who are located in high poverty areas because the overall success of the educational system is at stake

(Levine, 2009; 2007). Because the number of children living in poverty is growing, there is an increasing need for teachers with the pedagogical skills to help them gain the knowledge and skills necessary to help them change their lives. Beginning with the 1965 federal Elementary and Secondary Education Act (ESEA), which was replaced by the 2001 federal No Child Left Behind Act that was in effect from 2005 to 2015, to the current Every Child Succeeds Act that was signed into law in 2015. The passage of this legislation serve as indicators of our nation's commitment to its commitment to equal opportunity in education by determining key protective areas for disadvantaged and at-risk students. Each of these federal attempts to address the “complex challenges that arise for students who live with a disability, mobility problems, learning difficulties, poverty, or transience, or who need to learn English” (Washington Office of Superintendent of Instruction, n.d., para. 2).

It is evident from the research gathered that there is no more effective strategy for improving reading literacy and vocabulary development than rich naturally occurring emergence in literature-rich environments that occur early in life. Emergent readers must develop an understanding of different texts and the way in which written language works (Merchant, 2008). Policymakers concerned with the education of disadvantaged youth must enact policies promoting vocabulary learning in early childhood. As Beegle (2013) noted, the best way for underprivileged youth to escape the generational curse of poverty is through education. The very future of our nation is at stake. In order to be competitive in a world that now demands students be career ready on a global scale, the United States Department of Education (2021b) reported a growing consensus that students must be equipped with more than just basic skills.

Each year, several thousands of students leave high school totally unprepared for classes at the college level. As a result, college attainment rates are lagging far behind the projected

demands of our nation's workforce needs. "Almost one-third of American students require remedial education before entering college level courses" (Bettinger et al., 2009, para 1).

America, who was once the global leader in the education of its citizens at the post-secondary level, now ranks 12 in completion rates (NCES, 2021). In today's global economy, it is vital for educational reforms to be in place that will enable students to attain the skills necessary to achieve in a world that is more connected and complex than ever before. Walker (2015) points out that the United States, as compared to high-performing nations across the globe, does not direct its education funding toward high-poverty areas. Walker (2015) put this into perspective on a global scale:

If our country is to build a skilled workforce for the 21<sup>st</sup> Century, every child should have a chance at academic success. Their success or failure in public school ultimately determines the nation's future success. Unless we improve the educational support of those students in high poverty, who typically have the most significant needs with little support, we will not be just a nation at risk but a nation in decline. (para. 11)

This literature review will investigate the definition of poverty, the background history of educational reform which attempted to change the way schools across the nation addressed the achievement gaps in students of different categorical groups, conceptual factors surrounding literacy, the development of oral language, and the theoretical framework of pedagogy and the educational support of vocabulary development of young learners.

### ***Poverty Defined***

Poverty in the United States has been a constant over many decades, an on-going issue for adults but with a direct impact on many children as well (Johnson, 2015). As directed by the Office of Management and Budget's (OMB) Statistical Policy Directive 14, the United States

Census Bureau determines who is in poverty based on monthly or annual income levels that vary by family size and configuration. Geographical regions do not affect these poverty thresholds but are adjusted for inflation (U.S. Census Bureau, 2021). Jensen (2009) further explained people living in poverty have an income level that is less than necessary to afford basic needs such as food, shelter, and clothing and are technically categorized as poor. Extreme poverty is further defined by Cuthrell et al. (2010), as “living with an annual income of \$7,870 for a family of three” (p. 104). It has been additionally noted that poverty can also be defined as an ongoing systemic and enervative condition caused by multiple characteristics that have a negative impact on one’s mind, body, and soul (Jensen, 2009). Current data indicates that about 40 million Americans live in poverty, with about sixteen million categorized as living in deep poverty (Azzi-Lessing, 2017). Ankomah (2019) noted that “the United Nations 2018 Report, Report says “40 million Americans live in poverty, 18,5 million in extreme poverty, and 5,3 million live in Third World conditions of absolute poverty” (para. 2). In other words, the family income is less than half of the Federal Poverty Threshold. Gorski (2013) noted that poverty is a complex condition that ultimately impacts children in the school setting by their families being categorized as eligible for free or reduced lunches.

The State of America's Children 2021 Report (SACR), conducted by the Children's Defense Fund, summarizes the status of America's children in areas such as childhood poverty, early childhood education, income and wealth inequality, welfare, child health, child hunger, nutrition, population, housing and homelessness, and youth justice. There is a continuing upward spiral as to the number of children living in poverty across the world. According to the Children's Defense Fund or CDFR (2021), an advocate for children and used as a springboard for policy changes, their 2021 report noted that nearly 10.5 million children (one in seven) have fallen into

poverty since 2019. There were over 73 million children in the United States in 2019, which accounted for 22% of our nation's population. It further noted that the youngest children are the poorest, with most of those being under six and living in extreme poverty below half the poverty line (CDFR, 2021). Because these children lack the basic necessities to succeed, such as stable homes, nutritious food, access to good schools, and quality educational instruction, it is hard for most of them to reach their full potential. According to the Children's Defense Fund Report, statistics show that a child is born into poverty every minute (CDFR, 2021). Furthermore, a high school student drops out of school every nine seconds due to conditions that are directly linked to poverty (CDFR, 2021). Without policy reform to ensure that programs and strategies are implemented to improve the survival and success odds of children living in abject poverty, our nation will only be as prosperous as the most educated and literate of our citizens.

### ***Situational Poverty versus Generational Poverty***

Poverty can further be broken down into two categories that describe characteristics and circumstances of poverty: situational poverty and generational poverty. According to Cutherell et al. (2010), situational poverty can be attributed to distinct situations that typically only last temporarily, whereas generational poverty is a constant situation experienced by the family and spans several generations due to limited resources. Because there are hidden rules and beliefs that are cultural in nature, generational poverty can be very hard to conquer (Cutherell et al., 2010). Research further suggests that the problem of poverty is much more than the lack of finances (Cutherell et al., 2010). As identified by Payne (2005), several resources or lack thereof, apparently determine how poverty affects a family: financial, emotional, relationships, mental, physical, support systems, role models, spiritual, and a knowledge of hidden rules. The

correlation is this: the burden of poverty may be lessened if an individual lacks financial means but is strong in other areas such as emotional, spiritual, and physical support (Payne, 2005).

For this reason, it is imperative that children have solid teachers or other adults in their life that can offset the financial aspect of poverty. Dell'Angelo (2021) noted that, although classroom teachers may not have control over their students' economic situation, they have power and must think in broad terms about how to mediate the negative impact of poverty. According to Landsman (2014), often, the education of more affluent children utilizes educational strategies that address the needs of the "whole" child, whereas there is more emphasis on developing obedience in low-income children because of the perception that they come from violent, chaotic homes and only regulated curriculum will allow them to achieve. Rockwell (2006) likes to emphasize overcoming adversity by utilizing a more positive approach; instead of concentrating on the negativity often associated with poverty, focus on the things that make develop the resilience in an individual. The personal strengths individuals have as well as home/family/community connections can be key factors in overcoming the hardships associated with poverty (Rockwell, 2006).

Payne (2009) used the phrase deficit model to describe the mindset of those individuals who see the glass as half empty rather than half full. Also known as the deficit theory (Valencia, 1997), it is primarily used by the dominant culture to determine what a student can or cannot do in order to determine academic success. It is further described as a biased view or theory teachers may hold toward children in poverty (Valencia, 1997). By empowering those in poverty rather than allowing them to remain in a defeated mindset, they can gain the characteristics needed to rise above their circumstances. The primary difference between situational and generational poverty seems to be the attitude or perspective of the individuals. Those in situational poverty

often refuse to accept charity because of pride, whereas those in situational poverty may think they are owed a living (Marlin-Warfield, 2017; Payne et al., 2006). Regardless of the type of poverty a family is in, the key to breaking out of generational or situational poverty is to educate oneself so that better opportunities are available (Payne, 2019). Cleveland (2014) makes the argument that:

being in poverty is rarely about a lack of intelligence or ability; individuals stay in poverty because they do not see a choice or an alternative to their situation. Even if they do see choices or alternatives to their situation, they do not know how to access proper resources or people to get them to actually "choose" to organize themselves, complete assignments, behave respectfully, plan for the future, and communicate in the conventional sense. Schools are the only places where students can learn about the middle class's choices and rules or access people willing and able to help them. (para. 6)

### **Relationship Between Poverty, Learning, Early Reading Literacy**

There is a direct correlation between learning to read and its relationship between social and linguistic processes (Tracey & Morrow, 2012). The sociolinguistics theory is a direct study of anthropology, linguistics, and literacy analysis (Tracey & Morrow, 2012). It has long been postulated by theorists such as Bernstein (1972), Halliday and Weber (2009), and Rosenblatt (2004) that oral language development is the foundation upon which other reading skills develop. Students from different social and economic backgrounds have very different classroom experiences and levels of success because the language events they experience at home can either support or inhibit their academic achievement. Carey (2013) points out that "fifty years of research has revealed the sad truth that the children of lower-income, less-educated parents typically enter school with poorer language skills than their more privileged counterparts" (para.



1). Carey (2013) further emphasizes that "by some measures, 5-year-old children of lower socio-economic status score more than two years behind on standardized language development tests by the time they enter school" (para 1).

Studies have consistently shown a distinct correlation between the academic success of students and family income, particularly during their early childhood year (Van Ijzendoorn et al., 2004). There are issues with attendance, transportation, parent involvement, and health care among poor students. Freiberg (1993) reported that parents may have done poorly themselves and may perpetuate a negative attitude toward school as a result. According to Mouton and Hawkins (1996), they may want to protect their children from experiences they may have had themselves or simply do not have the inclination to encourage a positive relationship with the school because they do not value education. Children who live in poverty often do not have a significant, dependable adult in their life, so it is often their teacher to whom they look for that support. If these students do not find that affiliation with an adult, they end up dropping out. In a study by Mouton and Hawkins (1996), low-achieving high school students report a sense of alienation from their schools and, in many cases, believe no one cares about them or that their teachers do not like them or talk down to them. Such perceptions cause students to feel isolated from peers, teachers, and administrators alike.

Hart and Risley (1995, 1992, 2003) have done extensive studies on acquisition of vocabulary in young children. As noted in the Leaders Project (2013), "the authors conducted this study to look for the cause in the disparity in linguistic/academic progress among children from different socio-economic backgrounds" (para. 2). According to their research, they estimate that children from professional homes are exposed to approximately 11 million words in a year, and children from middle-class homes are exposed to 6 million words. However, children from

welfare homes are only exposed to approximately 3 million words (Leaders Project, 2013; Hart & Risley, 1995). This is relevant to one's ability to achieve in reading because students gain more fluency if they have an understanding of oral language. Such understanding gives them better vocabulary and comprehension skills and enables them to develop other sociolinguistic traits such as better habits of speech as in word choice, accent, and when and how to speak (Tracey & Morrow, 2012). Some would argue that the "Word Gap Research" is not necessarily valid. The criticism surrounding this theory, as stated by Avineri and Johnson (2015), Miller and Sperry (2012), and Zentella (2015), argues that it ignores the fact that language is learned and used in culturally defined contexts and the premise that maternal vocabulary spoken directly to the child is the only speech that matters for language learning. As noted by Brown and Gaskins (2014), many cultures do not use the practice of talking to children in socially defined dyadic interactions, and therefore, not necessary for language learning (Akhtar & Gernsbacher, 2007). It is evident that poverty impacts children in a multitude of ways. Consequently, it is critical to explore how educational reform has addressed the needs of these students over the years.

### **History of Educational Reform (ESEA, NCLB, & ESSA)**

Historically, the United States federal government has recognized the need to support the education of children from high poverty backgrounds with the passage of the Elementary and Secondary Education Act (ESEA) in 1965. The passage of this act originated the Title I Services that are still prevalent today in schools across our nation. Title I Services gives financial assistance to schools with a high percentage of at-risk students (Tracey & Morrow, 2012). Typically schools provide Title I services to at-risk children who are failing to meet state academic standards. In order to qualify to use Title I funds to fund school-wide programs in order increase academic achievement, at least 40% of the student population must have a low

socio-economic status (USDE, 2021a). The most up-to-date information from the 2015-2016 school year indicates that more than 55,906 schools in the United States used Title I funds to provide programs geared toward enabling low-achieving students master curriculum in reading and math by providing additional resources to support learning opportunities. More than 26 million children received these services, with approximately 58% in Kindergarten through 5<sup>th</sup> grade, 2% in preschool, 21% in grades 6-8, and 19% in grades 9-12 (USDE, 2021a).

One of the oldest intervention programs in the United States that were established as a direct result of the ESEA movement is the federal Head Start program (Chapin & Altenhofen, 2010; Vinovskis, 2008). Established to provide children and families living below the poverty level, this program targets preschool-age children to provide educational support living in poverty (Ramey & Ramey, 2004). This program has historically provided vital information regarding early interventions and support for young children living in poverty. Its counterpart, state-funded preschool, a \$24 billion-dollar market, serves preschool-age children with enrollment that topped 1.5 million in 2017 (Afton Partners, 2019). Both of these programs target socio-economically disadvantaged students and provide early intervention programs and instruction to improve their chances for academic success.

As previously mentioned, the Elementary and Secondary Education Act (ESEA) of 1965 began educational reform in the United States and has greatly influenced public education by providing programs for at-risk students in schools across the nation. It was revised in 2000 and President George W. Bush signed what then became known as the No Child Left Behind Act in 2002 (Klein, 2015). The NCLB Act increased the role of the Federal Government in holding states accountable for student achievement, particularly students who fall into gap groups such as free/reduced lunch, ethnicity, ESL students, and special needs students who typically do not

achieve as high as their more affluent peers (Klein, 2015). Fueled by the fear of the American Educational System no longer being internationally competitive, it sought to hold schools accountable, and those who did not comply were in danger of losing federal Title I money. In addition to making sure schools hired teachers who were considered "highly qualified" by holding a bachelor's degree in their teaching area, schools were charged with making "adequate yearly progress" or AYP based on proficiency goals. If a school failed to meet its annual achievement targets for two years or more, it faced a cascade of severe sanctions (Klein, 2015). NCLB gave specific goals that caused controversy and resistance from educators, among them the requirement that all students attending public school in the United States be able to read proficiently at grade level by 2014 (H.R. Res. 107-110, 2002). Such controversy was precisely why NCLB was placed under scrutiny and then revamped once the presidential administration changed hands in 2009.

According to Lee (2021), school accountability rules were a big part of NCLB, with heavy penalties for those who failed to meet AYP. Accountability requirements were set forth in order for states to receive federal funding. However, NCLB was not without controversy:

States were required to fulfill extensive accountability requirements to receive funding.

These requirements led states to argue unsuccessfully that NCLB is an "unfunded mandate." For example, Connecticut sued the federal government in 2005 for allegedly requiring the state to spend millions of state dollars on additional NCLB testing. A federal judge dismissed Connecticut's lawsuit on jurisdictional grounds, effectively ending the state's challenge. NCLB, however, did not mandate that states participate in the program. All requirements are a condition of funds. While a state may struggle financially without federal education funding, it could choose to opt-out of NCLB and the

requirements it included. As a result, it was not accurate to refer to NCLB as an "unfunded mandate; the law's requirements only applied to those states that voluntarily elected to participate." (Education Policy, para. 1 & 2)

Although NCLB gave more flexibility to states in how federal monies were spent, this was only true as long as schools were improving. The mixed feelings about NCLB include both positive and negative. While it did lead to a greater focus on struggling students and attempted to regulate the academic achievement of students in poverty as well as students of color and those who receive special needs services by pushing schools to give these students more attention and instructional support, some say it focused too much on standardized testing (Lee, 2021). Regardless of the controversy, there is still support for some of NCLB's reforms, including reporting school test results, including all students, and research-based instruction (Lee, 2021).

NCLB was replaced by the new law, the Every Student Succeeds Act (ESSA), when President Obama signed the bill on December 10, 2015. Unlike NCLB, this act seeks to reduce the role the federal government plays in education policy, including testing, student achievement, teacher quality, and low-performing schools, by giving states the power to enact programs and guidelines to ensure the success of their students (Klein, 2016). However, although there are accountability reported that must be submitted to the Department of Education, states have the freedom to choose their own goals addressing areas of proficiency, account for the graduation rate, English-language proficiency, and set student goals and expectations for students in gap groups in order to decrease achievement gaps (Lee, 2021). ESSA also has provided funding for two crucial programs to assist schools. The law authorized the creation of the National Center on Improving Literacy, which acts as a clearinghouse for information related to literacy and students with disabilities and provides literacy education for states (Lee, 2021).

Educational reform has made some progress in decreasing barriers to education such as gender, race, religion, and geography (Mortenson, 1993). Regardless, poverty is the one achievement barrier that has still not been conquered; statistically, a person from the lowest income category was only 16% as likely to obtain a college degree as a person from the highest income quartile, a rate that plummeted to 11% by 1989 (Mortenson, 1991). Levine and Nidiffer (1996) and Mortenson (1996) further reported that the number had dropped to 10 percent in 1996. Since that time, an even lower percentage of the poorest people in the United States were educated (Greenberg et al., 1999; Valdez, 1998). Although current research noted by Smith (2019) indicates that more poor students are enrolling in secondary educational institutions, a disproportionate number of them may be hindered from obtaining a bachelor's degree due to the type of institution they are choosing.

In a report from the Pew Research Center by senior economists, Fry and Cilluffo (2019, as cited in Smith, 2019) found that the “overall number of low-income undergraduate students had increased in colleges and universities over the past twenty years from 12 percent in 1996 to 20 percent in 2016” (para. 2 & 3). Fry and Cilluffo (2019) further noted that

as of the 2015-2016 school year, about 20 million students were enrolled in undergraduate education, up from 16.7 million in 1995-1996. Of those enrolled in 2015-2016, 47 percent were non-white, and 31 percent were in poverty. These numbers were up from 29 percent and 21 percent respectively, 20 years earlier. (para. 2)

However, because these colleges and universities are some of the least selective, they usually do not have as many resources available to enable students to succeed, which perpetuates the fact that students from low socio-economic backgrounds are not as successful as their more affluent peers. In addition, Fry and Cilluffo (2019) noted that 33% of students in

poverty borrowed money to attend school, whereas only 8% of their more affluent counterparts were likely to borrow. Such an extreme discrepancy in borrowing patterns perpetuates the cycle of poverty by keeping students in poverty in debt even after earning a college degree (Fry & Cilluffo, 2019).

### **Reducing Barriers to Learning**

Although the term “achievement gap” was developed almost twenty years ago when researchers first discovered the disparity in the test scores and coined the phrase “Black-White Test Score Gap” (Jencks & Phillips, 1998), or the difference in the test scores between black and white students, the term today has a much broader meaning. Murphy (2009) says that it refers to the gaps in achievement and attainment between different races and ethnicities and those of other classes or socio-economic backgrounds. According to the Condition of Education Report (2020), data from the fall of 2017 reported a higher percentage of high-poverty students enrolled in public school at 25% than 21% in low-poverty, with both percentages varying by race and ethnicity. In addition, 45% of Black and Hispanic students were more likely to attend high-poverty school, followed by 41% who were of American Indian/Alaska Native, 24% of Pacific Islander, 18% of students of two or more races, 15% of Asian students and 8% of the students were White. By contrast, low-poverty schools were more likely to be attended by 39% of students who were Asian, 31% who were White, 23% of students who were of two or more races than for 12% who were Pacific Islander, 8% who were American Indian/Alaska Native students, 8% Hispanic, and 7% who were Black (see Appendix B, Figure 2). The National Center for Educational Statistics (NCES, 2021) defines as high poverty school as:

one in which 76-100 percent of the student population qualifies for free/reduced lunches;  
mid-high poverty schools are schools where 51-75 percent of students are eligible for

free/reduced lunches, mid-low poverty schools are schools where 20-60 percent of students are eligible for free/reduced lunches, and low-poverty schools where less than 25 percent of the students receive free/reduced lunches. (p. 17)

As reported by the NCES (2021), in 2019, the National Assessment of Educational Progress (NAEP), which assesses student performances in reading and math in grades 4, 8, & 12 in both public and private schools, released the following information:

In 2019, 35 percent of 4<sup>th</sup>-grade students performed at or above the NAEP Proficient level. Scores disaggregated by the poverty level of the school students attended reflected that the average 4<sup>th</sup>-grade reading score in high poverty schools (206) was lower than the scores for 4<sup>th</sup>-grade students in mid-high poverty schools (217), mid-low poverty schools (227), and low-poverty schools (240). Comparatively, 41 percent of 4<sup>th</sup>-grade students performed at or above the NAEP Proficient level in 2019. In mathematics, scores disaggregated by the poverty level of the school students attended reflected that the average 4<sup>th</sup>-grade math score in high poverty schools (231) was lower than the scores for 4<sup>th</sup>-grade students in mid-high poverty schools (238), mid-low poverty schools (246), and low-poverty schools (258). (p. 17, see Appendix B, Figure 2)

With the passage of NCLB, the academic achievement of young learners was forced to the forefront of educational priorities (Bodrova et al., 2004). There was a change in the nation's focus on public education. School districts were required to make changes, reform their instructional practices, and shift their focus to early childhood education, including preschool and kindergarten (Bodrova et al., 2004). The Title I funds that were earmarked for high poverty level schools helped establish such programs as Reading First (RF), Early Reading First (ERF), and Even Start (ES) that were geared toward providing additional services to students in high-



poverty areas (USDE, 2002). Although ESSR replaced NCLB in 2015, programs such as these have been modified but continue to be implemented because the need for programs to offset the barriers to learning brought on by poverty is still at the forefront of student achievement (USDE, 2002). Competitive grants such as these encourage states to plan and implement changes to their instructional programs to remove the poverty barrier to student achievement. Unlike Title I, these programs were not automatically granted, so school districts must apply for the grants and adhere to strict guidelines regarding the allocation of these funds. This means that although these funds are available to help enhance early learning and literacy, not all high-poverty schools receive them because they failed to meet the requirement to receive the funds (USDE, 2002).

In a conversation with Elaine Weiss, the Broader Bolder Approach organization's national coordinator, Rosales (2016) noted that ESSA has “clawed back some of the most complex federal accountability requirements and emphasized the need for social, emotional, as well as traditional academic measures of student success (para. 5). Rosales (2016) further noted that “there has been money set aside for kindergarten investments and wraparound supports that help provides disadvantaged students equal opportunities to learn” (para. 5). There is a definite focus on addressing poverty-related barriers to teaching and learning while at the same time ensuring that all children have the opportunities to learn and obtain the foundational skills to build healthy and productive lives.

With the onset of the Covid-19 pandemic over the past few years, schools across the nation are in the process of receiving monetary relief of an unprecedented amount. This is especially true of the most disadvantaged schools in the nation. Barnum and Belsha (2021) reported that in the area of Detroit, Michigan, one of the poorest cities in the country, school districts receive more than \$23,000.00 per student. This monetary amount varies from state to

state, and some low-income schools will not receive that much, but overall, high-poverty districts will get much more in relief money than wealthier school districts. Much of this money will be directed for improvements to facilities and providing after-school and summer remediation programs to address other student needs they may not otherwise have the funds to address.

### **Early Reading Literacy**

There is a wide variance in the academic performance between students of different social classes across a long list of criterion, which include: grades, standardized test scores, grades, college entrance exams, and college degrees (Meyers, 2009). It is generally agreed upon that elementary school students with limited knowledge of vocabulary are at risk for significant deficiencies in reading comprehension (Biemiller, 2003; Graves, 2006; Nagy, 2005). Children's comprehension of oral and written language is a definitive concept that can be directly linked to parent and teacher support (Dickinson, 2011; NICHD Early Child Care Research Network, 2002). Students need extensive support to address gaps in their vocabulary knowledge if they are to be proficient in reading comprehension and cannot make adequate gains in attaining the necessary skills to succeed in reading without it. The type of talk as well as the amount of talk to which children are exposed significantly affect literacy development. "There are marked individual differences in the rate of word learning among children starting in early childhood, in large measure attributable to the nature and extent of their exposure to language" (Hart & Risley, 1995; Huttenlocher et al., 1991; Weizman & Snow, 2001; as cited in Carlisle et al., 2013, p. 1362). Additional findings indicated that a mother greatly contributed to the vocabulary development and reading comprehension of children in the early childhood years through the use of more sophisticated word choices when talking with their children (Weizman & Snow, 2001, as cited in Carlisle et al., 2013).

### **Pedagogical Practice And Poverty**

Smith et al. (2008) report that research has found that factors such as weak early literacy skills and low socio-economic background may put students at risk for reading disabilities (Blair & Scott, 2002). Therefore, it is critical for students from these backgrounds to receive quality early reading instruction by classroom teachers in early elementary school to give them the skills they need to learn to read (Dickinson & Tabors, 2001; Dickson & Bursuck, 1999; Snow et al., 1998; Van den Broek & Espin, 2012). This is especially true for impoverished children (Vernon-Feagans et al., 2010). Research shows a definite impact on teacher instruction and student achievement. In an extensive study of elementary math teachers, Sanders and Rivers (1996) revealed that children who had three "effective" teachers in a row scored at the 83<sup>rd</sup> percentile in math at the end of 5<sup>th</sup> grade, whereas children assigned to three "ineffective" teachers in a row scored at the 29<sup>th</sup> percentile. Amrein-Beardsley (2008) found that National Board Certified teachers produced students with more significant growth of at least one month than students non-board certified.

In early education, efforts have been made to raise the requirements for teacher qualifications because it has been recognized that teacher quality enhances the outcomes for young children (Whitebook, 2003). Teacher quality is the primary indicator of instructional practices that enhance student development and academic achievement. The National Research Council Report on pedagogy (as cited in Bowman et al., 2000), found that teacher quality was the most consistent indicator of early learning programs with high-quality instructional practices. The emerging research base suggests that professional development initiatives and teacher preparation programs are vital to preparing teachers to teach effectively in early childhood settings (Neuman & Cunningham, 2009). In order to improve children's literacy development,

teachers must have mastery of content knowledge and age-appropriate instructional methods to convey content to students effectively. A specific example of this is the training program introduced by Wasik et al. (2006, as cited in Neuman & Cunningham, 2009), which:

focused on helping teachers to ask age-appropriate questions, build vocabulary, and make connections to children's lives using books, concrete objects that represented target words in books, and lesson plans. Following this training, 70 percent of the intervention teachers significantly changed the way they talked to and listened to children during book reading, with subsequent improvement in children's vocabulary. (p. 537)

Regardless of how important it is for teachers to have professional development steeped in practices and methods directly related to early childhood development, content knowledge may not be enough to promote literacy in elementary students. Knowledge of content alone may not sufficient to improve the practice of concepts and skills associated with early literacy (Justice et al., 2008). As noted in research by Ball and Cohen (1999), there has to be a connection between content knowledge and the context within which it is applied in the classroom setting.

Professional development by itself is not enough to encourage the implementation of these concepts in early elementary classrooms. There must be a direct implementation of the concepts and practices learned that are applied in the classroom setting, not merely acquired knowledge, to have sustained impact.

When they examined teacher instruction in vocabulary at the upper elementary, Scott et al. (2003) and Watts (1995) noted that teachers normally pay more attention to words within the text as students were reading, whereas instruction was more geared toward definitions and words in context. Stahl and Fairbanks (1986) and Graves (2006) found that these approaches may be effective, but they may not actively engage students in word meanings and uses. Although these

approaches seem to be effective, Stahl and Fairbanks (1986) and Graves (2006) noted that it does not necessarily engage students in synthesis of word meanings and uses. Such instruction usually involves looking up words in a dictionary and rarely utilizes more in-depth instruction that encourages higher-level word analysis and application of knowledge. This type of instruction contributes to and supports improvement in reading comprehension.

There is notable concern among researchers about vocabulary development in the elementary years because the amount of time teachers actually spend on vocabulary instruction may be insufficient, especially for those students who are considered to be at-risk and come from a low socio-economic background because they are deemed disadvantaged in vocabulary development (Scott et al., 2003). There is a distinct possibility that teachers who are more knowledgeable about reading instruction and vocabulary development are more likely to utilize instructional practices that improve students' reading skills and vocabulary attainment. As Snow et al. (2005, as cited in Carlisle et al., 2013) argue: "a teachers' knowledge about language and literacy is a critical factor in the quality of their literacy instruction, but this knowledge needs to be linked to their understanding of students' development of reading skills and associated problems" (p. 1366). There must be more extensive vocabulary instruction embedded in reading instruction if the goal is to improve reading comprehension. Per Graves (2006, as cited in Carlisle, 2013), it is not enough to simply introduce words before they are asked to read passages or to ask students to read for meaning independently because these instructional strategies alone will not enhance vocabulary development that will contribute to improved comprehension of texts. Many variables, such as teachers' perceptions of students living in poverty, can impact student development.

### **Teacher Perceptions on Poverty**

There is an expectation in educational districts across the nation that all students will come to school ready to learn, regardless of their socio-economic background or other factors that may present barriers to learning. However, as noted previously, children from high-poverty backgrounds are at a distinct disadvantage, especially regarding vocabulary acquisition and reading readiness skills. Because of this, it is imperative that teachers be aware of the needs of children in poverty and the specific barriers to learning this poses to schools (American Psychological Association (APA), 2016). The percentage of teachers that expressed concern about poverty being an issue in their school grew from 19.5% in 1994 to 32.4% in 2012, a 12.9% increase (Snyder & Dillow, 2013). Ullucci and Howard (2015) stress the importance of teachers guarding against the myths surrounding poverty when preparing to work with students in high-poverty areas. It is crucial for educators to have a strong understanding of the way in which students and their families are impacted by poverty so that they are better equipped to deal with it. Ullucci and Howard (2015) further note the importance of teachers striving to educate all children and understanding the hardships of educating children in poverty, which requires a new perspective and a determination to break the poverty cycle. Teacher preparation programs should include a thorough overview of identifying, discussing, and examining the root cause of poverty (Ullucci & Howard, 2015). By having a thorough understanding of poverty, there is hope that their perception will be shifted from people being in poverty because of their own choices to a more "multi-faceted and complex understanding of how and why poverty happens and continues to perpetuate itself" (Ullucci & Howard, 2015, p. 181).

There is research that shows teachers often have a very negative perception of students living in poverty and the abilities of those students (Johnson, 2015). Often referred to as the "culture of poverty," Gorski (2008) feels that there is a distinct mindset by teachers that promotes

the belief that people in poverty share a set of beliefs that defines them as a group and a "culture." At the heart of this belief system is teacher professional development based on Ruby Payne's work and her book *A Framework for Understanding Poverty* (2003,2005). Gorski (2008) feels there is a definite generalization of problems such as classroom behavior issues, developmental delays, teen pregnancy, and single-parent homes that are over-attributed to low-income students. Critics of Payne's work, such as Bomer et al. (2008), assert that because teachers "make decisions and plans on the basis of their beliefs or conceptualizations of their students, students' daily lives are strongly affected by the influence of their teachers' thinking (p. 2524). Such biased beliefs may be a result of misinformation gained from Payne's (2005) work. People in poverty are misrepresented and lumped together in a culture instead of being viewed as an individual, often resulting in a deficit form of thinking that may cause teachers to have lower expectations of students in poverty (Bomer et al., 2008). As a "consequence of low teacher expectations, poor students are more likely to be in lower tracks or lower ability groups" (Ansalone, 2001, 2003; Connor & Boskin, 2001; Gamoran & Berends, 1987; and Oakes, 1985, as cited in Bomer et al., 2008, p. 2524). This often leads to instructional practices that are less innovative and tend to be "dominated by rote drill and practice" (Anyon, 1980, 1987; Dudley-Marling & Paugh, 2005; Moll & Ruiz, 2002; and Valenzuela, 1999, as cited in Bomer et al., 2008, p. 2524 In an assessment of instructional methods for 314 kindergarten and first-grade classrooms from 155 schools across three states with a high number of low-income students, Stipek (2004) found:

low-income schools tended to have more didactic instruction, allowing for little student-centered learning. Teaching approaches were predicted by three factors: teacher goals, the ethnic make-up of the class, and the teacher's perception of students facing family

financial challenges. The findings demonstrated that teacher perceptions about student poverty can strongly influence student learning and can be limited when teachers attribute negative characteristics due to their economic status. (Abstract, para. 1)

Howard et al. (2009) note that educators may often have lower expectations of students living in poverty resulting in students not having a proper understanding of the connection between their own efforts and success or failure. As mentioned previously, such perception is known as the Deficit Theory (Valencia, 1997) or Deficit Perception, as noted by Howard et al. (2009). A teacher's perception that a student lacks knowledge because of their socio-economic status and experiences and will inevitably fail. As a result, they may fall short of meeting such standards and not truly be reflective of their true cognitive abilities, resulting in expectations for these students being lowered (Howard et al., 2009). Such perceptions can permeate the school climate and make it one that is not conducive to student learning. According to Garcia and Weiss (2019), barriers to teaching and learning are greatly attributed to school climate and are critical indicators of adverse conditions that impede student learning. The reality is that these students may have the skills and abilities to succeed but are set up for failure due to a system that has biases against poverty that they are unaware of (Howard et al., 2009).

Such low expectations can be the catalyst that sets students on the path to continued failure in school and paint a picture that may not be accurate. Educators can help students by preparing them for the expectations of the school environment and preparing them to work in a large group and complete seat work independently (Howard et al., 2009). Neuman (2009) points out the inequality in educational resources inherent in high-poverty areas as well as the cleanliness of the community, the number of shops and restaurants available for citizens to patronize, and even the number of readily available newspapers for people to peruse. Such



differences subtly impact students' exposure to literacy, school readiness, and other areas of their lives (Neuman, 2009).

Cuthrell et al. (2010) also discussed the importance of teacher bias and teacher expectations and how both are indicative of student success. Upon examination of highly successful schools that also had high levels of economically disadvantaged students, they identified the following strategies:

1. They focus on hiring highly qualified teachers.
2. Teachers see the potential in all students and believe that all students can and should take responsibility for learning.
3. They use on-going assessments rather than emphasize large amounts of end-of-the-year testing.
4. Teachers meet weekly and collaboratively plan daily and weekly assessments to keep records of and monitor student growth.

Such strategies are more likely to address the needs of all students and prevent specific students from being targeted even gifted ones. There are high expectations for all students; therefore, all students have the same chance for success regardless of their socio-economic background. While the Deficit Theory surmises that it is a lack of effort that prevents students from achieving, Gorski (2013) explains that rather than lack of effort, it is a lack of opportunity and access to educational opportunity, educational services, and activities that work against struggling families and prevent the academic success of these students. In order to combat such dismal circumstances, teachers must be empowered and possess leadership characteristics that will enable them to provide educational opportunities that help students in poverty to overcome such barriers to learning.

### **The Impact of Leadership on Poverty**

In many school districts across our nation, the diversity of students, either socio-economically, culturally or linguistically is seen as a problem because there has been an increase in these populations (Howard, 2007). This challenges educators who are forced to grow due to this ever-changing diversity. Howard (2007) further asserted that educators must re-examine their educational practices, beliefs, and theories and engage in a driven, continuous, and systemic process of professional development to function effectively in highly diverse environments. For this reason, principals and teachers must emerge as transformational and servant leaders if they are to embody and implement the changes necessary to combat the effects of poverty in their classrooms.

Miller and Spaulding (1952) noted that the United States could become a leader in academic improvement if appropriate leadership was utilized. Adams and Dickey (1953) further theorized that leadership was an inherent part of a supervisor's responsibility if instructional strategies were to make an impact on classroom instruction. Sixty years ago, it was believed that education, and more importantly, educational leaders, were integral to students' academic success. Miller and Spaulding (1952) believed that success hinged on the leadership in the school. According to a report sponsored by the Wallace Foundation, Leithwood et al. (2011), noted

The combined influence of educators, parents and others on school decisions has a greater impact on learning than the influence of any one leader, the report says. But, paradoxically, principals do not lose clout when they share control. Collective leadership occurs, in part, because effective principals encourage others to join in. (p. 1)

Linking student success with principal leadership is elusive and difficult to pinpoint and prove. According to Coleman et al. (1966), the academic success of students is only partly attributed to school factors. Other studies have also echoed the findings of Coleman et al. (1966). Hallinger and Heck (1996) reinforced the sentiment, stating that there is little evidence to prove that principals influence student achievement. In all actuality, the contribution principals indirectly make to student learning is actually minute (Hallinger, 2005). Fullan (2014) agreed with Hallinger's assessment about a direct relationship between principal leadership and student achievement and stated that the time principals spend on instruction is not well spent because it does not yield schoolwide results. Marzano et al. (2005) provided a varying viewpoint with their research concerning the impact of principal leadership. DuFour and Marzano (2011) found that there is a distinct correlation between the academic success of students and principal leadership. In all actuality, one can infer that students achieve at a higher level if the principal has effective leadership skills. Fullan (2014) agreed with Marzano that the effect of principal leadership on student achievement is indirect and involves multiple players. First, the body of research established that long-term goal directed collaboration among teachers produce a higher level of learning among students. If principals are involved and direct such collaboration, they ultimately influence the teaching and instructional process, thereby maximizing their impact on the academic achievement of students (Fullan, 2014).

There has been a long-held belief that school leadership was solely “the role of the principal and that they were the primary source of educational expertise and the leadership function of the school was placed squarely on their shoulders” (Lai & Cheung, 2015, p. 673). However, the emphasis is now one of shared leadership rather than all of the leadership responsibilities falling on the shoulders of one individual (Fletcher & Kaufer, 2003; Jackson,

2000; Katzenmeyer & Moller, 2009; Lambert, 2002; Marks & Printy, 2003). According to York and Barr (2004), teacher leadership is the ability to influence colleagues, principals, and others to improve teaching and learning practices to increase student learning and achievement.

Teacher leadership is not a new conceptualization among educators or other stakeholders in the educational community. Teachers have consistently been expected to take on leadership roles in education improvement since the 1980s (Lieberman & Friedrich, 2010; York-Barr & Duke, 2004, as cited in Lai & Chung, 2015). Although teachers have always had autonomy in the classroom in making instructional decisions and planning instructional activities, the concept of teacher leadership beyond the classroom setting has gained prominence (Lai & Cheung, 2015). They further postulate that "teacher expertise has been increasingly recognized as an important part of schools' collective power that should be more fully capitalized on to bring about educational improvement" (Lai & Cheung, 2015, p. 674). In fact, according to the definition by York-Barr and Duke (2004, as cited in Lai and Chung, 2015, p. 674) noted above, there are several essential facets of the concept of teacher leadership:

1. Teacher leadership is more transformational in nature than transactive (Lai & Cheung, 2015). "Transactional Leadership focuses on maintaining the school's systems and structures to maintain effectiveness, whereas Transformational Leadership focuses on changing the culture of the school and developing its capacity to innovate in order to bring about school improvement" (Day et al., 2000, as cited in Lai & Cheung, 2015, p. 275).
2. Teacher leadership can be individually or collectively based, with their leadership being either formal or informal (Lai and Chung, 2015). Formal leadership is role-based, wherein teachers gain legitimacy through assigned roles or positions in the

school, such as department chairs, team leaders, or teacher mentors, whereas informal leadership is based on the influence teachers gain with their colleagues, parents, students, and community through their expertise and instructional practices (Wegner, 1998, as cited in Lai & Cheung, 2015).

3. As noted by Wenger (1998, as cited in Lai & Cheung, 2015), teacher leadership functions in communities of practice. “When teachers lead they engage colleagues and other members of school communities to examine individual and collective teaching practices and the school’s programs and policies, and in making decisions with the aim of improved educational practices and student learning” (O’Hair & Reitzug, as cited in Lai & Cheung, 2015, p. 675).
4. Teacher leadership “supports school development at different levels by promoting student learning through improved teaching and learning practices” (Lai & Cheung, 2015, p. 675) and is linked closely to teacher development, as noted by Poekert (2012, as cited in Lai & Cheung, 2015).

As noted above, regarding educational purposes, teachers must embrace transformative leadership rather than transactive leadership because of the nature and characteristics of these types of leaders. The distinction between these two types of leadership styles, as outlined by Burns (1978, as cited in Lai & Cheung, 2015, p. 675), theorized that "transactional leaders get things done, whereas transformative leaders mobilize the energies of others in the organization around a common cause or belief beyond self-interest." Even though there is a notable difference between these two types of instructional leadership, Burns (1978, as cited in Lei & Cheung, 2015) does not discredit the value of transactive leadership in its proper setting because it is often needed to motivate individuals and ensure that there is organization and order in the

processes necessary to carry out goals. Instead, he highlights transformative leadership as the leadership style that promotes a vision that encourages individuals to look beyond self-interest toward higher, common ideals (Burns, 1978). In schools with high rates of poverty, this type of leadership style that best serves the needs of at-risk students. It is vital that teacher leadership in our educational systems not be understated (Crippen & Willows, 2019). Because they are uniquely positioned to make change happen and are often associated with school improvement, professional development is often provided to expand teacher leadership (Muijs & Harris, 2006; York-Barr & Duke, 2004).

### **Transformative Leadership**

In response to the increase in diverse student populations, educational scholars have called for changes in teacher education programs to prepare for this in America's schools (Banks, 2006; Ladson-Billings, 2000; Villegas & Lucas, 2002, as cited in Vescio et al., 2009). Shields (2010, as cited in Robinson, 2017) puts forth the idea that "transformative leadership inextricably links education and educational leaders with the wider social context and further suggests that transformative leadership challenges inequities in schools and lobbies for inclusion, democracy, and justice" (p. 4). In transformative leadership, "educational leaders become champions for a re-created model of administration that urge all stakeholders to develop "critical theoretical and moral frames" as they examine the traditional ways of doing schools" (Marshall & Olivia, 2009, as cited in Robinson, 2017, p. 4). Robinson (2017) postulates that transformative leadership finds ways to involve all parents in schools, including high poverty and minority parents, and use policies as the impetus for school-home collaboration. She reiterates that in doing so, teachers as transformative leaders can establish avenues to establish trusting relationships with stakeholders,

encouraging them to collaborate with educators to impact school and societal conditions (Robinson, 2017).

Often educational leaders enter schools “where the playing field is not level, and some groups of students, such as those living in poverty, are disadvantaged” (Shields, 2014, p. 128).

Shields (2014) further noted:

A transformative leader must acknowledge the need for profound and equitable change. Once this has been established, there must be an attempt to deconstruct knowledge frameworks that perpetuate an inequitable status quo and to reconstruct frameworks that promote inclusion and equity, eliminate deficit thinking and the acceptance of the lived experiences of all children, and focus on democracy, liberation, equity, and justice (Shields, 2014). Through this type of leadership, schools will be organized and operated in ways that set children free from the constraints of poverty and permit them to compete on a more level playing field. (p. 128)

Shields (2014) encourages educators to learn to recognize the difference between a child’s innate ability and curiosity that may have been inhibited by an environment of poverty. Research shows that the “single most important factor in the academic achievement of disadvantaged children is the active rejection of the deficit theory or thinking by school leaders and staff” (Wagstaff & Fusarelli, 1995, as cited in Shields, 2014, p. 135).

Shields (2014) noted that:

it is easy to criticize and critique what is wrong but much more difficult to change the school culture to one that promotes the success of all students.” Therefore, as transformative leaders, teachers may be required to take on the roles of advocates and activists in speaking for those who cannot speak for themselves. (p. 129)

Transformative leadership requires educators to be courageous and to actively defend students who are deemed to be disadvantaged (Shields, 2014). Teachers are encouraged to exercise transformative leadership by Shields (2009), to balance both critique and promise, to effect deep and equitable changes, to deconstruct and reconstruct knowledge frameworks that generate inequity, and to emphasize individual achievement” (p. 4). It should also be noted that “if we fail to make these changes, impoverished children will continue to fail in greater numbers, and to attain lesser educational outcomes” (Shields, 2009, p. 142). Changes such as these are crucial to a school’s academic success they are to provide quality instruction to all students regardless of barriers to learning such as poverty, gender, and ethnicity. Thus, it is only through the active leadership by both administrators and classroom teachers that will fully bring about changes that will not only transform the the lives of those in poverty in the educational setting, but will benefit their more affluent peers as well.

### **Summary**

Over the past few decades, there has been a struggle to find a solution to close the achievement gap for all students. This is especially true for children who live in conditions of poverty. Research suggests that students who enter school with poor oral language and vocabulary development continue to struggle with literacy beyond the third grade (Hill & Launder, 2010; Law et al., 2011; Lonigan et al., 2011). This literature review has revealed a need to challenge teachers' perceptions regarding children who live in poverty and establish teachers as transformative leaders to enact change in the school setting.

The United States attempted to focus on educational reform, beginning with the passage of the ESEA in 1965 and again in 2001 when it passed NCLB. Obama furthered this endeavor when he signed ESSA in 2015, a reauthorization of ESEA. Each of these laws is built on key



areas of progress over the years and is symbolic of educators, communities, and parents' attempts to address the challenges surrounding students who live in poverty, have disabilities and have learning difficulties in the classroom. They are evidence of our nation's long-standing commitment to equal opportunity for all students. The classroom curriculum and instructional practices have been restructured to accommodate and enhance academic achievement in the primary grades.

However, according to Snow (2015), even with this focus on early student achievement and despite research findings, “only 15 states plus the District of Columbia require children to attend kindergarten leaving 35 who do not. Out of that number, only 11 plus the District of Columbia require full-day kindergarten” (p. 1). It has been estimated that only 30% of all American children attend Kindergarten nationwide (USDE, 2015). The National Center for Education Statistics (NCES, as cited in USA Facts, 2020) reported that “around 54 percent of children enrolled in early childhood programs in 2018 were three and four-year-olds” (para. 1). Unfortunately, out of “8.1 million children in this age group, 3.7 million were not enrolled in pre-primary programs” (NCES, as cited in USA Facts, 2020, para. 2). Barnett et al. (2009) note that the national average for preschool attendance is 25%. Suppose we address vocabulary and literacy development in our elementary schools. In that case, we must examine our current early literacy programs to ensure students are provided a strong foundation in oral language and vocabulary development. In addition, we must address how teacher perceptions and leadership impact classroom instruction and student achievement for students of low socio-economic status.

In this chapter, research and literature were summarized concerning the perceptions of teachers who teach early reading literacy to socio-economically disadvantaged students and their misconceptions of poverty. In addition, information was provided regarding the consequences of

living in poverty, the relationship between poverty, learning, and teaching, and the critical need for early vocabulary development and literacy instruction for students living in poverty. The next chapter on Methodology includes an in-depth discussion on the research methods used to address the research topic in this dissertation. The focus of Chapter Three includes a description of the population sampling and instrument selection for use in the research. Furthermore, it discusses the appropriateness of the design and include data collection, data analysis, and methods of interpretation.

## Chapter Three

### Procedures and Methodology

#### Introduction

According to Poverty Facts and Figures, (2011), “in 2009 there were 15.5 million children, or 1 in every 5 children in America, lived in poverty, an increase of nearly 4 million since 2000” (p. 24). Chapter Two revealed a gap in the literature in the area of academic response to children living in poverty and a deficit in recent literature discussing this phenomenon. As noted by the U.S. Department of Education, a high number of public schools were classified as high-poverty in 2011 according to Marquis-Hobbs (2014). Hernandez (2011) reported that there is a discrepancy in the achievement of students living in poverty to those not living in poverty. Absenteeism is one factor that may impede the success of these students because the correlation between a high rate of absenteeism and low level of student achievement is high (Hernandez, 2011). Students in the third grade who are not reading on grade level are much less likely to graduate, whereas students who read on grade level are much more likely to graduate than their non-affluent peers (Poverty Facts and Figures, 2011). For this reason, Hernandez (2011) asserted that Poverty does impact and affect educational outcomes.

This chapter outlines the methods and procedures utilized in this study to illustrate how these findings are valuable and meaningful for elementary schools moving forward. Additionally, the purpose and problem, rationale, research questions and hypotheses, research design, population and sample, instrumentation, collection and analysis of data, and ethical issues are discussed in this chapter. For this quantitative comparative study, the correlation between students living in poverty and the academic achievement levels attained on the annual Kentucky K-Prep assessment was investigated.

### **Research Paradigm**

There are still gaps regarding contemporary rural poverty, although multiple data does exist on children living below the poverty line (Payne, 2005). The purpose of this quantitative study was to examine whether there is a correlation between generational/situational poverty (Payne, 2005) and the academic achievement of students at the elementary level as indicated by performance standardized testing. The K-Prep testing data considered are the academic areas of Reading Achievement and the sub-score of vocabulary development. All social science and educational research should follow methodological principles, such as quantitative approaches, that allow researchers to ask and empirically investigate important questions to provide practitioners with relevant results and repeatable methodologies (Feuer et al., 2002). Allardt (1990) further postulated that using quantitative approaches to examine whether differences exist in selected phenomena in educational research began with a positivist approach of verifying or rejecting theoretical-based hypotheses of comparison sample populations. Therefore, this was justified because there is a definitive gap between students living in poverty and student achievement.

### **Research Design**

This study followed a quantitative causal-comparative format to determine whether differences existed between the independent variable of poverty and the dependent variables of student achievement in reading and vocabulary scores on the K-Prep assessment. Causal-Comparative designs are best suited to examine the differences between existing groups (Schenker & Rumrill, 2004). In this case, the respective groups are elementary students in the third, fourth, and fifth grades in elementary schools in rural southeastern Kentucky. This research design was chosen in an attempt to find a relationship between independent and dependent

variables after the event had already occurred, in other words, after the students had taken the K-Prep assessments in previous years.

The research goal was to determine whether the independent variable affected the outcome, or the dependent variable, by analyzing two or more groups of elementary students. Although a qualitative research format could have been used, a quantitative approach was used due to the strength of numerical data adds to the ease of interpretation of the data collected. The Institutional Review Board (IRB) at the University of the Cumberlands approved the research project (see Appendix D) once permission for extracting data was secured from the school district's administrator (see Appendix C). Archival K-Prep data and MAP data were collected for students enrolled in grades three, four, and five from 2015-2016, 2016-2017, 2017-2018, 2018-2019, and 2019-2020 from four rural elementary schools in Southeastern Kentucky.

### **Sampling Procedures and Data Collection Sources**

This convenience sample was drawn from that part of the population that was close at hand. As postulated by Creswell (2002),

the educational researcher today needs a large toolbox of approaches to study the complex educational issues in our society. No longer can we, as educators, use only experiments or surveys to address our research problems. Educators in this new century, whether conducting research or reading research to self-inform, need to know about quantitative, qualitative, and combined approaches to inquiry and to have an in-depth understanding of the multiple research designs and procedures used in our studies today.

(p. xxxiii)

Study participants were recruited from third, fourth, and fifth grades who reside in the participating districts. Valid informed consent included the following: (a) full disclosure of the

procedures and potential risks involved in the study study procedures as well as potential risks to prospective research participants; (b) an outline of the student population from which archival data were retrieved; and (c) written permission from the superintendents of the participating districts. The sample population included a total of 2,153 ( $n=2153$ ) third-grade students, 2,252 ( $n=2252$ ) fourth-grade students, and 2,247 ( $n=2247$ ) fifth-grade students that were analyzed during this study. A G\*Power analysis was utilized to set the minimum sample population with a resulting recommended sample size of 55 subjects (Faul, 2009). Therefore, the final sample sizes for the analyses exceeded the minimum sample size of 55, as determined by the G\*Power analysis (Faul, 2009), a priori to determine rigorous sample size (power = .80, effect = .15,  $\alpha = .05$ ) (see Appendix F).

The types of data used for this study were archival data, which included annual assessment scores that were non-random in nature (Fraenkel et al., 2015). The data collected were from the annual summative K-Prep assessment over the previous five years. This data was collected from students who were in grades three, four, and five. Utilizing a basic causal-comparative design (Fraenkel et al., 2015), the data illustrates subject characteristics such as groups, dependent and independent variables. In this research study, the categorical independent variable of poverty was established via the federal government's definition of free and reduced lunch. The dependent variables of this comparative design were the analysis of archival K-Prep reading scores and archival MAP data for vocabulary since K-Prep data does not include a vocabulary sub-score in the area of reading.

This study's data collection sources/population included elementary students in the 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> grades. Data collected included gathering information from two sources: information regarding reading achievement as indicated on Kentucky's K-Prep assessment as indicated on the

School Report Card of participating schools for five school years, including 2015-2016 through 2019-2020 as well as MAP data for the same time-span to determine the vocabulary development of students using their mean RIT scores. Research Procedures will include the following:

1. As previously noted, the categorical independent variable of poverty was established via the federal government's definition of free and reduced lunch. The two dependent variables of this comparative design was the K-Prep reading scores analysis and this category's vocabulary sub-score.
2. The Independent Variable of the percentage of students qualifying for free and reduced lunch was determined by looking at the Learning Environment Tab on the Kentucky School Report Card.
3. DV 1 & 2 (Dependent Variables 1 & 2) included the archival data gathered from the district's school report cards. Therefore, the statistical test for RQ1 will be a *t*-test to determine if a correlation exists between the IV and DV 1 & DV 2.

The estimated sample size for the study varied depending upon the number of students in each grade level. Site authorization confirmation was obtained from the Superintendents of the school districts from which data was gathered. As required by the participating University, the Institutional Review Board (IRB) reviewed a copy of the proposed study before the study began. The University's Institutional Review Board formally approved the study with no recommendations for further approval. Copies of the authorization letter and the community college's IRB documentation are in Appendix C and Appendix D, respectively. There was no identifying information or manipulation of the independent variable of the study done during the completion of the research project.

### **Statistical Tests**

The statistical test chosen for this research project was the independent sample *t*-test with equal variance, which tests a null hypothesis about two means, which are equal, or that the difference between them is zero. The independent sample *t*-test is a statistical analysis of the means of two independent groups to determine if there is evidence that the associated means are significantly different (Spatz, 2022). It is an inferential determination of whether or not the means between two unrelated groups are statistically different. In order to run an independent *t*-test, an independent, categorical variable with two groups and one continuous dependent variable must be included. Often it is used to investigate the differences in individuals, which means an individual cannot belong to more than one group.

As previously noted, the independent variable of poverty was established via the federal government's definition of free and reduced lunch. The analysis included collected archival data sets for five academic years to compare the categorical independent variable of poverty to the dependent variables of student achievement in reading and vocabulary on the K-Prep assessment. An independent variable *t*-test was used for research questions 1 and 2 to determine if a correlation exists between IV and DV 1 and DV 2. The *t*-test uses three key data points in its calculation: the number of data points, the mean difference, and the standard deviation of each group. The calculation of these data points produces the outcome of the *t*-test, which is the *t*-value (Hayes, 2022).

### **Summary**

In essence, research involves conducting the investigation of a phenomenon in a precise and systematic way (Yang, 2021). Yang (2021) further noted that



this procedure may be presented sequentially from the first step of problem definition through the final stage of writing the final report. However, it is also essential to understand that the research process is essentially circular in that each preceding and succeeding step feeds on each other. (p. 5)

As such, research is the collection of a series of data surrounding a particular subject, and the careful analysis of this data to draw correlations or to rule them out. "American sociologist Earl Robert Babbie defined research as a systematic inquiry to describe, explain, predict, and control the observed phenomenon. It involves inductive and deductive methods" (QuestionPro, 2021, para. 1).

The methodology utilized in this research was quantitative, which was deemed an appropriate research technique used to analyze the correlation between student achievement and the socio-economic status of students. The primary data used for this data were archival data of K-Prep and MAP scores, which were somewhat easy to access because both the school districts and state keep these records on file. To ensure the validity of the results, no relevant data were excluded, therefore all data for this causal-comparative research is determined to be implicit in determining the correlation between the data. Data were sorted in a variety of ways. The statistical analysis of archival data used trends and variables as well as the consistencies and inconsistencies of the data (Fraenkel et al., 2015). The secondary data were sorted categorically, which included a comparison of achievement levels between poverty/non-poverty students. The singularity of this study stems from the number of students in the districts analyzed that live in poverty as well as the impact the Covid-19 pandemic had on test scores over the past three years.

As indicated by the KDE Direct Certification numbers, the number of students living in poverty far outweigh those not living in poverty and due to the pandemic, the last three years of test data were not viable measures of student achievement.

There are many reasons that children live in poverty. Many factors come into play in determining the overall economic success of a family:

Children under 18 years represent 23 percent of the population, but they comprise 32 percent of all people in poverty. Many more children live in families with incomes just above the poverty threshold. Among all children, 44 percent live in low-income families and approximately one in every five (21 percent) live in poor families. Being a child in a low-income or poor family does not happen by chance. Parental education and employment, race/ethnicity, and other factors are associated with children's experience of economic insecurity. (Jiang et al., 2015, p. 1)

Our youngest children are the most at-risk. Further noted is the fact that "47 percent of children under age 3, approximately 5.3 million, live in low-income families" (Jiang et al., 2015, p. 3). The majority of these children do not attend public school at an early age, which puts them academically behind their more affluent peers. In order to help address this issue, an overview of the methods and procedures utilized in this study were discussed to illustrate how these findings are valuable and meaningful for elementary schools moving forward. In addition, this chapter discussed the purpose and problem, research questions and hypotheses, research design, instrumentation, data collection, and analysis. Chapter Four reviews the analysis of the data trends regarding academic achievement on the K-Prep assessments and MAP assessments. It also reviews how these data pieces were used to identify relationships that correlation that may be evident between academic achievement and poverty.

## Chapter Four

### Research Findings

#### Introduction

This chapter presents the research findings from this quantitative study and provides a statistical analysis of the data collected. A causal-comparative quantitative research design was utilized to study the impact of poverty on the reading achievement and vocabulary development of students in third, fourth, and fifth grades in two rural southeastern Kentucky school districts. A series of independent *t*-tests were used to investigate how the achievement scores of students in non-poverty compared with students in poverty according to archived K-Prep data over five years. In addition, because K-Prep data does not include a vocabulary component as a reading sub-score, additional independent sample *t*-tests to analyze student vocabulary scores according to archived MAPS achievement data over five years were used. It should be noted in analyzing the data, when referring to School B.1 and School B.2, the third grade data were part of the archived data for B.1 for school years 2014-2015 thru school years 2016-2017. However, KDE combined the test scores for third grade as part of School B.2 as of the 2017-2018 school year for reporting purposes. The *t*-test analyses of all third grade data are incorporated for both of these schools since it analyzed archived test data from the 2014-2015 school year through the 2018-2019 school year.

The information gathered in this study may help educational leaders and policymakers devise a plan of action as they develop intervention strategies that narrow the achievement gaps in sub-group student populations and help allocate resources accordingly. In addition, parents may become more aware of emergent literacy and phonemic awareness, vocabulary development, and their role in a child's potential academic success. By becoming aware of how

critical language development is to a child's ability to read and understand the written and spoken word, steps may be taken to provide enrichment opportunities at an earlier age. Finally, through this study's findings, educators may become more aware of the unique challenges children who grow up in poverty face and be able to provide an additional targeted structure within the classroom setting.

### **Participants and Research Setting**

After acquiring permission from the University of the Cumberland's Internal Review Board (IRB) (see Appendix D) to conduct this study, analyses of archived K-Prep reading test data and archived MAPS vocabulary test data of students in third, fourth, and fifth grades in three schools across two rural school districts in southeastern Kentucky was completed. The data were shared with the written approval of the Superintendents of both school districts. The target population for this research study consisted of two elementary schools in School District 1, and one elementary school in School District 2. A total of 2,153 ( $n=2153$ ) third-grade students, 2,252 ( $n=2252$ ) fourth-grade students, and 2,247 ( $n=2247$ ) fifth-grade students were analyzed during this study. Table 1 details the district-level demographics for School District 1 and School District 2, which focuses on the number of schools within the district, the student population, economically disadvantaged, ethnicity, and the number of gifted and talented students.

Table 1 (see Appendix A) denotes district-level demographics, which focus on the number of economically/non-economically disadvantaged students, the ethnic breakdown of the student population, and the number of gifted and talented students in the district. As indicated, School District 1 has five schools within its district: one high school, one middle school, and three elementary schools, with an overall student population of 2,756. It is interesting to note that School District 2 has a student population of 3,002, which is 246 more students than School

District 1, but they have three more schools within their district. Although School District Two has one high school and one middle school, they have four elementary schools and two alternative schools serving middle and high school students. The primary basis of the research questions in this study examines the relationship poverty has on student achievement. School District 1 has 81.3% of its student population economically disadvantaged. By comparison, School District 2 has an economically disadvantaged 80.30% student population. The counties are within one percentage point of each in that respect. Regarding ethnicity, School District 1 has a student population, which consists of 97.40% White Non-Hispanic students, whereas School District 2 has 86.50%. School District 2 has demographics that indicate more Hispanic/Latino students and a few more African-American and mixed-race students.

**Table 1***District Level Demographics*

	School District 1:	School District 2:
Economically Disadvantaged	81.30%	80.30%
Non- Economically Disadvantaged	18.70%	19.70%
# of White	97.40%	86.50%
Hispanic or Latino	1.35%	9.40%
African American	0.80%	1.80%
Other	0.50%	2.30%
Gifted & Talented	12.0%	88.0%
Not identified as Gifted & Talented	11.40%	88.60%
Number of Schools in District	5	8
Total Student Population	2,756	3,002

Table 2 (see Appendix A) details school-level demographics, which focus on the student population, teacher/student ratio, males/females, economically disadvantaged, ethnicity, and the number of gifted and talented students. Regarding grade levels, School A comprises pre-school through 5<sup>th</sup> grades, whereas the other three schools are broken down into pre-k through 2<sup>nd</sup> grades and 3<sup>rd</sup> through 5<sup>th</sup> grades. School B.1 and School B.2, which are combined into one school for data reporting purposes for the Kentucky Department of Education, has the largest student population, with 806 students. The student/teacher ratio is basically the same, with a 15:1 ratio for all schools except for School A, which has a student/teacher ratio of 16:1. School B.1 and School B.2 has the most significant number of students with disabilities, at around 221 students, whereas School D has 108 and School A has 93 students in this category. Regarding ethnicity, School B.1 and School B.2 has 780 of its student population being White Non-Hispanic, whereas School D has the largest Hispanic/Latino student population, with 77 of its students falling into that category.

**Table 2***School Level Demographics*

	School A	School B.1	School B.2	School D
Grade Levels	Pre-K – 5 <sup>th</sup>	Pre-K – 2 <sup>nd</sup>	3 <sup>rd</sup> – 5 <sup>th</sup>	3 <sup>rd</sup> – 5 <sup>th</sup>
Teacher/Student Ratio	15:1	15:1	16:1	16:1
Males/Females	245/264	442/364	*Note	336/303
Economically Disadvantaged	432	672	*Note	523
Non- Economically Disadvantaged	77	134	*Note	116
# of White/Non-Hispanic	424	780	*Note	538
Hispanic or Latino	6	11	*Note	77

	School A	School B.1	School B.2	School D
African American	1	0	*Note	1
	School A	School B.1	School B.2	School D
Students w/ Disabilities	93	221	*Note	108
Gifted & Talented	27	55	*Note	17
Not identified as Gifted & Talented	482	617	*Note	622
Number of Schools in District	5	5	5	8
Total Student Population	509	806	*Note	639

*Note:* Demographics are the same for School B.1 & B.2 because they are considered one school for reporting purposes for KDE.

Chapter Four outlines the data and analyzes any trends that may exist regarding academic achievement on the K-Prep and MAP assessments. These data pieces were used to identify relationships that may or may not indicate that a correlation exists between academic achievement and poverty. The following paragraphs provide an analysis of research questions one and two.

### **Analyses of Research Questions**

After gathering archived achievement data for K-Prep reading scores and MAPS vocabulary scores, excel spreadsheets were utilized to organize the raw data for statistical analysis. Data cleaning required manually extracting relevant archived K-Prep data from Kentucky School Report Cards and the manual calculation (see Appendix B, Figure 3) of non-poverty numbers in some years for specific grade levels since K-Prep failed to report those percentages. The non-poverty column was shaded to note those manual calculations if a manual

calculation was required. After the data were collected and organized, raw data were analyzed using statistical analysis to answer the following research questions:

RQ1: Is there a statistically significant difference in grades three, four, and five reading achievement among students living in poverty and those not living in poverty as measured by Kentucky's K-PREP assessment.

$H_01$ : There is not a statistically significant difference in grades three, four, and five reading achievement among students living in poverty and those not living in poverty as measured by Kentucky's K-PREP assessment.

$H_a1$ : There is a statistically significant difference in grades three, four, and five reading achievement among students living in poverty and those not living in poverty as measured by Kentucky's K-PREP assessment.

RQ2: Is there a statistically significant difference in grades three, four, and five vocabulary achievement among students living in poverty and those not living in poverty as measured by Measures of Academic Progress assessment.

$H_02$ : There is not a statistically significant difference in grades three, four, and five vocabulary achievement among students living in poverty and those not living in poverty as measured by Measures of Academic Progress assessment.

$H_a2$ : There is a statistically significant difference in grades three, four, and five vocabulary achievement among students living in poverty and those not living in poverty as measured by Measures of Academic Progress assessment.



After data cleaning, raw data were used to compare and analyze statistical differences between the categorical independent variable of poverty and the two dependent variables of archived K-Prep and MAP's test scores. Poverty was established by archived K-Prep data for RQ 1 and archived Site Enrollment Data for RQ. Further information on how Site Enrollment Data correlates with district poverty explained in the RQ 2 data analysis section. To analyze Research Question Two, once again, an independent sample two-tailed *t*-test was utilized.

### ***Research Question One***

To analyze Research Question One, an independent sample two-tailed *t*-test with equal variances was used to determine if any statistical difference existed between students in poverty and non-poverty in reading. This type of statistical test is inferential in nature and is used to determine if there is a significant difference between the means of two groups, which may be related to certain features. Assumptions for independent sample two-tailed *t*-tests include:

1. Data values must be independent.
2. Data must be obtained via a random sample from the population.
3. Data occurs in a normal distribution in each group.
4. Data values are continuous.
5. There are equal variances for the two independent groups.

In other words, the variables we are trying to analyze can take on any reasonable value, such as weight, test scores, temperatures, or other numerical indicators. In addition, if they have a monotonic relationship, then the *direction* and *relationship* are consistent. For instance, when one variable goes up, the other goes up, or when one variable goes up, the other goes down, consistently moving in the down-right direction. When running a two-sample equal-variance *t*-

test, it is assumed there is a normal distribution and that the variances of the distributions are the same for both populations being analyzed.

Limitations for independent sample two-tailed *t*-tests include:

1. When data violates the assumptions, the *t*-test might not have reliability.
2. Hypothesis testing does not provide certainty, only an indication of the strength of the evidence.

In the area of reading, student mean proficiency scores were analyzed from archived spring K-Prep test data over a five-year period, which included data from the following years: 2014-2015, 2015-2016, 2016-2017, 2017-2018, and 2018-2019. The last two years were not analyzed due to the impact the Covid-19 pandemic had on school districts across the nation. Data were charted by grade levels, which compared poverty & non-poverty reading scores at the following levels: novice, apprentice, proficient, distinguished, and proficient/distinguished categories before *t*-tests were completed (see Appendix B, Figures 4-6).

Three sets of nine individual statistical independent two-sample *t*-tests assuming equal variances were completed for three individual schools across three grade levels. The tests specifically compared the independent variables of reading achievement for poverty vs. non-poverty students at two K-Prep achievement levels to the dependent variable of grade-level composite scores for these students at the novice and combined proficient/distinguished levels, as categorized by K-Prep Data. As previously noted, the third grade for School B.1 was integrated into School B.2 effective school year 2017-2018. The *t*-test analyses of all third grade data averages the raw data over a five-year time-period, and does not differentiate this division/inclusion. Therefore, when discussing data analyses for third grade, School B.1 and School B.2 was combined to determine statistical significance.

In the first set of analyses, an independent *t*-test was used to analyze the individual composite score on the third grade K-Prep test in Reading at the novice level. Utilizing the data from this independent *t*-test consisted of looking at the dependent variable of reading achievement at the novice level as compared to the independent variable of poverty/non-poverty students in the third grades at School A, School B.1, School B.2, and School D (see Appendix B, Figure 7).

School A ( $N = 406$ ) resulted in a mean ( $M$ ) composite score of 31.86%, a standard deviation ( $SD$ ) of 8.54, and a variance of 91.34 for students in poverty as compared to a mean ( $M$ ) composite score of 5.82%, a standard deviation ( $SD$ ) of 7.79 and a variance of 75.85 for non-poverty students. With a degree of freedom ( $DF$ ) of 8 and a *t*-Stat of 4.50, these measurements resulted in a *p*-value of  $<.001$ . School B.1 and School B.2 ( $N = 611$ ) resulted in a mean ( $M$ ) composite score of 22.62%, a standard deviation ( $SD$ ) of 4.31, and a variance of 23.24 for students in poverty as compared to a mean ( $M$ ) composite score of 6.28%, a standard deviation ( $SD$ ) of 4.67, and a variance of 27.36 for non-poverty students. With a degree of freedom ( $DF$ ) of 8, and a *t*-Stat of 5.13, these measurements resulted in a *p*-value of  $<.001$ . School D ( $N=1,136$ ) resulted in a mean ( $M$ ) composite score of 26.02%, a standard deviation ( $SD$ ) of 4.9, and a variance of 29.95 for students in poverty as compared to a mean ( $M$ ) composite score of 12.74, a standard deviation ( $SD$ ) of 5.1, and a variance of 33.23% for non-poverty students. With a degree of freedom ( $DF$ ) of 8, and a *t*-Stat of 3.73, these measurements resulted in a *p*-value of  $<.001$ .

The independent sample *t*-test indicated a significant difference in the reading achievement for students in poverty as opposed to those in non-poverty at the novice level for third-grade students at all schools. At School A School, overall composite scores between these

poverty students ( $M=31.86$ ) and non-poverty students ( $M=5.82$ ), ( $t[8] = 4.5, p <.001$ ). At School B.1 and School B.2, overall composite scores between poverty students ( $M=22.62$ ) and non-poverty students ( $M=6.28$ ), ( $t[8] = 5.13, p <.001$ ). At School D, overall composite scores between poverty students ( $M=26.02$ ) and non-poverty students ( $M=12.74$ ), ( $t[8] = 3.73, p <.001$ ). In all three analyses, poverty students had a significantly higher mean than non-poverty students. The  $p$ -value is  $<.001$  in the statistical analyses for School A, School B.1, School B.2, and School D, which indicates a statistical difference in the reading scores of students in poverty as opposed to students in non-poverty for students in third grade. Due to the results, strong evidence suggests the null hypothesis be rejected as data shows support for the alternative hypothesis.

In the second set of analyses, an independent  $t$ -test was used to analyze the individual composite score on the fourth grade K-Prep test in Reading at the novice level. Utilizing the data from this independent  $t$ -test consisted of looking at the dependent variable of reading achievement at the novice level as compared to the independent variable of poverty/non-poverty students in the fourth grades at School A, School B.2, and School D (see Appendix B, Figure 8).

School A ( $N = 439$ ) resulted in a mean ( $M$ ) composite score of 22.84%, a standard deviation ( $SD$ ) of 9.8, and a variance of 119.60 for students in poverty as compared to a mean ( $M$ ) composite score of 9.34%, a standard deviation ( $SD$ ) of 4.9 and a variance of 31.12 for non-poverty students. With a degree of freedom ( $DF$ ) of 8 and a  $t$ -Stat of 2.45, these measurements resulted in a  $p$ -value of 0.04. School B.2 ( $N = 624$ ) resulted in a mean ( $M$ ) composite score of 17.7%, a standard deviation ( $SD$ ) of 0.8, and a variance of 0.84 for students in poverty as compared to a mean ( $M$ ) composite score of 9.2%, a standard deviation ( $SD$ ) of 7.5, and a variance of 71.01 for non-poverty students. With a degree of freedom ( $DF$ ) of 8, and a  $t$ -Stat of 2.24, these measurements resulted in a  $p$ -value of 0.06. School D ( $N=1,189$ ) resulted in a mean

(*M*) composite score of 26.3%, a standard deviation (*SD*) of 4.9, and a variance of 30.1 for students in poverty as compared to a mean (*M*) composite score of 10.84, a standard deviation (*SD*) of 3.5, and a variance of 15.35% for non-poverty students. With a degree of freedom (*DF*) of 8, and a *t*-Stat of 5.39, these measurements resulted in a *p*-value of  $<.001$ .

The independent sample *t*-test indicated that there was a significant difference in the reading achievement for students in poverty as opposed to those in non-poverty at the novice level for fourth-grade students at all schools. At School A, overall composite scores between these poverty students ( $M=22.84$ ) and non-poverty students ( $M=9.34$ ), ( $t[8] = 2.45, p < 0.04$ ). At School B.2, overall composite scores between poverty students ( $M=17.7$ ) and non-poverty students ( $M=9.2$ ), ( $t[8] = 2.24, p=0.06$ ). School D, overall composite scores between poverty students ( $M=26.3$ ) and non-poverty students ( $M=10.04$ ), ( $t[8] = 5.39, p < .001$ ). In all three analyses, poverty students had a significantly higher mean than non-poverty students. The *p*-value is  $<0.05$  in the statistical analyses for School A and  $<.001$  for School D, which indicates a statistical difference in the reading scores of students in poverty as opposed to students in non-poverty. Due to the results, strong evidence suggests the null hypothesis be rejected as data shows support for the alternative hypothesis. However, the *p*-value is 0.06 for B.2, indicating no statistical difference in the reading scores of students in poverty as opposed to students in non-poverty. Therefore, evidence suggests that the null hypothesis fails to be rejected.

In the third set of analyses, an independent *t*-test was used to analyze the individual composite score on the fifth grade K-Prep test in reading at the novice level. Utilizing the data from this independent *t*-test consisted of looking at the dependent variable of reading achievement at the novice level as compared to the independent variable of poverty/non-poverty students in the fifth grades at School A, School B.2, and School D (see Appendix B, Figure 9).

School A ( $N = 446$ ) resulted in a mean ( $M$ ) composite score of 25.84%, a standard deviation ( $SD$ ) of 7.06, and a variance of 62.37 for students in poverty as compared to a mean ( $M$ ) composite score of 3.94%, a standard deviation ( $SD$ ) of 4.6 and a variance of 26.79 for non-poverty students. With a degree of freedom ( $DF$ ) of 8 and a  $t$ -Stat of 5.185, these measurements resulted in a  $p$ -value of  $<.001$ . School B.2 ( $N = 624$ ) resulted in a mean ( $M$ ) composite score of 16.36%, a standard deviation ( $SD$ ) of 5.13, and a variance of 32.91 for students in poverty as compared to a mean ( $M$ ) composite score of 8.9%, a standard deviation ( $SD$ ) of 4.9, and a variance of 30.27 for non-poverty students. With a degree of freedom ( $DF$ ) of 8, and a  $t$ -Stat of 2.09, these measurements resulted in a  $p$ -value of 0.07. School D ( $N=1,177$ ) resulted in a mean ( $M$ ) composite score of 26.62%, a standard deviation ( $SD$ ) of 3.21, and a variance of 12.92 for students in poverty as compared to a mean ( $M$ ) composite score of 10.48, a standard deviation ( $SD$ ) of 4.51, and a variance of 25.45% for non-poverty students. With a degree of freedom ( $DF$ ) of 8, and a  $t$ -Stat of 5.82, these measurements resulted in a  $p$ -value of  $<.001$ .

The independent sample  $t$ -test indicated a significant difference in the reading achievement for students in poverty as opposed to those in non-poverty at the novice level for fifth-grade students at two of the three schools. At School A, overall composite scores between these poverty students ( $M=25.84$ ) and non-poverty students ( $M=3.94$ ), ( $t[8] = 5.18$ ,  $p<.001$ ). At School B.2, overall composite scores between poverty students ( $M=16.36$ ) and non-poverty students ( $M=8.9$ ), ( $t[8] = 2.09$ ,  $p=0.07$ ). At School D, overall composite scores between poverty students ( $M=26.62$ ) and non-poverty students ( $M=10.48$ ), ( $t[8] = 5.82$ ,  $p<.001$ ). In all three analyses, poverty students had a significantly higher mean than non-poverty students. The  $p$ -value is  $<.001$  in the statistical analyses for School A and for School D, which indicates a statistical difference in the reading scores of students in poverty as opposed to students in non-

poverty. Due to the results, strong evidence suggests the null hypothesis be rejected as data shows support for the alternative hypothesis. However, the  $p$ -value is 0.07 for School B.2, indicating no statistical difference in the reading scores of students in poverty as opposed to students in non-poverty. Therefore, evidence suggests that the null hypothesis fails to be rejected.

In the fourth set of analyses, an independent  $t$ -test was used to analyze the individual composite score on the third grade K-Prep test in Reading at the combined proficient/distinguished level. Utilizing the data from this independent  $t$ -test consisted of looking at the dependent variable of reading achievement at the proficient/distinguished level as compared to the independent variable of poverty/non-poverty students in the third grades at School A, School B.1, School B.2, and School D (see Appendix B, Figure 10).

School A ( $N = 406$ ) resulted in a mean ( $M$ ) composite score of 38.18%, a standard deviation ( $SD$ ) of 7.20, and a variance of 64.97 for students in poverty as compared to a mean ( $M$ ) composite score of 62.82%, a standard deviation ( $SD$ ) of 16.10 and a variance of 324.16 for non-poverty students. With a degree of freedom ( $DF$ ) of 8 and a  $t$ -Stat of -2.79, these measurements resulted in a  $p$ -value of 0.023. School B.1 and School B.2 ( $N = 611$ ) resulted in a mean ( $M$ ) composite score of 51.56%, a standard deviation ( $SD$ ) of 6.00, and a variance of 45.02 for students in poverty as compared to a mean ( $M$ ) composite score of 76.46%, a standard deviation ( $SD$ ) of 9.13, and a variance of 104.31 for non-poverty students. With a degree of freedom ( $DF$ ) of 8, and a  $t$ -Stat of -4.5, these measurements resulted in a  $p$ -value of <.001. School D ( $N=1,136$ ) resulted in a mean ( $M$ ) composite score of 46.4%, a standard deviation ( $SD$ ) of 4.2, and a variance of 22.34 for students in poverty as compared to a mean ( $M$ ) composite score of 70.76, a standard deviation ( $SD$ ) of 5.58, and a variance of 39.01% for non-poverty

students. With a degree of freedom (*DF*) of 8, and a *t*-Stat of -6.95, these measurements resulted in a *p*-value of <.001.

The independent sample *t*-test indicated a significant difference in the reading achievement for students in poverty as opposed to those in non-poverty at the third grade level for proficient/distinguished students at all three schools. At School A, overall composite scores between these poverty students ( $M=38.18$ ) and non-poverty students ( $M=62.82$ ), ( $t[8] = -2.79$ ,  $p=0.02$ ). At School B.1 and School B.2, overall composite scores between poverty students ( $M=51.56$ ) and non-poverty students ( $M=76.46$ ), ( $t[8] = -4.55$ ,  $p <.001$ ). At School D, overall composite scores between poverty students ( $M=46.4$ ) and non-poverty students ( $M=70.76$ ), ( $t[8] = -6.95$ ,  $p<.001$ ). In all three analyses, poverty students had a significantly lower mean than non-poverty students. The *p*-value is 0.02 in the statistical analyses for School A and <.001 for School B.1, School B.2, and School D, which indicates a statistical difference in the reading scores of students in poverty as opposed to students in non-poverty. Due to the results, strong evidence suggests the null hypothesis be rejected as data shows support for the alternative hypothesis.

On the fifth set of analyses, an independent *t*-test was used to analyze the individual composite score on the fourth grade K-Prep test in Reading at the combined proficient/distinguished level. Utilizing the data from this independent *t*-test consisted of looking at the dependent variable of reading achievement at the proficient/distinguished level as compared to the independent variable of poverty/non-poverty students in the fourth grades at School A, School B.2, and School D (see Appendix B, Figure 11).

School A ( $N = 439$ ) resulted in a mean ( $M$ ) composite score of 47.54%, a standard deviation ( $SD$ ) of 11.40, and a variance of 162.57 for students in poverty as compared to a mean



(*M*) composite score of 73.72%, a standard deviation (*SD*) of 11.24 and a variance of 157.84 for non-poverty students. With a degree of freedom (*DF*) of 8 and a *t*-Stat of -3.27, these measurements resulted in a *p*-value of 0.01. School B.2 (*N* = 624) resulted in a mean (*M*) composite score of 52.9%, a standard deviation (*SD*) of 2.67, and a variance of 8.92 for students in poverty as compared to a mean (*M*) composite score of 65.3%, a standard deviation (*SD*) of 4.53, and a variance of 25.69 for non-poverty students. With a degree of freedom (*DF*) of 8, and a *t*-Stat of -4.71, these measurements resulted in a *p*-value of <.001. School D (*N*=1,189) resulted in a mean (*M*) composite score of 41.7%, a standard deviation (*SD*) of 7.26, and a variance of 65.89 for students in poverty as compared to a mean (*M*) composite score of 68.52, a standard deviation (*SD*) of 6.49, and a variance of 52.75% for non-poverty students. With a degree of freedom (*DF*) of 8, and a *t*-Stat of -5.505, these measurements resulted in a *p*-value of <.001.

The independent sample *t*-test indicated a significant difference in the reading achievement for students in poverty as opposed to those in non-poverty at the fourth grade level for proficient/distinguished students at all three schools. At School A, overall composite scores between these poverty students (*M*=47.54) and non-poverty students (*M*=73.72), (*t*[8] = -3.27, *p*=0.01. At School B.2, overall composite scores between poverty students (*M*=52.9) and non-poverty students (*M*=65.3), (*t*[8] = -4.71, *p*<.001). At School D, overall composite scores between poverty students (*M*=41.7) and non-poverty students (*M*=68.52), (*t*[8] = -5.50, *p*<.001). In all three analyses, poverty students had a significantly lower mean than non-poverty students. The *p*-value is 0.01 in the statistical analyses for School A, and less than .001 at School B.2, and School D, which indicates a statistical difference in the reading scores of students in poverty as opposed to students in non-poverty. Due to the results, strong evidence suggests the null hypothesis be rejected as data shows support for the alternative hypothesis.

On the sixth set of analyses, an independent *t*-test was used to analyze the individual composite score on the fifth grade K-Prep test in Reading at the proficient/distinguished combined level. Utilizing the data from this independent *t*-test consisted of looking at the dependent variable of reading achievement at the proficient/distinguished level as compared to the independent variable of poverty/non-poverty students in the fifth grades at School A, School B.2, and School D (see Appendix B, Figure 12).

School A ( $N = 446$ ) resulted in a mean ( $M$ ) composite score of 40.92%, a standard deviation ( $SD$ ) of 2.85, and a variance of 10.19 for students in poverty as compared to a mean ( $M$ ) composite score of 70.56%, a standard deviation ( $SD$ ) of 14.22 and a variance of 252.99 for non-poverty students. With a degree of freedom ( $DF$ ) of 8 and a *t*-Stat of -4.08, these measurements resulted in a *p*-value of  $<.001$ . School B.2 ( $N = 624$ ) resulted in a mean ( $M$ ) composite score of 58.93%, a standard deviation ( $SD$ ) of 5.38, and a variance of 44.88 for students in poverty as compared to a mean ( $M$ ) composite score of 73.82%, a standard deviation ( $SD$ ) of 16.34, and a variance of 334.07 for non-poverty students. With a degree of freedom ( $DF$ ) of 7, and a *t*-Stat of -1.53, these measurements resulted in a *p*-value of 0.17. School D ( $N=1,177$ ) resulted in a mean ( $M$ ) composite score of 45.02 percent, a standard deviation ( $SD$ ) of 2.28, and a variance of 6.55 for students in poverty as opposed to a mean ( $M$ ) composite score of 72.92, a standard deviation ( $SD$ ) of 4.65, and a variance of 27.07% for non-poverty students. With a degree of freedom ( $DF$ ) of 8, and a *t*-Stat of -10.75, these measurements resulted in a *p*-value of  $<.001$ .

The independent sample *t*-test indicated a significant difference in the reading achievement for students in poverty as opposed to those in non-poverty at the fifth grade level for proficient/distinguished students at two of the three schools. At School A, overall composite

scores between these poverty students ( $M=40.92$ ) and non-poverty students ( $M=70.56$ ), ( $t[8] = -4.08$ ,  $p < .001$ ). At School B.2, overall composite scores between poverty students ( $M=58.92$ ) and non-poverty students ( $M=73.82$ , ( $t[7] = -1.53$ ,  $p=0.17$ ). At School D, overall composite scores between poverty students ( $M=45.02$ ) and non-poverty students ( $M=72.92$ ), ( $t[8] = -10.75$ ,  $p < .001$ ). In all three analyses, poverty students had a significantly lower mean than non-poverty students. The  $p$ -value is  $< .001$  in the statistical analyses for School A and School D, which indicates a statistical difference in the reading scores of students in poverty as opposed to students in non-poverty. Due to the results, strong evidence suggests the null hypothesis be rejected as data shows support for the alternative hypothesis. However, the  $p$ -value is 0.17 for School B.2, indicating no statistical difference in the reading scores of students in poverty as opposed to students in non-poverty. Therefore, evidence suggests the null hypothesis fails to be rejected.

### ***Research Question Two***

To analyze Research Question Two a two-tailed  $t$ -test with equal variances was again used to determine if any statistical difference existed between students in poverty and non-poverty in vocabulary development. The strength of association between the two variables for Research Question Two, the independent variable of poverty and the independent variable of vocabulary achievement, was examined over five years.

To analyze vocabulary achievement, data had to be collected from archived district Measures of Academic Progress (MAP) assessment results, a computer adaptive achievement test developed by the Northwest Evaluation Association (NWEA). In evaluating data for this study, students' mean RIT scores in the reading sub-score of vocabulary over five years were analyzed, including data from the following years: 2014-2015, 2015-2016, 2016-2017, 2017-

2018, and 2018-2019. As previously mentioned, the last two years were not analyzed due to the impact the Covid-19 pandemic had on school districts across the nation. Data were charted by grade levels, which compared students' mean RIT scores to district poverty levels, as determined by the number of Direct Certification students in each district outlined below.

MAPS data did not include a poverty/non-poverty analysis of its data; therefore, an alternate means to determine the student population's poverty/non-poverty status had to be utilized. Because the districts whose data were analyzed participate in the USDA Community Eligibility Provision (CEP) program, these data were looked at to determine students' poverty/non-poverty levels (USDA, 2021). Districts participating in CEP do not utilize household income applications to determine free/reduced meal eligibility. The poverty level was determined by the number of students on the Direct Certification List districts receive each month. This list contains the directly certified students who receive Supplemental Nutrition Assistance (SNAP) benefits, Medicare, Medicaid, or are migrant, homeless, or displaced and are thereby eligible for free meals. Districts receive monthly notification of these students, and adjustments are made to the number of students who receive free/reduced-price lunches within their school districts and reflected in the point of sale systems districts use to keep track of meals served to students during each meal service.

The school districts report these numbers annually on their October 31<sup>st</sup> Site Enrollment Report and their April 1<sup>st</sup> Certified Eligibility Provision Report in the state Child Nutrition Information Payment System (CNIPS) to determine the district free/reduced percentage for each school within the district. Once these numbers are reported again on April 1<sup>st</sup>, it is determined whether or not schools and districts meet the eligibility criteria to participate in the Community Eligibility Provision (CEP) option (Community Eligibility, 2022). The CNIPS system calculates

the district's free and reduced-priced numbers to determine school and district eligibility. Sites with an Identified Student Percentage (ISP) of 40% or greater are eligible for this option. Sites which have an ISP between 30% and 39.99% are potentially eligible to participate in the CEP option for the National School Lunch Program (NSLP) and School Breakfast Program (SBP) (Community Eligibility, 2022).

The CEP option provides an alternative to household applications for free and reduced-price meals for economically disadvantaged students in local education agencies (LEAs) and schools. Sites that elect this option agree to serve all students free lunches and breakfasts for four successive school years and claim meals based on the percentage of identified students multiplied by a USDA-defined multiplier factor (Title I and Community Eligibility Provision Frequently Asked Questions, n.d.).

For the purpose of this study, the percentage of directly certified students, as noted on the Site Enrollment reported (see Appendix B, Figures 13-22) for each district, was utilized to determine if there was a statistically significant difference in the impact of poverty on MAPS vocabulary scores. Three additional sets of nine individual statistical independent two-sample *t*-tests assuming equal variances were completed for the schools noted earlier in this study across three grade levels. These tests specifically compared vocabulary development for students as categorized by MAP's data against the number of directly certified students on district Site Enrollment reported (see Appendix B, Figures 23-25) and are discussed below.

The seventh, eighth and ninth set of independent *t*-test statistical analysis consisted of looking at the percentage of students identified by Direct Certification within each district as compared to their Mean RIT scores in Vocabulary Development according to MAP data. As previously noted, the third grade for School B.1 was integrated into School B.2 effective school

year 2017-2018. The *t*-test analyses of all third grade data averages the raw data over a five-year time-period, and does not differentiate this division/inclusion. Therefore, when discussing data analyses for third grade, School B.1 and School B.2 was combined to determine statistical significance.

The seventh data set compares students in the third grades at School A, School B.1, School B.2, and School D (see Appendix B, Figure 23). At School A, the mean score (*M*) was 81.6% with a variance of 522.8 for directly certified students as opposed to a mean score (*M*) of 183.14% with a variance of 6.41 in their Mean RIT scores. There were 8 *df*, a *t*-Stat of -9.87, and a *p*-value of <.001. At School B.1 and School B.2, the mean score (*M*) was 82.8% with a variance of 480.2 for directly certified students as opposed to a mean score (*M*) of 185.42% with a variance of 1.14 in their Mean RIT scores. There were 8 *df*, a *t*-Stat of -10.46, and a *p*-value of <.001. At School D, the mean score (*M*) was 67.4%, with a variance of 10.3 for directly certified students as opposed to a mean score (*M*) of 187.78% and a variance of 13.56 in their Mean RIT scores. There were 8 *df*, a *t*-Stat of -55.11, and a *p*-value of <.001. The *p*-value is <.001 on the statistical analyses of School A, School B.1, School B.2, and School D, which indicates a statistical difference implying the vocabulary scores are impacted by the number of directly certified students identified within these schools. Therefore, the null hypothesis was rejected, as data supports the alternative hypothesis.

The eighth set of independent *t*-test statistical analysis consisted of looking at the percentage of students identified by Direct Certification within each district, as compared to their Mean RIT scores in Vocabulary Development according to MAP data in fourth grades at School A, School B.2, and School D (see Appendix B, Figure 24).

At School A, the mean score ( $M$ ) was 81.6% with a variance of 522.8 for directly certified students as opposed to a mean score ( $M$ ) of 191.68% with a variance of 3.58 in their Mean RIT scores. There were 8  $df$ , a  $t$ -Stat of -10.73, and a  $p$ -value of <.001. At School B.2, the mean score ( $M$ ) was 82.8% with a variance of 480.2 for directly certified students as opposed to a mean score ( $M$ ) of 145.22% with a variance of 9378.38 in their Mean RIT scores. There were 7  $df$ , a  $t$ -Stat of -1.42, and a  $p$ -value of 0.19, which is greater than 0.05. At School D, the mean score ( $M$ ) was 67.4%, with a variance of 10.3 for directly certified students as opposed to a mean score ( $M$ ) of 197.45% and a variance of 6.048 in their Mean RIT scores. There were 8  $df$ , a  $t$ -Stat of -71.93, and a  $p$ -value of <.001. The  $p$ -value is <.001 on two of the three statistical analyses, indicating a statistical difference, and the vocabulary scores are impacted by the number of directly certified students identified at School A and School D, but not at School B.2. Therefore, the null hypothesis was rejected as data supports the alternative hypothesis for School A and School D; however, the null hypothesis fails to be rejected for School B.2.

The ninth set of independent  $t$ -test statistical analysis consisted of looking at the percentage of students identified by Direct Certification within each district, as compared to their Mean RIT scores in Vocabulary Development according to MAP data in fifth grades at School A, School B.2, and School D (see Appendix B, Figure 25).

At School A, the mean score ( $M$ ) was 81.6% with a variance of 522.8 for directly certified students as opposed to a mean score ( $M$ ) of 199.22% with a variance of 5.12 in their Mean RIT scores. There were 8  $df$ , a  $t$ -Stat of -11.45, and a  $p$ -value of <.001. At School B.2, the mean score ( $M$ ) was 84.25% with a variance of 626.25 for directly certified students as opposed to a mean score ( $M$ ) of 161.22% with a variance of 8143.09 in their Mean RIT scores. There were 7  $df$ , a  $t$ -Stat of -1.64, and a  $p$ -value of 0.15, which is greater than 0.05 because the  $p$ -value

is = to 0.1. At School D, the mean score ( $M$ ) was 67.4%, with a variance of 10.3 for directly certified students as opposed to a mean score ( $M$ ) of 205.9% and a variance of 14.38 in their Mean RIT scores. There were 8  $df$ , a  $t$ -Stat of -62.34, and a  $p$ -value of  $<.001$ . The  $p$ -value is  $<.001$  on two of the three statistical analyses, indicating a statistical difference, and the vocabulary scores are impacted by the number of directly certified students identified at School A and School D, but not School B.2. Therefore, the null hypothesis was rejected as data supports the alternative hypothesis for School A and School D; however, the null hypothesis fails to be rejected for School B.2.

### **Supplementary Findings**

In null-hypothesis significance testing, the goal is to decide between two interpretations of a statistical relationship within a given sample (Price et al., 2015). One of the crucial steps in this process is known as finding the  $p$ -value, which is the probability of obtaining test results, with the assumption that the null hypothesis is true (Price et. al., 2015). The  $p$ -value looks at the statistical analysis to determine whether or not data could have occurred under the null hypothesis. Initial statistical analysis of this data utilized a  $p$ -value of less than 0.05. A  $p$ -value less than 0.05 ( $\leq 0.05$ ) is considered statistically significant. There is less than a 5% probability that the null hypothesis is correct and the results have occurred at random. The smaller the  $p$ -value, the more substantial the evidence that the null hypothesis should be rejected.

In addition to conducting independent sample  $t$ -tests with a  $p$ -value of less than 0.05, research was also conducted independent sample  $t$ -tests using the same data with a  $p$ -value of less than .001, with the same results. The analysis of both reading and vocabulary data indicated that there was substantial evidence against the null hypothesis at School A, School B.1 and



School D at all grade levels, but only at the third grade at School B.2, except for the analysis of reading at the apprentice/proficient level in fourth grade.

### **Summary**

Chapter Four provided a synopsis of the data analysis procedures and a description of the sample population for the study. Research questions one and two were analyzed using an independent sample two-tailed *t*-test of equal variance to determine the significance of a *p*-value of  $<0.05$ . The primary focus of the study was to determine the relationship between poverty and student achievement in elementary schools in high-poverty areas, as measured by archival K-Prep reading data and MAP vocabulary data

The statistical analysis for RQ 1 determined the impact poverty had on the reading achievement of students in the third, fourth, and fifth grades in two areas: the number of Novice students and the number of Proficient/Distinguished students within the district. To determine if there was a significant difference between poverty and non-poverty students in the area of reading, three sets of nine independent statistical *t*-tests were completed. At the novice level, there was a statistically significant difference in the K-Prep reading scores at all grade levels for School A, School B.1, and School D. There was a statistically significant difference in the third grade at School B.2 but not in the fourth and fifth grades. Again, at the proficient/distinguished level, there was a statistically significant difference in the K-Prep reading scores at all grade levels for School A, School B.1, and School D. There was a statistically significant difference in the third and fourth grades at School B.2, but not in the fifth grade.

Additional independent *t*-tests were given to determine if there was a statistically significant difference in vocabulary scores compared to the number of directly certified students each district had. As previously noted, this number directly affects the free/reduced lunch, which

directly inferences the poverty status of a district. The statistical analysis for RQ 2 determined the impact poverty had on students' vocabulary development in the third, fourth, and fifth grades. To determine if there was a significant difference between poverty and non-poverty students and students' vocabulary scores, three sets of nine independent statistical *t*-tests were completed. There was a statistically significant difference in the third grade at School A, School B.1, School B.1, and School D. Again, in the fourth and fifth grades, there was a statistically significant difference in the vocabulary scores at all grade levels for School A, School B.1, and School D. However, at School B.1 and School B.2, there was a statistically significant difference in vocabulary development in the third but not in the fourth and fifth grades. This same pattern occurred in the data analysis of K-Prep Reading scores at School B.1 and School B.2, for the same grade levels, increasing the correlation that the data analysis confirms there is a correlation between students living in poverty and non-poverty and their reading achievement and vocabulary development.

Chapter Five delineates an overview of the interpretation of the data and conclusions regarding the correlation between poverty and student achievement in reading achievement and vocabulary development. The findings are presented in a way that allows for replication of the study. In addition, there are suggestions for the application of the analyses as it pertains to educational policies, instructional practices, as well as the implications for future research.

## Chapter Five

### Summary, Discussion, and Implications

#### Introduction

Across the nation, schools are struggling academically, and the number of children living in poverty continues to grow. In the United States, 20% of public schools are considered high-poverty schools (Marquis-Hobbs, 2014). This quantitative study was designed to explore the relationship between students in high poverty areas and their academic performance in reading and vocabulary development in the third, fourth, and fifth grades. In order to be a viable, productive member of society, the ability to read and comprehend is a basic component of competent citizenship (Freire, 1973). In order to understand the role of poverty in a student's ability to read, and also to determine if poverty impacts vocabulary acquisition of young children, archival K-Prep and MAP data were analyzed. This chapter summarizes conclusions while also discussing the implications that emerged from the analysis of this archived data. Although many factors impact student academic achievement, poverty resulting from single-income family homes or single-parent homes is one of the primary barriers to students' overall academic success in the classroom (Ravitz, 2011, as cited in SerVaas, 2011, see Appendix E). A nationwide problem exists in the relationship between children living in poverty and academic success (Gordon & Mui, 2014; Portnow & Hussain, 2016).

The National Center for Children in Poverty (2017) reported an increase of 42% to 44% from 2009 to 2015 for children living in poverty. The impact of poverty extends far beyond the lack of wealth and resources. Poverty impacts a child's ability to learn, as well as their physical health, social and emotional well-being, and the opportunity to receive a quality education (Barling & Weatherhead, 2016). La Placa and Corlyon (2016) note poverty's negative influences

on family dynamics. Because children are the most vulnerable, the effects of poverty are transmitted between generations and have future implications on society (La Placa & Corlyon, 2016). Today more than ever, young people are challenged with obtaining secure livelihoods and employment while battling limited resources, poor education, low skill levels, and limited support networks.

### **Practical Assessment of Research Questions**

In order for educators to effect true change in the life of their students, they must first form a connection to them that encourages meaningful discourse and relationships. Care theory, first introduced by Noddings decades ago, emphasized the value of relationships (Mays, n.d.). Noddings (2015) noted that “*all* teachers are moral educators” with a responsibility to produce “better adults” (p. 235, as cited in Mays, n.d., para 2) and “education is relations” (Noddings, 2012 p. 67, as cited in Mays, n.d. para 2). Such relations, developed through student interactions with teachers and administrators through “modeling, dialogue, practice, and confirmation” as mirrored through the behavior of students and evidenced in classroom behavior (Mays, n.d., para. 2). Mays further noted that “in the classroom, care theory has also been identified as a pathway to potentially improve student outcomes across grades and cultures (Newcomer, 2018; Noddings, 2012; Meyers, 2009, as cited in Mays, n.d., para. 5). This supports the stance that students succeed on achievement tests within caring school communities with high expectations that influence teacher and student aspirations. This involves transformative and transformational leadership as powerful tools in shaping the school and classroom atmosphere. In order to shape the school atmosphere, teachers and principals must have high expectations for all students regardless of their socio-economic status.

There has been an increase in the research done regarding the role of the principal and the impact they have on instruction, resulting in the finding that leadership is a vital component in the overall student achievement within the school setting (Fullan, 2001, Marzano et al., 2005, Sergiovanni, 2001, as cited in Jacobson, 2008). Because of research on leadership and its impact on student achievement, there has been a shift in the way we view the role of the principal and teacher. "Traditional notions of leadership's charismatic and heroic efforts, deeply rooted in an individualistic and non-systemic worldview" (Senge, 1990, as cited in Jacobson, 2008, p. 6). Such ideas have been transformed so that leadership now represents "empowerment, transformation, and community" (Jacobson, 2008, p. 6). Leadership is now considered a concentrated effort between administrators and teachers rather than a functional component in the role of the principal (Gronn & Hamilton, 2004; Riley & MacBeath, 1998; Spillane et al., 2007, as cited in Jacobson, 2008). In order for actual systemic change to occur, the primary responsibility for enacting steps leading to implementation often falls on the principal (Jacobson, 2008).

Research has shown that leadership and student leadership has a direct correlation. In a "meta-analysis of studies on the effects of leadership on student achievement, it was reported that school leaders account for almost 5 percent of the variation in test scores, or roughly 25 percent of all in-school variables" (Hallinger and Heck, 1996, as cited in Jacobson, 2008, p. 3). Recent research further indicates that "effective leadership ranks second only to the quality of teaching in influencing student learning" (Leithwood et al., 2004, as cited in Jacobson, 2008, p. 3). Additional findings by Scheerens and Boskers (1997, as cited in Jacobson, 2008, p. 3) found that leadership is a vital component in serving students in high-poverty schools. Although principal leadership is a crucial component of student success in high-poverty schools, research

shows that teacher leadership is just as important. There must be continuous cooperation among both teachers, administrators, and colleagues so that teachers are empowered with instructional strategies that are effective in order to make a change in the students' success in high-poverty areas (Johnson et al., 2014). It is imperative that high-poverty schools utilize the knowledge inherent in successful educators, provide instructional practices that are comprehensive and include a diverse student population, involve stakeholders in the learning process, and provide a safe, nurturing, structured environment to support student learning and development (Johnson et al., 2014).

The complexities and deficiencies caused in schools affected by high-poverty cause challenges that need all involved parties to exhibit leadership skills rather than administrators assuming all the responsibilities relating to, according to Heifitz and Laurie (1997). One of the most important factors in school improvement is the relationship between teachers and administrators in outlining the roles and responsibilities of teachers in the educational process (Rosenholtz, 1989). Teachers must be part of the discussion with administrators in instructional design and in the development of policies and procedures that will ensure student achievement and be conducive to a positive school climate (Rosenholtz, 1989). Change is much more readily accepted in schools where there is unity and concurrence between teachers and administrators and they are included in the decision-making process and contribute to instructional decisions than in schools where they are not included in this process (Rosenholtz, 1989, as cited in Johnson et al., 2013). School leaders often face issues such as "poor nutrition, inadequate health services, high rates of illiteracy, as well as drug and substance abuse" in high-poverty schools, making student success less likely (Jacobson, 2008, p. 4). In addition, high rates of student absenteeism, enrollment issues, and discipline issues are often at high-poverty schools (Jacobson, 2008).

Because of the transitory nature of high-poverty students, sustaining a high level of learning is often difficult due to a lack of continuous instruction (Jacobson, 2008). Jacobson (2008) further noted that it is almost impossible for high-poverty to be successful and to produce student achievement at a level expected by stakeholders due to the insurmountable odds these students face. However, schools are still held to high standards by legislative mandates in the U.S. and other countries, regardless of such odds (Jacobson, 2008). Some high-poverty schools overcame the obstacles and proved that high levels of student achievement can be achieved, regardless of such barriers to learning (Jacobson, 2008). These schools beat the odds when one looks at other schools located in high-poverty areas (Brookover & Lezotte, 1979; Edmonds, 1979; Purkey & Smith, 1983; Smith, 2008, as cited in Jacobson, 2008). When discussing leadership, it is interesting to note that there is increasing concern that there are very few individuals with the type of high-quality educational leadership skills need to address the obstacles faced by high-poverty schools (Jacobson et al., 2005).

This research investigated the possible relationship between poverty and student achievement in reading and vocabulary development. This section will discuss the results of each research question and examine research that supports and refutes the findings from this study. Following the discussion of the questions, there will be a discussion of the limitations of the study and recommendations for further study. The questions explored were as follows:

RQ1: Is there a statistically significant difference in grades three, four, and five reading achievement among students living in poverty and those not living in poverty as measured by Kentucky's K-PREP assessment.

RQ2: Is there a statistically significant difference in grades three, four, and five vocabulary achievement among students living in poverty and those not living in poverty as measured by Measures of Academic Progress assessment.

### ***Research Question One***

Research Question One determined if there was a significant difference between students living in poverty/non-poverty and student achievement in reading, according to Kentucky's archived K-Prep assessment data for grades three, four, and five. Data from three schools in two different school districts were analyzed. Both districts, therefore all three schools, are considered to be high poverty areas according to the number of directly certified students that qualifies the entire district to qualify for free lunch regardless of their socio-economic status. As previously noted in Chapter Four, Table 1 showed minimal differences in the student population number of economically disadvantaged students as compared to non-economically disadvantaged students. School District 2 had a larger student population with 3,002 students as compared to 2,756 students in School District 1. However, there was minimal difference in the number of economically disadvantaged students, with School District 1 having 81.30% and School District 2 having 80.30%. Schools in both districts are primarily white, with very few African American or Hispanic students. These statistics suggest that the demographics should have little impact on the results of the statistical significance of the test data for this question. As Donahue et al. (1999) illustrated, there is a link between the education of parents, eligibility for free and reduced lunch and reading success; therefore, it stands to reason that students in high-poverty have lower academic achievement scores than non-poverty students, as supported by data.

According to a recent National Assessment of Educational Progress (NAEP, 2019) report, approximately 35% of fourth-grade students were at or above the NAEP Proficient level



in reading, which was one percent lower as compared to 2017. The trend continues at the middle and high school levels. According to the NAEP (2019) report, eight graders performed at or above the NAEP Basic level at 73%, which was 4 points lower than their score in 2017.

Allington and McGill-Franzen (2015) reported that high-poverty students in twelfth-grade were four years below the reading level of low-poverty students in twelfth grade. Allington and McGill-Franzen (2015) further noted that the reading level of high-poverty students was the same as low-poverty eighth grade students and that “in the United States and other nations, students from low-income families do not read as well as kids from more affluent families” (para. 1). Years of research indicate a definite link in student achievement on first-grade reading and math assessments as they correlate with subsequent achievement test scores throughout their academic years (Arnold & Doctoroff, 2003; Crawford et al., 2001; Duncan et al., 2007; Entwisle et al., 2003; Luster & McAdoo, 1996). Young children who struggle with reading tend to be reluctant readers, resulting in insufficient reading time and falling behind in their reading skills compared to their peers (Arnold & Doctoroff, 2003). Poor reading skills affect every academic area because reading skills must be built upon and is used across the curriculum such as word problems in math (Crawford et al., 2001).

School A and School D showed a statistically significant difference in test scores in reading for poverty students as opposed to non-poverty students at the novice and proficient/distinguished levels for the third, fourth, and fifth grades. In addition, School B.1 data showed a statistically significant difference in test data for third-grade students at the novice level in reading but not at School B.1 at the fourth or fifth grades. However, School B.1 and School B.2 data shows a statistically significant difference in test data for third and fourth-grade levels in reading but not in the fifth grade.

One possible discrepancy could be the reading series used by the schools. School B.1 and School B.2 uses the Pearson Scott Foresman *Reading Street* (2011) series used by all reading teachers in the school because this series is most aligned to the K-Prep reading assessment. School A uses the Houghton-Mifflin *Journeys* (2009) series. School D uses the Pearson Scott Foresman *Reading Street* (2011) series. All three school districts have changed their reading series within the past two years. This discrepancy could be attributed to the research-based intervention strategies used by School B.1 and School B.2 to differentiate instruction. Teachers analyze nine-week test data and group students according to areas of instructional need. This intensive intervention program focuses on low-performing students in small group remediation daily. Progress monitoring systems periodically assess the progress of at-risk students in reading. The daily intervention lessons are based on the progress monitoring data that target each student's academic weakness. School A does not have this extensive of an intervention program in place. It is unknown whether School D has this type of program.

Future research into the reason for this finding is necessary to determine if data results can be duplicated. It would be compelling to compare other components of reading and evaluate the differences between poverty and non-poverty students to see if further correlations could be made. A more extensive look at the components of reading should be evaluated to see exactly where the differences lie. This would help to determine whether or not the achievement gap pertains to all areas of reading or only comprehension and vocabulary.

According to Allington and McGill-Franzen (2015), another factor should be considered regarding the reading achievement gap between poverty & non-poverty students: summer reading loss. "What has become clear over the past thirty-five years is that low-income students learn as much during each school year as their middle-class peers" (Alexander et al., 2007;

Hayes & Grether, 1983; Heyns, 1978, as cited in Allington et al., 2015, para. 5). One of the biggest problems occur during the summer months when students are not in school (Allington et al., 2015). High poverty students lose two or three months of reading skills, and low poverty students add a month of reading skills (Allington & McGill-Franzen, 2015). This means that “even when schools for students in both high-income and low-income families are equally effective, summer reading loss widens the reading achievement gap that existed when these children began kindergarten” (Allington & McGill-Franzen, 2015, para. 5).

### ***Research Question Two***

Research Question Two determined if there was a significant difference between students living in poverty/non-poverty and student achievement in vocabulary according to Kentucky’s archived MAP data for grades three, four, and five. Again, data from three schools in two different school districts were analyzed. As previously noted, both districts, therefore all three schools, are considered high poverty areas according to the number of directly certified students that qualifies the entire district to qualify for free lunch regardless of their socio-economic status. Data for School A and School D showed a statistically significant difference in test scores in vocabulary for poverty students as opposed to non-poverty students in the third, fourth, and fifth grades. In addition, School B.1 and School B.2 data showed a statistically significant difference in test data for third-grade students but not in the fourth or fifth grades.

Research on vocabulary development are in agreement with past research noting a correlation between a small vocabulary development and the socio-economic status of students. (Donahue et al., 1999; Hoff, 2003; Molfese et al., 2003; Noble et al., 2006; Rathbun et al., 2005). It is important to note that two other studies (Hoff, 2003; Molfese et al., 2003, as cited in Pritts, 2009) found that “maternal speech and academic achievement were interrelated and found

that households with more conversations tend to have a higher level of income and educational level” (p. 78). One can conclude that verbal discourse stimulates the brain to make cognitive connections between oral and written language (Pritts, 2009). Wolfe (2001, as cited in Pritts, 2009) noted that the brain makes connections dependent upon the emotional content of the information being conveyed. Pritts (2009) affirms that the “data from the research is important because it suggests that more two-way teacher-student interactions result in more vocabulary gain, as assessed by the DIBELS WUF measurement scale” (p. 78) used in the two research studies noted above.

Other discrepancies between the test scores could be attributed to the criteria used to student’s socio-economic status. Noble et al. (2006, as cited in Pritts, 2009) noted that the socio-economic status of students can be determined in multiple ways and that reading achievement and vocabulary development can be impacted by many different components. Factors such as “student’s prior knowledge, cognitive factors, and life experiences impact” academic achievement (Noble, 2006, as cited in Pritts, 2009). Baker et al. (1995) emphasized maternal speech and verbal interactions as being necessary for low socio-economic students. Molfese et al. (2003, as cited in Pritts, 2009) noted that a child’s overall academic success are impacted by their home life, parenting skills, and the activities and life experiences they are exposed to. In order to determine a student’s lunch status, this study only used the direct certification percentage from the districts/school participating in this study. In addition, this limited comparison model may have contributed to the results of the research questions, as well as the small sample size affecting the findings.

The complex process of reading is one that involves a variety of skills synthesized together to make meaning (Israel & Monaghan, 2007; Pressley, 2002; Stanovich, 2000, as cited

in Pritts, 2009). “Vocabulary acquisition is one element within this complex process“ (Pritts, 2009, p. 84). There must be a clear understanding of phonemic awareness, the alphabetic principle, and vocabulary. The reading skills needed for comprehension and decoding are based in the knowledge of processes and basic understanding (Pritts, 2009).

### **Limitations of the Study**

The limitations of the current study included the confines of the sample size, time frame, breadth of the study, and generalizations of the study's findings. The scope of the study limited participants to two school districts and elementary educators who teach in high-poverty schools in Kentucky. The narrow focus of the study's purposeful sampling hinders the study's generalization of results. Additional research could address a larger sample size across several states to gain a more comprehensive understanding of the phenomenon of poverty as it pertains to student achievement. A comparison across several regions in the United States with a high concentration of poverty could also offer a more comprehensive perspective.

In addition, because it would be interesting to note teacher perceptions as it relates to the impact of poverty within their classroom setting, a mix-method research project could be conducted to include a qualitative component to the data collected. Other content areas, such as mathematics, could also be concluded to determine if the results were limited to reading achievement and vocabulary development since those two areas are somewhat reflective of each other.

Another limitation to the study is the availability of current assessment data. Due to the Covid-19 pandemic, the earliest relevant archived test data available was during the 2018-2019 school year. When district superintendents were asked permission to use their district's test data, they cautioned the validity of current test data because they felt data were negatively impacted

due to school closings and students having to receive classroom instruction via virtual instruction.

### **Implications for Future Study**

The existing paradigm that guides public education revolves around student achievement, as measured by standardized achievement tests. The standard of achievement is measured and controlled by entities outside the school building, and students are pressured to compete in an environment controlled and delineated by external forces. There is a perception of uniformity in achievement based on the precept that students who take these standardized tests do so on an equal playing field. A presumption is that taking identical tests should indicate students' overall ability and knowledge and the quality of schools that produce these results. However, socio-cultural factors are not adequately considered in how they influence pedagogy and student learning. As a result, many students fail to achieve at high levels, given the terrain of public education.

In the spring of 2021, an analysis of the spring 2021 test scores of 5.5 million students indicated that students in each grade achieved a score that was three to six percentile points lower on the Measures of Academic Progress (MAP) test than they did in 2019 (Barshay et al., 2021). “Analysts noted that reading scores of the lowest-achieving students have been declining for a decade and that the 2019 losses, incredibly steep among low performers, had erased 30 years of progress” (Barshay et al., 2019, para 21). The onset of the Covid-19 pandemic has caused this trend only to get worse. Across the nation, students, especially young ones, struggled more with reading than ever as virtual learning impeded regular classroom instruction, and many had inadequate resources to aid them when they struggled (Barshay et al., 2021). Reading daily became less common giving students far less practice in this crucial area, which research already

showed that nearly two-thirds of students do not read on grade level, and a steady decline in test scores over the years (Barshay et al., 2021). According to Andrea Yon, a seven-year veteran teacher at a rural school in South Carolina where approximately three-fourths of all students qualify for free or reduced-price lunches, the trend in reading is getting worse. Some of her struggling eighth-grade students now read at a third or fourth-grade level, whereas they used to read at a fifth or sixth-grade level (Barshay et al., 2021).

In Massachusetts, the state that has the highest scores in reading is in decline with third through eighth grade reading scores falling six percentage points in annual achievement tests from spring 2019 to spring 2021 (Barshay et al., 2021). The National School Report Card (NAEP) seems to support these findings. According to Camera (2021), "math and reading scores for 9-year-old students in the U.S. have not increased since 2012, with the most dramatic decline in 13-year olds, a major finding since NAEP began recording such academic trends in the 1970's" (para. 1). As the Nation's Report Card, NAEP is the most extensive continuing and nationally representative assessment of student knowledge in math, reading, science, U.S. history, civics, and geography (Camera, 2021). Assessments are administered every eight years in math and reading only, and the results are reported nationally by age, as opposed to the other NAEP exams, which are administered every three years and results are reported by state and city (Camera, 2021). The latest assessment was administered to roughly 34,000 nine- and thirteen-year-olds during the 2019 – 2020 school year, just before the Covid-19 pandemic disruptions to the educational setting. Notably:

results from this assessment show widening score gaps between higher-performing and lower-performing students, with the changes driven by declines among lower-performing students, a trend that has emerged across other NAEP exams and grade levels in recent

years, including reading and mathematics in grades four and eight. (Camera, 2021, para. 7)

Camera (2021) goes on to note that the reading scores among the lowest-performing students in the 10<sup>th</sup> percentile declined among nine and thirteen-year-old students as compared to this same group in 2012. Conversely, neither age group had any note-worthy changes for students achieving at a higher level since 2012 (Camera, 2021).

The education field has been inundated with changes since the federal government mandate of No Child Left Behind (2002) required all schools to produce increased student achievement. Obama's revision of this act with the Every Student Succeeds Act (2015) updated this law but still held states accountable for student achievement. From changes in student assessment to changes in administrative leadership to changes in quality teaching practices, most of these differences have afforded a better quality of education for many students. However, there are still problems with students' reading achievement across the nation, and students in the United States still fall far behind their global peers. The Progress in International Reading Literacy Study (PIRLS), an “assessment administered every five years to fourth-graders in participating countries, assesses reading literacy performance and measures students’ approaches to informational reading in an online environment” (Library Research Service, 2017, para. 1). When international standards of excellence are analyzed, it is evident that the United States has improved its educational policies (PIRLS, 2006). However, according to PIRLS (2016), the United States scored lower than 12 education systems: Moscow City (Russian Federation), the Russian Federation, Singapore, Hong Kong (China), Ireland, Finland, Poland, Northern Ireland (United Kingdom), Norway, Chinese Taipei (China), England (United Kingdom), and Latvia.



According to the Library Research Service (2017), fourth-graders in the U.S. achieved 549 points in reading out of a possible 1000, ranking them 15<sup>th</sup> out of 58 countries on PIRLS. The average U.S. score declined from its 2011 score of 556 but was higher than the international average of 500 (Library Research Service, 2017). The report also noted that students attending high-poverty schools with more than 75% of their population qualifying for free or reduced-price lunch scored 516, which was lower than the overall U.S. reading score (Library Research Service, 2017).

### **Summary**

One of the critical milestones in education is the mastery of reading skills by the end of third grade (Hernandez, 2011). For those students who fail to accomplish this milestone, their latter educational years often exhibit failing grades and can be a crucial predictor of student drop-out (Hernandez, 2011). According to research from the Annie E. Casey Foundation and the Center for Demographic Analysis, Hernandez (2011) noted that studies show a correlation between high-school graduation rates, reading skills, and poverty levels. Hernandez (2011) further noted that findings from a longitudinal study, which included approximately 4,000 students, indicated that third-grade students who do not read on grade level are four times less likely to earn their high school diploma than students who read on grade level. This rate is much greater for readers who were not able to master basic reading skills by third grade (Hernandez, 2011). Such a lack of basic reading skills is detrimental to a student's ability to achieve in all academic areas. Approximately one-third of these students are struggling readers, which accounts for about three-fifths of the total population of students who either drop out or do not graduate on time (Hernandez, 2011). Inference can be made from the study that poverty directly affects graduation rates (Hernandez, 2011). As Hernandez (2011), noted, "reading poorly and

living in poverty puts these children in double jeopardy” (p. 3). The findings of the research by the Annie B. Casey Foundation include (Hernandez, 2011):

1. Approximately one in six students who do not master reading by third grade does not earn their high school diploma on time, four times greater than students who do master reading skills at this grade level.
2. The highest drop-out rates and fail-to finish on-time rates greatly increase for those students who fall in the below-basic readers, with approximately 23 percent of these students falling into that category as compared to 9 percent of children with basic skills and 4 percent who read proficiently.
3. Approximately 22 percent of children of a low socio-economic status fail to earn a high-school diploma as compared to students who are more affluent for those students. This rises to 32 percent for students spending more than half of their childhood in poverty.
4. Around 26 percent of students who were poor for at least a year and failed to master reading skills by third grade failed to get a high school diploma, at least six times greater than students who had mastered reading skills.
5. The highest rate was for poor Black and Hispanic students, with approximately 31 and 33 percent failing to graduate, which is much higher than for proficient readers.
6. Approximately 11 percent of poor children who were proficient readers in third grade failed to get their high school diploma as compared to 9 percent of their more affluent counterparts.
7. Of third graders who have mastered reading skills, only 2 percent graduate with a high school diploma on time.

8. Black and Hispanic students who had not mastered reading in third grade were far behind in graduation rates than white students on the same skill level. (p. 4)

Research suggests that higher reading scores in the third grade are more conducive to graduation than students with low reading scores in the third grade. Hernandez (2011), noted that "third-grade is an important pivot point in a child's education, the time when students shift from learning to read and begin reading to learn" (p. 4). Using the outcomes from this study, the recommendation that effective teacher professional development in understanding and awareness of the limitations and barriers to learning for high poverty students will improve student achievement in the areas of reading and vocabulary for students of low socio-economic backgrounds can be made. The participants in this study exhibited a noticeable gap in reading achievement and vocabulary development between poverty and non-poverty students at the novice and proficient/distinguished levels at the 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> grades at both School A and School D. In addition, School B.1 and School B.2 exhibited a noticeable gap in reading achievement between poverty and non-poverty students at the novice levels in 3<sup>rd</sup> grade and also at the proficient/distinguished levels in the 3<sup>rd</sup> and 4<sup>th</sup> grades. However, School B.2 did not show a gap between poverty and non-poverty students at the novice level for 4<sup>th</sup> and 5<sup>th</sup> grades or the proficient/distinguished level at the 5<sup>th</sup> grade.

The implication that reflective professional development that emphasizes improvement in teaching techniques is supported in research, as noted in the literature review section of this study. Although teachers receive the vast majority of their professional development each year focusing on content or instructional strategies geared toward helping students master content, virtually none focuses on gap group students and the best way to help them master content or deal with teacher perceptions of poverty as it relates to students in their classroom. It has been

proven that there has to be a connection between content knowledge and the context to which it is applied. For example, the research noted in the literature review stated that teachers typically focus on words in context and definitions when teaching vocabulary. However, this strategy alone may not be sufficient for students living in poverty. Teachers must be aware of any misconceptions they harbor regarding students of low socio-economic backgrounds and take measures to ensure a high standard of learning is being set for all students. This research supplemented the existing knowledge base concerning the relationship between high-poverty students and their academic achievement. Research on the subject should continue to make available the best practices for all students. In that way, the stipulations of ESSA (2015) and its predecessor, NCLB (2002), can be for all students. In this way, all students can be academically successful regardless of their socio-economic background.

In addition to legislative initiatives impacting student achievement, leadership also plays an integral part in students' academic success by both the principal and teachers. Strong principal leadership is needed to confront the many challenges that public education faces. Teachers must realize that they are also leaders within the school setting by having high expectations for student achievement. Expectations inform aspirations. Students tend to interpret low ability and self-worth if expectations are set low.

For this reason, principals must consistently communicate expectations to teachers, and they, in turn, must consistently communicate expectations to students. Such consistency will increase the validity of student responses. Expectations can be most effective when they begin at the top and permeate downward. Principals and teachers alike must be perceptive and adaptive to the social needs of the school and students. They must be critical thinkers while also being

reflective of their influential role in shaping the educational climate of the school and classroom setting.

The finding of this study offers insight as to the performance of these students and seems to be indicative of how schools located in economically impoverished communities show a statistically significant difference in the performance levels between these groups of students. Researchers are encouraged to replicate this study to decipher if similar conclusions emerge or a different theory is developed. Furthermore, researchers would be advised to investigate schools that maintain a different demographic profile. For this study, the schools analyzed were predominately white. Additional research is also needed to determine more precisely if students in communities of high poverty experience improved life chances due to pedagogy, curriculum, and assessment aligned with achievement tests.

This study showed that effective school research has played an essential role in school reform during the past 25 years. Children of high poverty often come to school with limited background knowledge and limited vocabularies, all the while trying to meet the academic and curriculum standards set forth by state and local authorities. This is made even more difficult if they are distracted because their basic needs are often not met, resulting in developmental needs not being met. However, despite such challenges outside the school setting, children in poverty are able to demonstrate learning in the classroom. Current leaders are searching for innovative methods to address failing school systems by exploring research as they design and adopt new curricula (FCD, 2008). The achievement gap between children living in middle-class and poverty is significant (Kaiser & Roberts, 2011; Klein & Knitzer, 2006). Teachers work hard to provide remediation and instructional activities to help students achieve academically, in spite of the difficulties they face in understanding why these students are often not focused and fail to stay

on task. As scholars and leaders, it is critical to analyze the embedded power that exists within the tenets of effective school research and provide teachers with the knowledge and skills needed to reach our most vulnerable students and overcome poverty as a barrier to learning. Educators and legislators across the nation must think authentically about the implications of how we currently educate children. Without this contemplation, educators and educational institutions everywhere are destined to leave many children behind, regardless of intent or the laws that govern this idea.

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**Appendix A****Table 1***District Level Demographics*

	School District 1:	School District 2:
Economically Disadvantaged	81.30%	80.30%
Non- Economically Disadvantaged	18.70%	19.70%
# of White	97.40%	86.50%
Hispanic or Latino	1.35%	9.40%
African American	0.80%	1.80%
Other	0.50%	2.30%
Gifted & Talented	12.0%	88.0%
Not identified as Gifted & Talented	11.40%	88.60%
Number of Schools in District	5	8
Total Student Population	2,756	3,002

**Table 2***School Level Demographics*

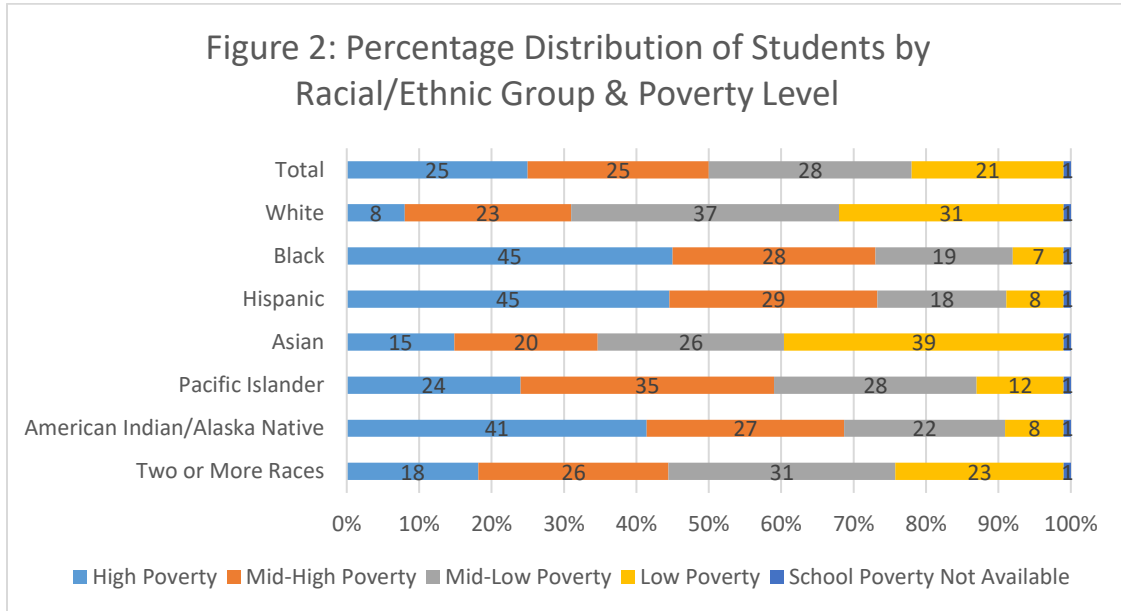
	School A	School B.1	School B.2	School D
Grade Levels	Pre-K – 5 <sup>th</sup>	Pre-K – 2 <sup>nd</sup>	3 <sup>rd</sup> – 5 <sup>th</sup>	3 <sup>rd</sup> – 5 <sup>th</sup>
Teacher/Student Ratio	15:1	15:1	16:1	16:1
Males/Females	245/264	442/364	*Note	336/303
Economically Disadvantaged	432	672	*Note	523
Non- Economically Disadvantaged	77	134	*Note	116
# of White/Non-Hispanic	424	780	*Note	538
Hispanic or Latino	6	11	*Note	77
Students w/ Disabilities	93	221	*Note	108
Gifted & Talented	27	55	*Note	17
Not identified as Gifted & Talented	482	617	*Note	622
Number of Schools in District	5	5	5	8
Total Student Population	509	806	*Note	639

*Note:* Demographics are the same for School B.1 & B.2 because they are considered one school for reporting purposes for KDE.

**Appendix B**

**Figure 2**

*Percentage/Distribution of Students by Ethnicity/Poverty Level*



**Figure 3**

*Calculation Figures/Formula for Poverty vs. Non-Poverty*

Steps to Calculate Non-Poverty Numbers				Worksheet to Calculate Non-Poverty Numbers					
				(Put numbers in yellow Boxes ONLY. The numbers in red boxes will calculate automatically.)					
<b>Step</b>	Non-Poverty # = Total Tested - Poverty #'s			<b>Step 1:</b>	Total # Tested 0	minus	Total Poverty Tested 0	equals	Total Tested in Non-Poverty 0
	<b>To Get Total Number of Students in N/A/PI/D Categories</b>								
<b>Step</b>	Total # Tested times the % of the category (Move Decimal 2 Places to the Left). Example: 273 x .187 = 51.051 or 51 students who were Novice.			<b>Step 2:</b>	Total # Tested 0	x	Percent All Students in 0	equals	# Students in Each Category 0
	<b>In Column 2 – Poverty Column:</b>								
<b>Step</b>	Poverty # tested (182) times your percent in Poverty Category (23.6) (Move decimal 2 Places to the LEFT). Example: 182 x .236 = 42.952 or 43 Rounded (This is the number of Non-Poverty Students in Category.)			<b>Step 3:</b>	Poverty # Tested 0	x	% in Poverty Category 0	equals	Number of Students in Poverty 0
	<b>To Get Percent in Non-Poverty Category:</b>								
	Then subtract: Total number of students in Step 2 (51.051) minus the # of Non-Poverty Students in Category (42.952) Example: 51.051 - 42.952 = 8.099 = Percent of Non-Poverty Tested				Total # in Step 2 0	minus	Non-Poverty Students 0	equals	Percent of Non-Poverty Tested 0
	<b>To Get Number of Students in Non-Poverty Category:</b>								
<b>Step</b>	Then divide 8.099 (number in each category) by 91 (The number of students tested in non-poverty category). Example: 8.099 divided by 91 = 0.089 or 8.9 Note: Move decimal 2 places to the RIGHT to get % in Non Poverty Category.)			<b>Step 4:</b>	Percent in Each Non-Poverty Area 0	divide	# of Students Tested in Non-Poverty 0	equals	Percent of Non-Poverty Tested 0
<b>Step</b>	Add the number in each category to make sure it equal 100.								

Figure 4

Data Collection Chart – 3<sup>rd</sup> Grade K-Prep Reading Data

**Data Collection**  
**3rd Grade - Reading - Archived K-Prep Data**

Total Tested: 406				Total Tested: 611				Total Tested: 1,136			
<b>School District 1</b>				<b>School District 1</b>				<b>School District 2</b>			
School A - 3rd Grade Reading				School B.1 & School B.2 - 3rd Grade Reading				School D - 3rd Grade Reading			
2018-2019				2018-2019				2018-2019			
District Direct Cert. (72%) vs. School Direct Cert. (76%)				District Direct Cert. (72%) vs. School Direct Cert. (77%)				District Direct Cert. (65%) vs. School Direct Cert. (67%)			
District Poverty Index (100%) vs. School Poverty Index (100%)				District Poverty Index (100%) vs. School Poverty Index (100%)				District Poverty Index (98%) vs. School Poverty Index (100%)			
	Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty
<b>Total Number</b>	68	63	5	<b>Total Number</b>	109	87	22	<b>Total Number</b>	195	159	36
<b>Prof./Dist.</b>	35.3%	33.3%	60.5%	<b>Prof./Dist.</b>	54.1%	50.6%	67.9%	<b>Prof./Dist.</b>	56.4%	51.6%	77.8%
<b>Distinguished</b>	13.2%	12.7%	19.5%	<b>Distinguished</b>	23.9%	20.7%	36.6%	<b>Distinguished</b>	28.7%	23.9%	50.0%
<b>Proficient</b>	22.1%	20.6%	41.0%	<b>Proficient</b>	30.3%	29.9%	31.9%	<b>Proficient</b>	27.7%	27.7%	27.8%
<b>Apprentice</b>	35.3%	36.5%	20.2%	<b>Apprentice</b>	25.7%	26.4%	22.9%	<b>Apprentice</b>	26.7%	29.6%	13.9%
<b>Novice</b>	29.4%	30.2%	19.3%	<b>Novice</b>	20.2%	23.0%	9.1%	<b>Novice</b>	16.9%	18.9%	8.3%
			100.0%				100.5%				100.0%
<b>School District 1</b>				<b>School District 1</b>				<b>School District 2</b>			
School A - 3rd Grade Reading				School B.1 & School B.2 - 3rd Grade Reading				School D - 3rd Grade Reading			
2017-2018				2017-2018				2017-2018			
District Direct Cert. (73%) vs. School Direct Cert. (68%)				District Direct Cert. (73%) vs. School Direct Cert. (74%)				District Direct Cert. (65%) vs. School Direct Cert. (69%)			
District Poverty Index (100%) vs. School Poverty Index (100%)				District Poverty Index (100%) vs. School Poverty Index (100%)				District Poverty Index (97%) vs. School Poverty Index (100%)			
	Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty
<b>Total Number</b>	75	67	8	<b>Total Number</b>	118	97	21	<b>Total Number</b>	211	153	58
<b>Prof./Dist.</b>	40.0%	40.3%	37.5%	<b>Prof./Dist.</b>	58.5%	51.5%	90.5%	<b>Prof./Dist.</b>	55.5%	47.7%	75.9%
<b>Distinguished</b>	13.3%	14.9%	-0.1%	<b>Distinguished</b>	23.70.0%	22.7%	28.6%	<b>Distinguished</b>	18.5%	14.4%	29.3%
<b>Proficient</b>	26.7%	25.4%	37.6%	<b>Proficient</b>	34.7%	28.9%	61.9%	<b>Proficient</b>	37.0%	33.3%	46.6%
<b>Apprentice</b>	38.7%	35.8%	63.0%	<b>Apprentice</b>	20.3%	22.7%	9.5%	<b>Apprentice</b>	27.0%	30.1%	19.0%
<b>Novice</b>	21.3%	23.9%	-0.5%	<b>Novice</b>	21.2%	25.8%	0.0%	<b>Novice</b>	17.5%	22.2%	5.2%
			100.0%				100.0%				100.1%
<b>School District 1</b>				<b>School District 1</b>				<b>School District 2</b>			
School A - 3rd Grade Reading				School B.1 & School B.2 - 3rd Grade Reading				School D - 3rd Grade Reading			
2016-2017				2016-2017				2016-2017			
District Direct Cert. (72%) vs. School Direct Cert. (74%)				District Direct Cert. (72%) vs. School Direct Cert. (77%)				District Direct Cert. (64%) vs. School Direct Cert. (72%)			
District Poverty Index (99%) vs. School Poverty Index (100%)				District Poverty Index (99%) vs. School Poverty Index (100%)				District Poverty Index (97%) vs. School Poverty Index (100%)			
	Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty
<b>Total Number</b>	86	76	10	<b>Total Number</b>	119	88	31	<b>Total Number</b>	254	217	37
<b>Prof./Dist.</b>	54.7%	51.3%	80.5%	<b>Prof./Dist.</b>	63.9%	56.8%	84.1%	<b>Prof./Dist.</b>	51.6%	49.8%	62.2%
<b>Distinguished</b>	19.8%	17.1%	40.3%	<b>Distinguished</b>	22.7%	17.0%	38.9%	<b>Distinguished</b>	14.2%	14.7%	11.3%
<b>Proficient</b>	34.9%	34.2%	40.2%	<b>Proficient</b>	41.2%	39.8%	45.2%	<b>Proficient</b>	37.4%	35.0%	51.5%
<b>Apprentice</b>	20.9%	22.4%	9.5%	<b>Apprentice</b>	22.7%	26.1%	13.0%	<b>Apprentice</b>	22.8%	23.5%	18.7%
<b>Novice</b>	24.4%	26.3%	10.0%	<b>Novice</b>	13.4%	17.0%	3.2%	<b>Novice</b>	25.6%	26.7%	19.1%
			100.0%				100.3%				100.6%
<b>School District 1</b>				<b>School District 1</b>				<b>School District 2</b>			
School A - 3rd Grade Reading				School B.1 & School B.2 - 3rd Grade Reading				School D - 3rd Grade Reading			
2015-2016				2015-2016				2015-2016			
District Direct Cert. (114%) vs. School Direct Cert. (122%)				District Direct Cert. (114%) vs. School Direct Cert. (121%)				District Direct Cert. (58%) vs. School Direct Cert. (65%)			
District Poverty Index (99%) vs. School Poverty Index (100%)				District Poverty Index (99%) vs. School Poverty Index (100%)				District Poverty Index (97%) vs. School Poverty Index (100%)			
	Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty
<b>Total Number</b>	92	83	9	<b>Total Number</b>	124	107	17	<b>Total Number</b>	225	186	39
<b>Prof./Dist.</b>	33.7%	31.3%	55.8%	<b>Prof./Dist.</b>	59.7%	57.9%	71.0%	<b>Prof./Dist.</b>	46.4%	41.6%	69.3%
<b>Distinguished</b>	12.0%	9.6%	34.1%	<b>Distinguished</b>	30.6%	28.0%	47.0%	<b>Distinguished</b>	21.9%	17.8%	41.5%
<b>Proficient</b>	21.7%	21.7%	21.7%	<b>Proficient</b>	29.0%	29.9%	23.3%	<b>Proficient</b>	24.6%	23.8%	28.4%
<b>Apprentice</b>	22.8%	20.5%	44.0%	<b>Apprentice</b>	23.4%	23.4%	23.4%	<b>Apprentice</b>	25.9%	28.1%	15.4%
<b>Novice</b>	43.5%	48.2%	0.2%	<b>Novice</b>	16.9%	18.7%	5.6%	<b>Novice</b>	27.7%	30.3%	15.3%
			100.0%				99.3%				100.6%
<b>School District 1</b>				<b>School District 1</b>				<b>School District 2</b>			
School A - 3rd Grade Reading				School B.1 & School B.2 - 3rd Grade Reading				School D - 3rd Grade Reading			
2014-2015				2014-2015				2014-2015			
District Direct Cert. (65%) vs. School Direct Cert. (68%)				District Direct Cert. (65%) vs. School Direct Cert. (65%)				District Direct Cert. (62%) vs. School Direct Cert. (64%)			
District Poverty Index (99%) vs. School Poverty Index (100%)				District Poverty Index (99%) vs. School Poverty Index (100%)				District Poverty Index (92%) vs. School Poverty Index (99%)			
	Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty
<b>Total Number</b>	85	75	10	<b>Total Number</b>	141	112	29	<b>Total Number</b>	251	206	45
<b>Prof./Dist.</b>	40.0%	34.7%	79.8%	<b>Prof./Dist.</b>	46.8%	41.1%	68.8%	<b>Prof./Dist.</b>	46.2%	41.3%	68.6%
<b>Distinguished</b>	14.1%	14.7%	9.6%	<b>Distinguished</b>	9.2%	7.1%	17.3%	<b>Distinguished</b>	13.9%	12.1%	22.1%
<b>Proficient</b>	25.9%	20.0%	70.2%	<b>Proficient</b>	37.6%	33.9%	51.9%	<b>Proficient</b>	32.3%	29.1%	46.9%
<b>Apprentice</b>	32.9%	34.7%	19.4%	<b>Apprentice</b>	27.7%	30.4%	17.3%	<b>Apprentice</b>	24.7%	26.7%	15.5%
<b>Novice</b>	27.1%	30.7%	0.1%	<b>Novice</b>	25.5%	28.6%	13.5%	<b>Novice</b>	29.1%	32.0%	15.8%

Figure 5

Data Collection Chart – 4<sup>th</sup> Grade K-Prep Reading Data

**Data Collection**  
**4th Grade - Reading - Archived K-Prep Data**

Total Tested: 439				Total Tested: 624				Total Tested: 1,189			
<b>School District 1</b>				<b>School District 1</b>				<b>School District 2</b>			
<b>School A - 4th Grade Reading</b>				<b>School B.2 - 4th Grade Reading</b>				<b>School D - 4th Grade Reading</b>			
<b>2018-2019</b>				<b>2018-2019</b>				<b>2018-2019</b>			
District Direct Cert. (72%) vs. School Direct Cert. (76%)				District Direct Cert. (72%) vs. School Direct Cert. (74%)				District Direct Cert. (65%) vs. School Direct Cert. (67%)			
District Poverty Index (100%) vs. School Poverty Index (100%)				District Poverty Index (100%) vs. School Poverty Index (100%)				District Poverty Index (98%) vs. School Poverty Index (100%)			
	Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty
<b>Total Number</b>	<b>77</b>	<b>69</b>	<b>8</b>	<b>Total Number</b>	<b>117</b>	<b>92</b>	<b>25</b>	<b>Total Number</b>	<b>228</b>	<b>173</b>	<b>55</b>
<b>Prof./Dist.</b>	68.8%	66.7%	86.9%	<b>Prof./Dist.</b>	56.8%	56.5%	57.9%	<b>Prof./Dist.</b>	61.8%	56.1%	80.0%
<b>Distinguished</b>	19.5%	20.3%	12.6%	<b>Distinguished</b>	17.9%	15.2%	27.8%	<b>Distinguished</b>	16.7%	12.7%	29.1%
<b>Proficient</b>	49.4%	46.4%	75.3%	<b>Proficient</b>	41.9%	41.3%	44.1%	<b>Proficient</b>	45.2%	43.4%	50.9%
<b>Apprentice</b>	20.8%	21.7%	13.0%	<b>Apprentice</b>	26.5%	26.1%	28.0%	<b>Apprentice</b>	23.2%	27.2%	10.9%
<b>Novice</b>	10.4%	11.6%	0.0%	<b>Novice</b>	13.7%	17.4%	0.1%	<b>Novice</b>	14.9%	16.8%	9.1%
			<b>100.9%</b>				<b>100.0%</b>				<b>100.0%</b>
<b>School District 1</b>				<b>School District 1</b>				<b>School District 2</b>			
<b>School A - 4th Grade Reading</b>				<b>School B.2 - 4th Grade Reading</b>				<b>School D - 4th Grade Reading</b>			
<b>2017-2018</b>				<b>2017-2018</b>				<b>2017-2018</b>			
District Direct Cert. (73%) vs. School Direct Cert. (68%)				District Direct Cert. (73%) vs. School Direct Cert. (107%)				District Direct Cert. (65%) vs. School Direct Cert. (69%)			
District Poverty Index (100%) vs. School Poverty Index (100%)				District Poverty Index (100%) vs. School Poverty Index (100%)				District Poverty Index (97%) vs. School Poverty Index (100%)			
	Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty
<b>Total Number</b>	<b>84</b>	<b>72</b>	<b>12</b>	<b>Total Number</b>	<b>114</b>	<b>95</b>	<b>19</b>	<b>Total Number</b>	<b>248</b>	<b>206</b>	<b>42</b>
<b>Prof./Dist.</b>	57.1%	52.8%	83.3%	<b>Prof./Dist.</b>	52.6%	49.0%	72.2%	<b>Prof./Dist.</b>	44.4%	38.8%	71.4%
<b>Distinguished</b>	16.7%	15.3%	25.0%	<b>Distinguished</b>	14.0%	11.5%	27.8%	<b>Distinguished</b>	9.3%	6.8%	21.4%
<b>Proficient</b>	40.5%	37.5%	58.3%	<b>Proficient</b>	38.6%	37.5%	44.4%	<b>Proficient</b>	35.1%	32.0%	50.0%
<b>Apprentice</b>	32.1%	36.1%	8.3%	<b>Apprentice</b>	29.8%	33.3%	11.1%	<b>Apprentice</b>	31.9%	34.0%	21.4%
<b>Novice</b>	10.7%	11.1%	8.3%	<b>Novice</b>	17.5%	17.7%	16.7%	<b>Novice</b>	23.8%	27.2%	7.1%
			<b>99.9%</b>				<b>100.0%</b>				<b>99.9%</b>
<b>School District 1</b>				<b>School District 1</b>				<b>School District 2</b>			
<b>School A - 4th Grade Reading</b>				<b>School B.2 - 4th Grade Reading</b>				<b>School D - 4th Grade Reading</b>			
<b>2016-2017</b>				<b>2016-2017</b>				<b>2016-2017</b>			
District Direct Cert. (72%) vs. School Direct Cert. (74%)				District Direct Cert. (72%) vs. School Direct Cert. (69%)				District Direct Cert. (64%) vs. School Direct Cert. (72%)			
District Poverty Index (99%) vs. School Poverty Index (100%)				District Poverty Index (99%) vs. School Poverty Index (100%)				District Poverty Index (97%) vs. School Poverty Index (100%)			
	Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty
<b>Total Number</b>	<b>93</b>	<b>77</b>	<b>16</b>	<b>Total Number</b>	<b>121</b>	<b>95</b>	<b>26</b>	<b>Total Number</b>	<b>220</b>	<b>182</b>	<b>38</b>
<b>Prof./Dist.</b>	37.6%	33.8%	55.9%	<b>Prof./Dist.</b>	57.0%	54.7%	65.4%	<b>Prof./Dist.</b>	40.9%	36.3%	62.9%
<b>Distinguished</b>	9.7%	7.8%	18.8%	<b>Distinguished</b>	23.1%	17.9%	42.1%	<b>Distinguished</b>	12.3%	10.4%	21.4%
<b>Proficient</b>	28.0%	26.0%	37.6%	<b>Proficient</b>	33.9%	36.8%	23.3%	<b>Proficient</b>	28.6%	25.8%	42.0%
<b>Apprentice</b>	31.2%	31.2%	31.2%	<b>Apprentice</b>	24.8%	26.3%	19.3%	<b>Apprentice</b>	34.1%	35.7%	26.4%
<b>Novice</b>	31.2%	35.1%	12.4%	<b>Novice</b>	18.2%	18.9%	15.6%	<b>Novice</b>	25.0%	28.0%	10.6%
			<b>100.0%</b>				<b>100.3%</b>				<b>100.4%</b>
<b>School District 1</b>				<b>School District 1</b>				<b>School District 2</b>			
<b>School A - 4th Grade Reading</b>				<b>School B.2 - 4th Grade Reading</b>				<b>School D - 4th Grade Reading</b>			
<b>2015-2016</b>				<b>2015-2016</b>				<b>2015-2016</b>			
District Direct Cert. (114%) vs. School Direct Cert. (122%)				District Direct Cert. (114%) vs. School Direct Cert. (115%)				District Direct Cert. (58%) vs. School Direct Cert. (65%)			
District Poverty Index (99%) vs. School Poverty Index (100%)				District Poverty Index (99%) vs. School Poverty Index (100%)				District Poverty Index (97%) vs. School Poverty Index (100%)			
	Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty
<b>Total Number</b>	<b>87</b>	<b>72</b>	<b>15</b>	<b>Total Number</b>	<b>145</b>	<b>116</b>	<b>29</b>	<b>Total Number</b>	<b>264</b>	<b>214</b>	<b>50</b>
<b>Prof./Dist.</b>	48.3%	44.4%	67.0%	<b>Prof./Dist.</b>	55.9%	53.4%	65.9%	<b>Prof./Dist.</b>	43.5%	38.5%	64.9%
<b>Distinguished</b>	14.9%	9.7%	39.9%	<b>Distinguished</b>	15.9%	16.4%	13.9%	<b>Distinguished</b>	9.9%	8.9%	14.2%
<b>Proficient</b>	33.3%	34.7%	26.6%	<b>Proficient</b>	40.0%	37.1%	51.6%	<b>Proficient</b>	33.6%	29.6%	50.7%
<b>Apprentice</b>	27.6%	29.2%	19.9%	<b>Apprentice</b>	26.9%	28.4%	20.9%	<b>Apprentice</b>	30.2%	32.9%	18.6%
<b>Novice</b>	24.1%	26.4%	13.1%	<b>Novice</b>	17.2%	18.1%	13.6%	<b>Novice</b>	26.3%	28.6%	16.5%
			<b>99.5%</b>				<b>100.0%</b>				<b>100.0%</b>
<b>School District 1</b>				<b>School District 1</b>				<b>School District 2</b>			
<b>School A - 4th Grade Reading</b>				<b>School B.2 - 4th Grade Reading</b>				<b>School D - 4th Grade Reading</b>			
<b>2014-2015</b>				<b>2014-2015</b>				<b>2014-2015</b>			
District Direct Cert. (65%) vs. School Direct Cert. (68%)				District Direct Cert. (65%) vs. School Direct Cert. (64%)				District Direct Cert. (62%) vs. School Direct Cert. (64%)			
District Poverty Index (99%) vs. School Poverty Index (100%)				District Poverty Index (99%) vs. School Poverty Index (100%)				District Poverty Index (92%) vs. School Poverty Index (99%)			
	Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty
<b>Total Number</b>	<b>98</b>	<b>90</b>	<b>8</b>	<b>Total Number</b>	<b>127</b>	<b>110</b>	<b>17</b>	<b>Total Number</b>	<b>229</b>	<b>188</b>	<b>41</b>
<b>Prof./Dist.</b>	42.9%	40.0%	75.5%	<b>Prof./Dist.</b>	52.8%	50.9%	65.1%	<b>Prof./Dist.</b>	43.2%	38.8%	63.4%
<b>Distinguished</b>	11.2%	10.0%	24.7%	<b>Distinguished</b>	8.7%	6.4%	23.6%	<b>Distinguished</b>	7.4%	3.2%	26.7%
<b>Proficient</b>	31.6%	30.0%	49.6%	<b>Proficient</b>	44.1%	44.5%	41.5%	<b>Proficient</b>	35.8%	35.6%	36.7%
<b>Apprentice</b>	28.6%	30.0%	12.9%	<b>Apprentice</b>	33.1%	32.7%	35.7%	<b>Apprentice</b>	30.1%	30.0%	30.6%
<b>Novice</b>	28.6%	30.0%	12.9%	<b>Novice</b>	14.2%	16.4%	0.0%	<b>Novice</b>	26.6%	30.9%	6.9%

Figure 6

Data Collection Chart – 5<sup>th</sup> Grade K-Prep Reading Data

**Data Collection**  
**5th Grade - Reading - Archived K-Prep Data**

Total Tested: 446				Total Tested: 624				Total Tested: 1,177			
<b>School District 1</b>				<b>School District 1</b>				<b>School District 2</b>			
<b>School A - 5th Grade Reading</b>				<b>School B.2 - 5th Grade Reading</b>				<b>School D - 5th Grade Reading</b>			
<b>2018-2019</b>				<b>2018-2019</b>				<b>2018-2019</b>			
District Direct Cert. (72%) vs. District Direct Cert. (76%)				District Direct Cert. (72%) vs. School Direct Cert. (74%)				District Direct Cert. (65%) vs. School Direct Cert. (67%)			
District Poverty Index (100%) vs. School Poverty Index (100%)				District Poverty Index (100%) vs. School Poverty Index (100%)				District Poverty Index (98%) vs. School Poverty Index (100%)			
	Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty
Total Number	81	70	11	Total Number	109	87	22	Total Number	241	199	42
Prof./Dist.	48.1%	44.3%	72.3%	Prof./Dist.	64.2%	62.1%	72.5%	Prof./Dist.	52.3%	47.7%	73.8%
Distinguished	13.6%	12.9%	18.1%	Distinguished	22.0%	17.2%	41.0%	Distinguished	14.1%	12.1%	23.8%
Proficient	34.6%	31.4%	55.0%	Proficient	42.2%	44.8%	31.9%	Proficient	38.2%	35.7%	50.0%
Apprentice	39.5%	42.9%	17.9%	Apprentice	24.8%	25.3%	22.8%	Apprentice	29.0%	31.2%	19.0%
Novice	12.3%	12.9%	8.5%	Novice	11.0%	12.6%	4.7%	Novice	18.7%	21.1%	7.1%
			99.5%				100.4%				99.9%
<b>School District 1</b>				<b>School District 1</b>				<b>School District 2</b>			
<b>School A - 5th Grade Reading</b>				<b>School B.2 - 5th Grade Reading</b>				<b>School D - 5th Grade Reading</b>			
<b>2017-2018</b>				<b>2017-2018</b>				<b>2017-2018</b>			
Whitley City Elementary School - 5th Grade Reading				Pine Knot Elementary School - 5th Grade Reading				Monticello Elementary School - 5th Grade Reading			
District Poverty Index (100%) vs. School Poverty Index (100%)				District Poverty Index (100%) vs. School Poverty Index (100%)				District Poverty Index (97%) vs. School Poverty Index (100%)			
	Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty
Total Number	91	76	15	Total Number	116	94	22	Total Number	211	172	39
Prof./Dist.	44.0%	36.8%	80.0%	Prof./Dist.	73.3%	68.1%	95.5%	Prof./Dist.	50.7%	45.3%	74.4%
Distinguished	6.6%	5.3%	13.3%	Distinguished	25.0%	20.2%	45.5%	Distinguished	17.1%	11.6%	41.0%
Proficient	37.4%	31.6%	66.7%	Proficient	48.3%	47.9%	50.0%	Proficient	33.6%	33.7%	33.3%
Apprentice	27.5%	28.9%	20.0%	Apprentice	18.1%	22.3%	0.0%	Apprentice	28.0%	29.7%	20.5%
Novice	28.6%	34.2%	0.0%	Novice	8.6%	9.6%	4.5%	Novice	21.3%	25.0%	5.1%
			100.0%				100.0%				99.9%
<b>School District 1</b>				<b>School District 1</b>				<b>School District 2</b>			
<b>School A - 5th Grade Reading</b>				<b>School B.2 - 5th Grade Reading</b>				<b>School D - 5th Grade Reading</b>			
<b>2016-2017</b>				<b>2016-2017</b>				<b>2016-2017</b>			
District Direct Cert. (72%) vs. School Direct Cert. (74%)				District Direct Cert. (72%) vs. School Direct Cert. (69%)				District Direct Cert. (64%) vs. School Direct Cert. (72%)			
District Poverty Index (99%) vs. School Poverty Index (100%)				District Poverty Index (99%) vs. School Poverty Index (100%)				District Poverty Index (97%) vs. School Poverty Index (100%)			
	Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty
Total Number	84	65	19	Total Number	140	107	33	Total Number	248	212	36
Prof./Dist.	41.7%	40.0%	47.5%	Prof./Dist.	58.6%	57.0%	63.8%	Prof./Dist.	45.6%	42.5%	63.9%
Distinguished	10.7%	10.8%	10.4%	Distinguished	16.4%	15.9%	18.0%	Distinguished	11.3%	9.0%	24.8%
Proficient	31.0%	29.2%	37.2%	Proficient	42.1%	41.1%	45.3%	Proficient	34.3%	33.5%	39.0%
Apprentice	33.3%	30.8%	41.9%	Apprentice	20.0%	18.7%	24.2%	Apprentice	26.6%	27.8%	19.5%
Novice	25.0%	29.2%	10.6%	Novice	21.4%	24.3%	12.0%	Novice	27.8%	29.7%	16.6%
			100.1%				99.5%				99.9%
<b>School District 1</b>				<b>School District 1</b>				<b>School District 2</b>			
<b>School A - 5th Grade Reading</b>				<b>School B.2 - 5th Grade Reading</b>				<b>School D - 5th Grade Reading</b>			
<b>2015-2016</b>				<b>2015-2016</b>				<b>2015-2016</b>			
District Direct Cert. (114%) vs. School Direct Cert. (122%)				District Direct Cert. (114%) vs. School Direct Cert. (115%)				District Direct Cert. (58%) vs. School Direct Cert. (65%)			
District Poverty Index (99%) vs. School Poverty Index (100%)				District Poverty Index (99%) vs. School Poverty Index (100%)				District Poverty Index (97%) vs. School Poverty Index (100%)			
	Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty
Total Number	95	86	9	Total Number	122	106	16	Total Number	225	184	41
Prof./Dist.	44.2%	39.5%	89.1%	Prof./Dist.	62.3%	58.5%	87.5%	Prof./Dist.	52.4%	47.3%	75.3%
Distinguished	12.6%	11.6%	22.2%	Distinguished	18.0%	17.0%	24.6%	Distinguished	15.6%	13.0%	27.3%
Proficient	31.6%	27.9%	67.0%	Proficient	44.3%	41.5%	62.9%	Proficient	36.9%	34.2%	49.0%
Apprentice	31.6%	33.7%	11.5%	Apprentice	23.0%	25.5%	6.4%	Apprentice	20.9%	23.4%	9.7%
Novice	24.2%	26.7%	0.3%	Novice	14.8%	16.0%	6.8%	Novice	26.7%	29.3%	15.0%
			101.0%				100.7%				101.0%
<b>School District 1</b>				<b>School District 1</b>				<b>School District 2</b>			
<b>School A - 5th Grade Reading</b>				<b>School B.2 - 5th Grade Reading</b>				<b>School D - 5th Grade Reading</b>			
<b>2014-2015</b>				<b>2014-2015</b>				<b>2014-2015</b>			
District Direct Cert. (65%) vs. School Direct Cert. (68%)				District Direct Cert. (65%) vs. School Direct Cert. (64%)				District Direct Cert. (62%) vs. School Direct Cert. (64%)			
District Poverty Index (99%) vs. School Poverty Index (100%)				District Poverty Index (99%) vs. School Poverty Index (100%)				District Poverty Index (92%) vs. School Poverty Index (99%)			
	Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty		Total Tested	Poverty	Non-Poverty
Total Number	95	84	11	Total Number	137	119	18	Total Number	252	182	70
Prof./Dist.	46.3%	44.0%	63.9%	Prof./Dist.	51.8%	52.1%	49.8%	Prof./Dist.	52.0%	42.3%	77.2%
Distinguished	9.5%	8.3%	18.7%	Distinguished	14.6%	13.4%	22.5%	Distinguished	13.1%	8.2%	25.8%
Proficient	36.8%	35.7%	45.2%	Proficient	37.2%	38.7%	27.3%	Proficient	38.9%	34.1%	51.4%
Apprentice	30.5%	29.8%	35.8%	Apprentice	29.2%	28.6%	33.2%	Apprentice	25.4%	29.7%	14.2%
Novice	23.2%	26.2%	0.3%	Novice	19.0%	19.3%	17.0%	Novice	22.6%	28.0%	8.6%

**Figure 7**

*t-test Statistical Analysis – 3<sup>rd</sup> Grade Poverty/Non-Poverty Novice Reading*

**t-Test Statistical Analysis of Reading Scores  
3rd Grade (Poverty vs. Non-Poverty) at the Novice Level**

**Total Tested: 406**

**School A**  
Reading - 3rd Grade  
Novice

Year	Poverty	Non-Poverty
2014-2015	30.7	0.1
2015-2016	48.2	0.2
2016-2017	26.3	10
2017-2018	23.9	-0.5
2018-2019	30.2	19.3

t-Test: Two-Sample Assuming Equal Variances

	Poverty	Non-Poverty
Mean	31.86	5.82
Variance	91.343	75.857
Observations	5	5
Pooled Vari	83.6	
Hypothesized	0	
df	8	
t Stat	4.503061	
P(T<=t) one	0.000997	
t Critical on	1.859548	
P(T<=t) twc	0.001994	<b>P&lt;.05</b>
t Critical tw	2.306004	

**P<.01**

**Total Tested: 611**

**School B.1 & School B.2**  
Reading - 3rd Grade  
Novice

Year	Poverty	Non-Poverty
2014-2015	28.6	13.5
2015-2016	18.7	5.6
2016-2017	17	3.2
2017-2018	25.8	0
2018-2019	23	9.1

t-Test: Two-Sample Assuming Equal Variances

	Poverty	Non-Poverty
Mean	22.62	6.28
Variance	23.242	27.367
Observations	5	5
Pooled Variance	25.3045	
Hypothesized	0	
df	8	
t Stat	5.135978	
P(T<=t) one-tai	0.000445	
t Critical one-t	1.859548	
P(T<=t) two-tai	0.00089	<b>P&lt;.05</b>
t Critical two-t	2.306004	

**P<.01**

**Total Tested: 1,136**

**School D**  
Reading - 3rd Grade  
Novice

Year	Poverty	Non-Poverty
2014-2015	32	15.8
2015-2016	30.3	15.3
2016-2017	26.7	19.1
2017-2018	22.2	5.2
2018-2019	18.9	8.3

t-Test: Two-Sample Assuming Equal Variances

	Poverty	Non-Poverty
Mean	26.02	12.74
Variance	29.957	33.233
Observations	5	5
Pooled Vari	31.595	
Hypothesized	0	
df	8	
t Stat	3.735587	
P(T<=t) one	0.002871	
t Critical on	1.859548	
P(T<=t) twc	0.005742	<b>P&lt;.05</b>
t Critical tw	2.306004	

**P<.01**



**Figure 8**

*t-test Statistical Analysis – 4<sup>th</sup> Grade Poverty/Non-Poverty Novice Reading*

**t-Test Statistical Analysis of Reading Scores  
4th Grade (Poverty vs. Non-Poverty) at the Novice Level**

**Total Tested: 439**

**School A**  
Reading - 4th Grade  
Novice

Year	Poverty	Non-Poverty
2014-2015	30	12.9
2015-2016	26.4	13.1
2016-2017	35.1	12.4
2017-2018	11.1	8.3
2018-2019	11.6	0.0005

**Total Tested: 624**

**School B.2**  
Reading - 4th Grade  
Novice

Year	Poverty	Non-Poverty
2014-2015	17.4	0.1
2015-2016	17.7	16.7
2016-2017	18.9	15.6
2017-2018	18.1	13.6
2018-2019	16.4	0

**Total Tested: 1,189**

**School D**  
Reading - 4th Grade  
Novice

Year	Poverty	Non-Poverty
2014-2015	30.9	6.9
2015-2016	28.6	16.5
2016-2017	28	10.6
2017-2018	27.2	7.1
2018-2019	16.8	9.1

t-Test: Two-Sample Assuming Equal Variances

t-Test: Two-Sample Assuming Equal Variances

t-Test: Two-Sample Assuming Equal Variances

	Poverty	Non-Poverty
Mean	22.84	9.3401
Variance	119.603	31.1206651
Observations	5	5
Pooled Variance	75.36183	
Hypothesized Mean Difference	0	
df	8	
t Stat	2.458809	
P(T<=t) one-tail	0.019696	
t Critical one-tail	1.859548	
P(T<=t) two-tail	0.039392	<b>P&lt;.05</b>
t Critical two-tail	2.306004	

	Poverty	Non-Poverty
Mean	17.7	9.2
Variance	0.845	71.005
Observations	5	5
Pooled Variance	35.925	
Hypothesized Mean Difference	0	
df	8	
t Stat	2.242284	
P(T<=t) one-tail	0.027614	
t Critical one-tail	1.859548	
P(T<=t) two-tail	0.055228	<b>P&gt;.05</b>
t Critical two-tail	2.306004	

	Poverty	Non-Poverty
Mean	26.3	10.04
Variance	30.1	15.358
Observations	5	5
Pooled Variance	22.729	
Hypothesized Mean Difference	0	
df	8	
t Stat	5.392627	
P(T<=t) one-tail	0.000326	
t Critical one-tail	1.859548	
P(T<=t) two-tail	0.000652	<b>P&lt;.05</b>
t Critical two-tail	2.306004	

**P<.05**

Two Tail P>.05  
One Tail P<.05

**P<.01**

**Figure 9**

*t-Test Statistical Analysis – 5<sup>th</sup> Grade Poverty/Non-Poverty Novice Reading*

**t-Test Statistical Analysis of Reading Scores  
5th Grade (Poverty vs. Non-Poverty) at the Novice Level**

**Total Tested: 446**

**School A**  
Reading - 5th Grade  
Novice

Year	Poverty	Non-Poverty
2014-2015	26.2	0.3
2015-2016	26.7	0.3
2016-2017	29.2	10.6
2017-2018	34.2	0
2018-2019	12.9	8.5

t-Test: Two-Sample Assuming Equal Variances

	Poverty	Non-Poverty
Mean	25.84	3.94
Variance	62.373	26.793
Observatio	5	5
Pooled Var	44.583	
Hypothesiz	0	
df	8	
t Stat	5.185964	
P(T<=t) one	0.000418	
t Critical or	1.859548	
P(T<=t) twc	0.000837	<b>P&lt;.05</b>
t Critical tw	2.306004	

**P<.01**

**Total Tested: 624**

**School B.2**  
Reading - 5th Grade  
Novice

Year	Poverty	Non-Poverty
2014-2015	19.3	17
2015-2016	16	6.8
2016-2017	24.3	12
2017-2018	9.6	4.5
2018-2019	12.6	4.2

t-Test: Two-Sample Assuming Equal Variances

	Poverty	Non-Poverty
Mean	16.36	8.9
Variance	32.913	30.27
Observations	5	5
Pooled Varianc	31.5915	
Hypothesized f	0	
df	8	
t Stat	2.098571	
P(T<=t) one-tai	0.034545	
t Critical one-t	1.859548	
P(T<=t) two-tai	0.069091	<b>P&gt;.05</b>
t Critical two-t	2.306004	

**P>.05**

**Total Tested: 1,177**

**School D**  
Reading - 5th Grade  
Novice

Year	Poverty	Non-Poverty
2014-2015	28	8.6
2015-2016	29.3	15
2016-2017	29.7	16.6
2017-2018	25	5.1
2018-2019	21.1	7.1

t-Test: Two-Sample Assuming Equal Variances

	Poverty	Non-Poverty
Mean	26.62	10.48
Variance	12.917	25.447
Observatio	5	5
Pooled Var	19.182	
Hypothesiz	0	
df	8	
t Stat	5.826753	
P(T<=t) one	0.000197	
t Critical or	1.859548	
P(T<=t) twc	0.000393	<b>P&lt;.05</b>
t Critical tw	2.306004	

**P<.01**

**Figure 10**

*t-Test Statistical Analysis – 3<sup>rd</sup> Grade Poverty/Non-Poverty Prof./Dist. Reading*

**t -Test Statistical Analysis of Reading Scores  
3rd Grade (Poverty vs. Non-Poverty) at the Proficient/Distinguished Level**

Total Tested: 406

**School A**  
Reading - 3rd Grade  
Proficient/Distinguished

Year	Poverty	Non-Poverty
2014-2015	34.7	79.8
2015-2016	31.3	55.8
2016-2017	51.3	80.5
2017-2018	40.3	37.5
2018-2019	33.3	60.5

Total Tested: 611

**School B.1 & School B.2**  
Reading - 3rd Grade  
Proficient/Distinguished

Year	Poverty	Non-Poverty
2014-2015	41	68.8
2015-2016	57.9	71
2016-2017	56.8	84.1
2017-2018	51.5	90.5
2018-2019	50.6	67.9

Total Tested: 1,136

**School D**  
Reading - 3rd Grade  
Proficient/Distinguished

Year	Poverty	Non-Poverty
2014-2015	41.3	68.6
2015-2016	41.6	69.3
2016-2017	49.8	62.2
2017-2018	47.7	75.9
2018-2019	51.6	77.8

t-Test: Two-Sample Assuming Equal Variances

	Poverty	Non-Poverty
Mean	38.18	62.82
Variance	64.972	324.167
Observatio	5	5
Pooled Var	194.5695	
Hypothesiz	0	
df	8	
t Stat	-2.793015	
P(T<=t) one	0.011725	
t Critical on	1.859548	
P(T<=t) twc	0.023449	<b>P&lt;.05</b>
t Critical tw	2.306004	

**P<.05**

t-Test: Two-Sample Assuming Equal Variances

	Poverty	Non-Poverty
Mean	51.56	76.46
Variance	45.023	104.313
Observations	5	5
Pooled Varianc	74.668	
Hypothesized I	0	
df	8	
t Stat	-4.556193	
P(T<=t) one-tai	0.00093	
t Critical one-t	1.859548	
P(T<=t) two-ta	0.001859	<b>P&lt;.05</b>
t Critical two-t	2.306004	

**P<.01**

t-Test: Two-Sample Assuming Equal Variances

	Poverty	Non-Poverty
Mean	46.4	70.76
Variance	22.335	39.013
Observatio	5	5
Pooled Var	30.674	
Hypothesiz	0	
df	8	
t Stat	-6.954438673	
P(T<=t) one	5.89461E-05	
t Critical on	1.859548038	
P(T<=t) twc	0.000117892	<b>P&lt;.05</b>
t Critical tw	2.306004135	

**P<.01**

**Figure 11**

*t-Test Statistical Analysis – 4<sup>th</sup> Grade Poverty/Non-Poverty Prof./Dist. Reading*

**t -Test Statistical Analysis of Reading Scores  
4th Grade (Poverty vs. Non-Poverty) at the Proficient/Distinguished Level**

Total Tested: 439

**School A**  
Reading - 4th Grade  
Proficient/Distinguished

Year	Poverty	Non-Poverty
2014-2015	40	75.5
2015-2016	44.4	67
2016-2017	33.8	55.9
2017-2018	52.8	83.3
2018-2019	66.7	86.9

Total Tested: 624

**School B.2**  
Reading - 4th Grade  
Proficient/Distinguished

Year	Poverty	Non-Poverty
2014-2015	50.9	65.1
2015-2016	53.4	65.9
2016-2017	54.7	65.4
2017-2018	49	72.2
2018-2019	56.5	57.9

Total Tested: 1,189

**School D**  
Reading - 4th Grade  
Proficient/Distinguished

Year	Poverty	Non-Poverty
2014-2015	38.8	63.4
2015-2016	38.5	64.9
2016-2017	36.3	62.9
2017-2018	38.8	71.4
2018-2019	56.1	80

t-Test: Two-Sample Assuming Equal Variances

	Poverty	Non-Poverty
Mean	47.54	73.72
Variance	162.568	157.842
Observatio	5	5
Pooled Var	160.205	
Hypothesiz	0	
df	8	
t Stat	-3.270406	
P(T<=t) one	0.005675	
t Critical one-t	1.859548	
P(T<=t) two	0.011349	P<.05
t Critical two-t	2.306004	

One Tail P<.01  
Two Tail P<.05

t-Test: Two-Sample Assuming Equal Variances

	Poverty	Non-Poverty
Mean	52.9	65.3
Variance	8.915	25.695
Observations	5	5
Pooled Variance	17.305	
Hypothesized	0	
df	8	
t Stat	-4.713092	
P(T<=t) one-tai	0.000758	
t Critical one-t	1.859548	
P(T<=t) two-tai	0.001516	P<.05
t Critical two-t	2.306004	

P<.01

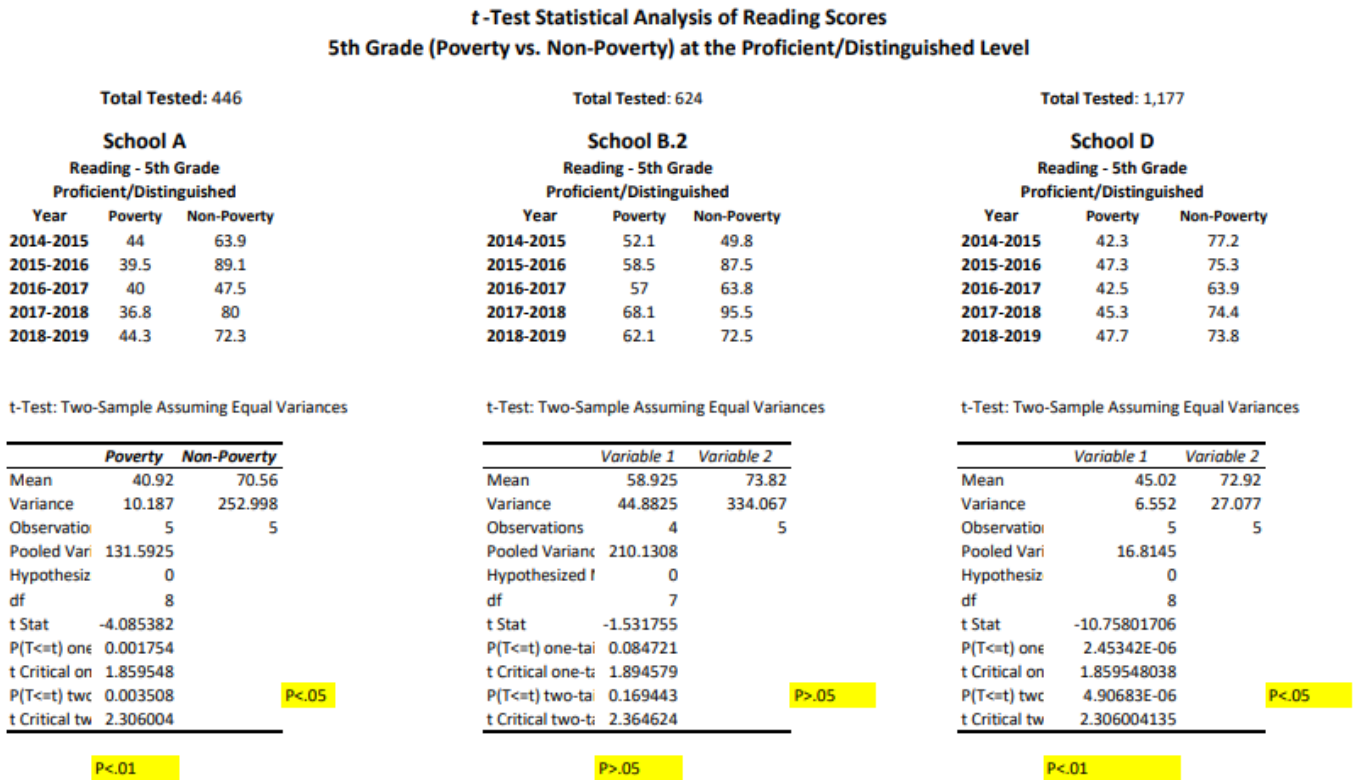
t-Test: Two-Sample Assuming Equal Variances

	Poverty	Non-Poverty
Mean	41.7	68.52
Variance	65.895	52.747
Observatio	5	5
Pooled Vari	59.321	
Hypothesiz	0	
df	8	
t Stat	-5.505852	
P(T<=t) one	0.000285	
t Critical one	1.859548	
P(T<=t) two	0.00057	P<.05
t Critical two	2.306004	

P<.01

**Figure 12**

*t-Test Statistical Analysis – 5<sup>th</sup> Grade Poverty/Non-Poverty Prof./Dist. Reading*



**Figure 13**

*District 1 – 2014-2015 – Direct Certification Percentages*

3/3/22, 12:31 PM

Child Nutrition Information and Payment System | Site Enrollment Site List

CNIPS Site Enrollment List	
111111	Status: Active
<b>School District 1</b>	
DBA:	
Address: Kentucky	
Type of Agency: Educational Institution	
Type of SNP Organization: Public	

Reporting Month: October 2014

Action	Site ID	Site Name	Type	Lunch Free	Lunch Reduced	Lunch Paid	Lunch Total	% Free & Reduced
View		School B.2	Eligibility	580	0	0	580	100.0000 %
			Meals	9,200	0	0	9,200	100.0000 %
			Participation	460	0	0	460	100.0000 %
			Direct Cert	310	60		580	63.7931 %
View		School A	Eligibility	646	0	0	646	100.0000 %
			Meals	12,168	0	0	12,168	100.0000 %
			Participation	609	0	0	609	100.0000 %
			Direct Cert	395	47		646	68.4211 %
View		Data Not Used	Eligibility	732	0	44	776	94.2720 %
			Meals	13,788	0	0	13,788	100.0000 %
			Participation	690	0	0	690	100.0000 %
			Direct Cert	472	29		776	64.5619 %
View		School B.1	Eligibility	529	0	0	529	100.0000 %
			Meals	10,048	0	0	10,048	100.0000 %
			Participation	503	0	0	503	100.0000 %
			Direct Cert	310	33		529	64.8393 %
View		Data Not Used	Eligibility	441	0	0	441	100.0000 %
			Meals	8,163	0	0	8,163	100.0000 %
			Participation	409	0	0	409	100.0000 %
			Direct Cert	258	17		441	62.3583 %
<b>District Totals</b>			<b>Eligibility</b>	<b>2,928</b>	<b>0</b>	<b>44</b>	<b>2,972</b>	<b>98.5195 %</b>
			<b>Meals</b>	<b>53,367</b>	<b>0</b>	<b>0</b>	<b>53,367</b>	<b>100.0000 %</b>
			<b>Participation</b>	<b>2,671</b>	<b>0</b>	<b>0</b>	<b>2,671</b>	<b>%</b>
			<b>Direct Cert</b>	<b>1,745</b>	<b>186</b>	<b>0</b>	<b>2,972</b>	<b>100.0000 %</b>
								<b>64.9731 %</b>

Total Sites: 5

**Figure 14***District 2 – 2014-2015 – Direct Certification Percentages*

CNIPS Site Enrollment List	
22222	Status: Active
<b>School District 2</b>	
DBA:	
Address: Kentucky	
Type of Agency: Educational Institution	
Type of SNP Organization: Public	

Reporting Month: October 2014

Action	Site ID	Site Name	Type	Lunch Free	Lunch Reduced	Lunch Paid	Lunch Total	% Free & Reduced
View		Data Not Used	Eligibility Meals Participation Direct Cert	723 12,184 677 329	0 0 0 168	211 723 41	934 12,907 718 934	77.4400 % 94.3984 % 94.2897 % 53.2120 %
View		Data Not Used	Eligibility Meals Participation Direct Cert	430 5,866 326 219	0 0 0 63	0 348 20	430 6,214 346 430	100.0000 % 94.3997 % 94.2197 % 65.5814 %
View		Data Not Used	Eligibility Meals Participation Direct Cert	490 7,470 415 256	0 0 0 96	0 443 25	490 7,913 440 490	100.0000 % 94.4016 % 94.3182 % 71.8367 %
View		Data Not Used	Eligibility Meals Participation Direct Cert	689 11,161 621 338	0 0 0 140	59 662 37	748 11,823 658 748	92.1440 % 94.4007 % 94.3769 % 63.9037 %
View		School D	Eligibility Meals Participation Direct Cert	733 11,123 618 340	0 0 0 137	9 660 37	742 11,783 655 742	98.8160 % 94.3987 % 94.3511 % 64.2857 %
View		Data Not Used	Eligibility Meals Participation Direct Cert	11 143 8 7	0 0 0 3	0 9 1	11 152 9 11	100.0000 % 94.0789 % 88.8889 % 90.9091 %
<b>District Totals</b>			<b>Eligibility Meals Participation Direct Cert</b>	<b>3,076 47,947 2,665 1,489</b>	<b>0 0 0 607</b>	<b>279 2,845 161</b>	<b>3,355 50,792 2,826 3,355</b>	<b>91.6841 % 94.3987 % 94.3029 % 62.4739 %</b>

Total Sites: 6

**Figure 15**

*District 1 – 2015-2016 – Direct Certification Percentages*

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Child Nutrition Information and Payment System | Site Enrollment Site List

CNIPS Site Enrollment List	
111111	Status: Active
<b>School District 1</b>	
DBA:	
Address: Kentucky	
Type of Agency: Educational Institution	
Type of SNP Organization: Public	

Reporting Month: October 2015

Action	Site ID	Site Name	Type	Lunch Free	Lunch Reduced	Lunch Paid	Lunch Total	% Free & Reduced
View		School B.2	Eligibility	415	0	0	415	100.0000 %
			Meals	7,569	0	0	7,569	100.0000 %
			Participation	379	0	0	379	100.0000 %
			Direct Cert	196	283		415	115.4217 %
View		School A	Eligibility	633	0	0	633	100.0000 %
			Meals	11,625	0	0	11,625	100.0000 %
			Participation	582	0	0	582	100.0000 %
			Direct Cert	320	450		633	121.6430 %
View		Data Not Used	Eligibility	719	0	44	763	94.2720 %
			Meals	12,213	0	0	12,213	100.0000 %
			Participation	611	0	0	611	100.0000 %
			Direct Cert	292	473		763	100.2621 %
View		School B.1	Eligibility	741	0	0	741	100.0000 %
			Meals	9,935	0	0	9,935	100.0000 %
			Participation	497	0	0	497	100.0000 %
			Direct Cert	356	542		741	121.1876 %
View		Data Not Used	Eligibility	476	0	0	476	100.0000 %
			Meals	8,357	0	0	8,357	100.0000 %
			Participation	418	0	0	418	100.0000 %
			Direct Cert	212	321		476	111.9748 %
<b>District Totals</b>			<b>Eligibility</b>	<b>2,984</b>	<b>0</b>	<b>44</b>	<b>3,028</b>	<b>98.5469 %</b>
			<b>Meals</b>	<b>49,699</b>	<b>0</b>	<b>0</b>	<b>49,699</b>	<b>100.0000 %</b>
			<b>Participation</b>	<b>2,487</b>	<b>0</b>	<b>0</b>	<b>2,487</b>	<b>%</b>
			<b>Direct Cert</b>	<b>1,376</b>	<b>2,069</b>		<b>3,028</b>	<b>100.0000 %</b>
								<b>113.7715 %</b>

Total Sites: 5



**Figure 16**

*District 2 – 2015-2016 – Direct Certification Percentages*

CNIPS Site Enrollment List	
22222	Status: Active
<b>School District 2</b>	
DBA:	
Address: Kentucky	
Type of Agency: Educational Institution	
Type of SNP Organization: Public	

Reporting Month: October 2015

Action	Site ID	Site Name	Type	Lunch Free	Lunch Reduced	Lunch Paid	Lunch Total	% Free & Reduced
View		Data Not Used	Eligibility	875	0	96	971	90.1280 %
			Meals	12,038	0	0	12,038	100.0000 %
			Participation	709	0	0	709	100.0000 %
			Direct Cert	292	175		971	48.0947 %
View		Data Not Used	Eligibility	409	0	0	409	100.0000 %
			Meals	5,456	0	0	5,456	100.0000 %
			Participation	321	0	0	321	100.0000 %
			Direct Cert	179	90		409	65.7702 %
View		Data Not Used	Eligibility	485	0	0	485	100.0000 %
			Meals	7,454	0	0	7,454	100.0000 %
			Participation	439	0	0	439	100.0000 %
			Direct Cert	214	106		485	65.9794 %
View		Data Not Used	Eligibility	766	0	0	766	100.0000 %
			Meals	11,375	0	0	11,375	100.0000 %
			Participation	670	0	0	670	100.0000 %
			Direct Cert	288	141		766	56.0052 %
View		School D	Eligibility	722	0	0	722	100.0000 %
			Meals	11,003	0	0	11,003	100.0000 %
			Participation	648	0	0	648	100.0000 %
			Direct Cert	334	133		722	64.6814 %
<b>District Totals</b>			<b>Eligibility</b>	<b>3,257</b>	<b>0</b>	<b>96</b>	<b>3,353</b>	<b>97.1369 %</b>
			<b>Meals</b>	<b>47,326</b>	<b>0</b>	<b>0</b>	<b>47,326</b>	<b>100.0000 %</b>
			<b>Participation</b>	<b>2,787</b>	<b>0</b>	<b>0</b>	<b>2,787</b>	<b>%</b>
			<b>Direct Cert</b>	<b>1,307</b>	<b>645</b>		<b>3,353</b>	<b>100.0000 %</b>
								<b>%</b>
								<b>58.2165 %</b>

Total Sites: 5

**Figure 17**

*District 1 – 2016-2017 – Direct Certification Percentages*

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Child Nutrition Information and Payment System | Site Enrollment Site List

CNIPS Site Enrollment List	
111111	Status: Active
<b>School District 1</b>	
DBA:	
Address: Kentucky	
Type of Agency: Educational Institution	
Type of SNP Organization: Public	

Reporting Month: October 2016

Action	Site ID	Site Name	Type	Lunch Free	Lunch Reduced	Lunch Paid	Lunch Total	% Free & Reduced
View		School B.2	Eligibility Meals Participation Direct Cert	391 5,751 360 184	0 0 0 86	0 0 0 0	391 5,751 360 391	100.0000 % 100.0000 % 100.0000 % 69.0537 %
View		School A	Eligibility Meals Participation Direct Cert	691 9,589 600 321	0 0 0 190	0 0 0 0	691 9,589 600 691	100.0000 % 100.0000 % 100.0000 % 73.9508 %
View		Data Not Used	Eligibility Meals Participation Direct Cert	731 10,975 686 276	0 0 0 214	8 0 0 0	739 10,975 686 739	98.8640 % 100.0000 % 100.0000 % 66.3058 %
View		School B.1	Eligibility Meals Participation Direct Cert	679 8,776 549 362	0 0 0 164	0 0 0 0	679 8,776 549 679	100.0000 % 100.0000 % 100.0000 % 77.4669 %
View		Data Not Used	Eligibility Meals Participation Direct Cert	478 7,052 441 220	0 0 0 124	0 0 0 0	478 7,052 441 478	100.0000 % 100.0000 % 100.0000 % 71.9665 %
<b>District Totals</b>			<b>Eligibility Meals Participation Direct Cert</b>	<b>2,970 42,143 2,636 1,363</b>	<b>0 0 0 778</b>	<b>8 0 0 0</b>	<b>2,978 42,143 2,636 2,978</b>	<b>99.7314 % 100.0000 % % 100.0000 % % 71.8939 %</b>

Total Sites: 5

**Figure 18**

*District 2 – 2016-2017 – Direct Certification Percentages*

CNIPS Site Enrollment List	
22222	Status: Active
<b>School District 2</b>	
DBA:	
Address: Kentucky	
Type of Agency: Educational Institution	
Type of SNP Organization: Public	

Reporting Month: October 2016

Action	Site ID	Site Name	Type	Lunch Free	Lunch Reduced	Lunch Paid	Lunch Total	% Free & Reduced
View		Data Not Used	Eligibility	907	0	90	997	90.9280 %
			Meals	11,207	0	0	11,207	100.0000 %
			Participation	701	0	0	701	100.0000 %
			Direct Cert	365	181		997	54.7643 %
View		Data Not Used	Eligibility	397	0	0	397	100.0000 %
			Meals	5,303	0	0	5,303	100.0000 %
			Participation	332	0	0	332	100.0000 %
			Direct Cert	211	82		397	73.8035 %
View		Data Not Used	Eligibility	423	0	0	423	100.0000 %
			Meals	6,110	0	0	6,110	100.0000 %
			Participation	382	0	0	382	100.0000 %
			Direct Cert	200	81		423	66.4303 %
View		Data Not Used	Eligibility	739	0	0	739	100.0000 %
			Meals	10,294	0	0	10,294	100.0000 %
			Participation	644	0	0	644	100.0000 %
			Direct Cert	335	136		739	63.7348 %
View		School D	Eligibility	726	0	0	726	100.0000 %
			Meals	10,560	0	0	10,560	100.0000 %
			Participation	660	0	0	660	100.0000 %
			Direct Cert	391	132		726	72.0386 %
<b>District Totals</b>				<b>3,192</b>	<b>0</b>	<b>90</b>	<b>3,282</b>	<b>97.2578 %</b>
				<b>43,474</b>	<b>0</b>	<b>0</b>	<b>43,474</b>	<b>100.0000 %</b>
				<b>2,719</b>	<b>0</b>	<b>0</b>	<b>2,719</b>	<b>%</b>
				<b>1,502</b>	<b>612</b>		<b>3,282</b>	<b>100.0000 %</b>
								<b>64.4119 %</b>

Total Sites: 5

**Figure 19**

*District 1 – 2017-2018 – Direct Certification Percentages*

3/3/22, 12:20 PM

Child Nutrition Information and Payment System | Site Enrollment Site List

<b>CNIPS</b>	
<b>Site Enrollment List</b>	
111111 Status: Active	
<b>School District 1</b>	
DBA:	
Address: Kentucky	
Type of Agency: Educational Institution	
Type of SNP Organization: Public	

**Reporting Month:** October 2017

Action	Site ID	Site Name	Type	Lunch Free	Lunch Reduced	Lunch Paid	Lunch Total	% Free & Reduced
View		School B.2	Eligibility	365	0	0	365	100.0000 %
			Meals	5,720	0	0	5,720	100.0000 %
			Participation	337	0	0	337	100.0000 %
			Direct Cert	148	245		365	107.6712 %
View		School A	Eligibility	670	0	0	670	100.0000 %
			Meals	9,796	0	0	9,796	100.0000 %
			Participation	577	0	0	577	100.0000 %
			Direct Cert	298	159		670	68.2090 %
View		Data Not Used	Eligibility	760	0	0	760	100.0000 %
			Meals	10,922	0	0	10,922	100.0000 %
			Participation	643	0	0	643	100.0000 %
			Direct Cert	284	197		760	63.2895 %
View		School B.1	Eligibility	665	0	0	665	100.0000 %
			Meals	9,516	0	0	9,516	100.0000 %
			Participation	560	0	0	560	100.0000 %
			Direct Cert	329	160		665	73.5338 %
View		Data Not Used	Eligibility	478	0	0	478	100.0000 %
			Meals	7,437	0	0	7,437	100.0000 %
			Participation	438	0	0	438	100.0000 %
			Direct Cert	205	131		478	70.2929 %
<b>District Totals</b>			<b>Eligibility</b>	<b>2,938</b>	<b>0</b>	<b>0</b>	<b>2,938</b>	<b>100.0000</b>
			<b>Meals</b>	<b>43,391</b>	<b>0</b>	<b>0</b>	<b>43,391</b>	<b>%</b>
			<b>Participation</b>	<b>2,555</b>	<b>0</b>	<b>0</b>	<b>2,555</b>	<b>100.0000</b>
			<b>Direct Cert</b>	<b>1,264</b>	<b>892</b>		<b>2,938</b>	<b>%</b>
								<b>100.0000</b>
								<b>73.3833</b>

Total Sites: 5

**Figure 20**

*District 2 – 2017-2018 – Direct Certification Percentages*

CNIPS Site Enrollment List	
22222	Status: Active
<b>School District 2</b>	
DBA:	
Address: Kentucky	
Type of Agency: Educational Institution	
Type of SNP Organization: Public	

Reporting Month: October 2017

Action	Site ID	Site Name	Type	Lunch Free	Lunch Reduced	Lunch Paid	Lunch Total	% Free & Reduced
View		Data Not Used	Eligibility Meals Participation Direct Cert	895 11,804 695 348	0 0 0 208	81 0 0	976 11,804 695 976	91.7280 % 100.0000 % 100.0000 % 56.9672 %
View		Data Not Used	Eligibility Meals Participation Direct Cert	413 5,707 336 239	0 0 0 75	0 0 0	413 5,707 336 413	100.0000 % 100.0000 % 100.0000 % 76.0291 %
View		Data Not Used	Eligibility Meals Participation Direct Cert	403 6,261 369 205	0 0 0 73	0 0 0	403 6,261 369 403	100.0000 % 100.0000 % 100.0000 % 68.9826 %
View		Data Not Used	Eligibility Meals Participation Direct Cert	728 10,625 625 316	0 0 0 153	0 0 0	728 10,625 625 728	100.0000 % 100.0000 % 100.0000 % 64.4231 %
View		School D	Eligibility Meals Participation Direct Cert	687 10,986 647 350	0 0 0 121	0 0 0	687 10,986 647 687	100.0000 % 100.0000 % 100.0000 % 68.5590 %
<b>District Totals</b>			Eligibility Meals Participation Direct Cert	<b>3,126</b> <b>45,383</b> <b>2,672</b> <b>1,458</b>	<b>0</b> <b>0</b> <b>0</b> <b>630</b>	<b>81</b> <b>0</b> <b>0</b>	<b>3,207</b> <b>45,383</b> <b>2,672</b> <b>3,207</b>	<b>97.4743 %</b> <b>100.0000 %</b> <b>%</b> <b>100.0000 %</b> <b>%</b> <b>65.1076 %</b>

Total Sites: 5

**Figure 21**

*District 1 – 2018-2019 – Direct Certification Percentages*

3/3/22, 12:28 PM

Child Nutrition Information and Payment System | Site Enrollment Site List

<b>CNIPS</b>	
<b>Site Enrollment List</b>	
111111 Status: Active	
<b>School District 1</b>	
DBA:	
Address: Kentucky	
Type of Agency: Educational Institution	
Type of SNP Organization: Public	

**Reporting Month:** October 2018

Action	Site ID	Site Name	Type	Lunch Free	Lunch Reduced	Lunch Paid	Lunch Total	% Free & Reduced
View		School B.2	Eligibility	363	0	0	363	100.0000 %
			Meals	5,963	0	0	5,963	100.0000 %
			Participation	332	0	0	332	100.0000 %
			Direct Cert	166	102		363	73.8292 %
View		School A	Eligibility	659	0	0	659	100.0000 %
			Meals	10,563	0	0	10,563	100.0000 %
			Participation	587	0	0	587	100.0000 %
			Direct Cert	328	170		659	75.5690 %
View		Data Not Used	Eligibility	771	0	0	771	100.0000 %
			Meals	12,214	0	0	12,214	100.0000 %
			Participation	679	0	0	679	100.0000 %
			Direct Cert	254	264		771	67.1855 %
View		School B.1	Eligibility	629	0	0	629	100.0000 %
			Meals	10,152	0	0	10,152	100.0000 %
			Participation	564	0	0	564	100.0000 %
			Direct Cert	328	159		629	77.4245 %
View		Data Not Used	Eligibility	481	0	0	481	100.0000 %
			Meals	7,801	0	0	7,801	100.0000 %
			Participation	434	0	0	434	100.0000 %
			Direct Cert	196	136		481	69.0229 %
<b>District Totals</b>			<b>Eligibility</b>	<b>2,903</b>	<b>0</b>	<b>0</b>	<b>2,903</b>	<b>100.0000</b>
			<b>Meals</b>	<b>46,693</b>	<b>0</b>	<b>0</b>	<b>46,693</b>	<b>%</b>
			<b>Participation</b>	<b>2,596</b>	<b>0</b>	<b>0</b>	<b>2,596</b>	<b>100.0000</b>
			<b>Direct Cert</b>	<b>1,272</b>	<b>831</b>		<b>2,903</b>	<b>%</b>
								<b>100.0000</b>
								<b>%</b>
								<b>72.4423 %</b>

Total Sites: 5

**Figure 22**

*District 2 – 2018-2019 – Direct Certification Percentages*

CNIPS Site Enrollment List	
22222	Status: Active
<b>School District 2</b>	
DBA:	
Address: Kentucky	
Type of Agency: Educational Institution	
Type of SNP Organization: Public	

Reporting Month: October 2018

Action	Site ID	Site Name	Type	Lunch Free	Lunch Reduced	Lunch Paid	Lunch Total	% Free & Reduced
View		Data Not Used	Eligibility Meals Participation Direct Cert	900 12,982 722 308	0 0 0 228	61 0 0	961 12,982 722 961	93.6480 % 100.0000 % 100.0000 % 55.7752 %
View		Data Not Used	Eligibility Meals Participation Direct Cert	409 5,880 327 207	0 0 0 98	0 0 0	409 5,880 327 409	100.0000 % 100.0000 % 100.0000 % 74.5721 %
View		Data Not Used	Eligibility Meals Participation Direct Cert	424 6,940 386 212	0 0 0 86	0 0 0	424 6,940 386 424	100.0000 % 100.0000 % 100.0000 % 70.2830 %
View		Data Not Used	Eligibility Meals Participation Direct Cert	682 10,744 597 269	0 0 0 185	0 0 0	682 10,744 597 682	100.0000 % 100.0000 % 100.0000 % 66.5689 %
View		School D	Eligibility Meals Participation Direct Cert	682 11,397 634 302	0 0 0 155	0 0 0	682 11,397 634 682	100.0000 % 100.0000 % 100.0000 % 67.0088 %
<b>District Totals</b>				<b>3,097</b>	<b>0</b>	<b>61</b>	<b>3,158</b>	<b>98.0684 %</b>
				<b>47,943</b>	<b>0</b>	<b>0</b>	<b>47,943</b>	<b>100.0000 %</b>
				<b>2,666</b>	<b>0</b>	<b>0</b>	<b>2,666</b>	<b>%</b>
				<b>1,298</b>	<b>752</b>		<b>3,158</b>	<b>100.0000 %</b>
								<b>%</b>
								<b>64.9145 %</b>

Total Sites: 5

**Figure 23**

*t-Test Statistical Analysis – 3<sup>rd</sup> Grade MAP Vocabulary Data*

**t-Test Statistical Analysis of MAP Vocabulary Data  
3rd Grade**

**School A  
3rd Grade**

MAP's Vocabulary		
Year	Percentage of Direct Cert.	Mean RIT Scores
2014-2015	68	181.7
2015-2016	122	187.4
2016-2017	74	181.2
2017-2018	68	181.9
2018-2019	76	183.5

**School B.1 & School B.2  
3rd Grade**

MAP's Vocabulary		
Year	Percentage of Direct Cert.	Mean RIT Scores
2014-2015	65	184.7
2015-2016	121	184.6
2016-2017	77	187.2
2017-2018	74	185.6
2018-2019	77	185

**School D  
3rd Grade**

MAP's Vocabulary		
Year	Percentage of Direct Cert.	Mean RIT Scores
2014-2015	64	181.3
2015-2016	65	189.3
2016-2017	72	188.8
2017-2018	69	190.5
2018-2019	67	189

t-Test: Two-Sample Assuming Equal Variances

	Percentage of Direct Cert.	Mean RIT Scores
Mean	81.6	183.14
Variance	522.8	6.413
Observations	5	5
Pooled Variance	264.6065	
Hypothesized Mean Difference	0	
df	8	
t Stat	-9.869767205	
P(T<=t) one-tail	4.68007E-06	
t Critical one-tail	1.859548038	
P(T<=t) two-tail	9.36013E-06	
t Critical two-tail	2.306004135	

p<.001

p<0.5

t-Test: Two-Sample Assuming Equal Variances

	Percentage of Direct Cert.	Mean RIT Scores
Mean	82.8	185.42
Variance	480.2	1.142
Observations	5	5
Pooled Variance	240.671	
Hypothesized Mean Difference	0	
df	8	
t Stat	-10.4589993	
P(T<=t) one-tail	3.03284E-06	
t Critical one-tail	1.859548038	
P(T<=t) two-tail	6.06568E-06	
t Critical two-tail	2.306004135	

p<.001

p<0.5

t-Test: Two-Sample Assuming Equal Variances

	Percentage of Direct Cert.	Mean RIT Scores
Mean	67.4	187.78
Variance	10.3	13.557
Observations	5	5
Pooled Variance	11.9285	
Hypothesized Mean Difference	0	
df	8	
t Stat	-55.11012878	
P(T<=t) one-tail	6.51964E-12	
t Critical one-tail	1.859548038	
P(T<=t) two-tail	1.30393E-11	
t Critical two-tail	2.306004135	

p<.001

p<0.5



**Figure 24**

*t-Test Statistical Analysis – 4<sup>th</sup> Grade MAP Vocabulary Data*

**t -Test Statistical Analysis of MAP Vocabulary Data  
4th Grade**

**School A  
4th Grade**

Year	MAP's Vocabulary	
	Percentage of Direct Cert.	Mean RIT Scores
2014-2015	68	190.4
2015-2016	122	194.4
2016-2017	74	189.5
2017-2018	68	191.7
2018-2019	76	192.4

**School B.2  
4th Grade**

Year	MAP's Vocabulary	
	Percentage of Direct Cert.	Mean RIT Scores
2014-2015	65	191.1
2015-2016	121	0
2016-2017	77	193.3
2017-2018	74	196.5
2018-2019	77	198.8

**School D  
4th Grade**

Year	MAP's Vocabulary	
	Percentage of Direct Cert.	Mean RIT Scores
2014-2015	64	195.5
2015-2016	65	197.6
2016-2017	72	201.2
2017-2018	69	195
2018-2019	67	198

t-Test: Two-Sample Assuming Equal Variances

	Percentage of Direct Cert.	Mean RIT Scores
Mean	81.6	191.68
Variance	522.8	3.577
Observations	5	5
Pooled Variance	263.1885	
Hypothesized Mean Difference	0	
df	8	
t Stat	-10.72864736	
P(T<=t) one-tail	2.50446E-06	
t Critical one-tail	1.859548038	
P(T<=t) two-tail	5.00893E-06	<b>p&lt;0.5</b>
t Critical two-tail	2.306004135	

**p<.001**

t-Test: Two-Sample Assuming Equal Variances

	Percentage of Direct Cert.	Mean RIT Scores
Mean	82.8	145.225
Variance	480.2	9378.3825
Observations	5	4
Pooled Variance	4293.706786	
Hypothesized Mean Difference	0	
df	7	
t Stat	-1.42015616	
P(T<=t) one-tail	0.09926592	
t Critical one-tail	1.894578605	
P(T<=t) two-tail	0.198531839	<b>p&gt;0.5</b>
t Critical two-tail	2.364624252	

**p>.01**

t-Test: Two-Sample Assuming Equal Variances

	Percentage of Direct Cert.	Mean RIT Scores
Mean	67.4	197.46
Variance	10.3	6.048
Observations	5	5
Pooled Variance	8.174	
Hypothesized Mean Difference	0	
df	8	
t Stat	-71.92774373	
P(T<=t) one-tail	7.77322E-13	
t Critical one-tail	1.859548038	
P(T<=t) two-tail	1.55464E-12	<b>p&lt;0.5</b>
t Critical two-tail	2.306004135	

**p<.001**

**Figure 25**

*t-Test Statistical Analysis – 5<sup>th</sup> Grade MAP Vocabulary Data*

**t-Test Statistical Analysis of MAP Vocabulary Data  
5th Grade**

**School A  
5th Grade  
MAP's Vocabulary**

Year	Percentage of Direct Cert.	Mean RIT Scores
2014-2015	68	196.5
2015-2016	122	201.1
2016-2017	74	197.2
2017-2018	68	199.8
2018-2019	76	201.5

**School B.2  
5th Grade  
MAP's Vocabulary**

Year	Percentage of Direct Cert.	Mean RIT Scores
2014-2015	65	197
2015-2016	121	0
2016-2017	77	197.1
2017-2018	74	207.1
2018-2019	77	204.9

**School D  
5th Grade  
MAP's Vocabulary**

Year	Percentage of Direct Cert.	Mean RIT Scores
2014-2015	64	202.4
2015-2016	65	209
2016-2017	72	210.9
2017-2018	69	203.8
2018-2019	67	203.4

t-Test: Two-Sample Assuming Equal Variances

	Percentage of Direct Cert.	Mean RIT Scores
Mean	81.6	199.22
Variance	522.8	5.137
Observations	5	5
Pooled Variance	263.9685	
Hypothesized Mean Difference	0	
df	8	
t Stat	-11.44656364	
P(T<=t) one-tail	1.5349E-06	
t Critical one-tail	1.859548038	
P(T<=t) two-tail	3.0698E-06	p<0.5
t Critical two-tail	2.306004135	

p<.001

t-Test: Two-Sample Assuming Equal Variances

	Percentage of Direct Cert.	Mean RIT Scores
Mean	84.25	161.22
Variance	626.25	8143.097
Observations	4	5
Pooled Variance	4921.591143	
Hypothesized Mean Difference	0	
df	7	
t Stat	-1.63554487	
P(T<=t) one-tail	0.07297471	
t Critical one-tail	1.894578605	
P(T<=t) two-tail	0.14594942	p>0.5
t Critical two-tail	2.364624252	

p=0.1

t-Test: Two-Sample Assuming Equal Variances

	Percentage of Direct Cert.	Mean RIT Scores
Mean	67.4	205.9
Variance	10.3	14.38
Observations	5	5
Pooled Variance	12.34	
Hypothesized Mean Difference	0	
df	8	
t Stat	-62.3393397	
P(T<=t) one-tail	2.43711E-12	
t Critical one-tail	1.859548038	
P(T<=t) two-tail	4.87422E-12	p<0.5
t Critical two-tail	2.306004135	

p<.001

## Appendix C

### Consent Form 1

Consent Form/Letter  
District 1

October 19, 2021

██████████, Superintendent  
██████████ School District  
KY ██████████  
Phone: (806) ██████████

RE: Permission to Utilize Archival K-Prep Test Data & MAP Data to Conduct Research Study

Dear Mr. ██████████:

I am writing to request permission to utilize your district's K-Prep test data on your annual school report cards to conduct a research study on the effect poverty has on reading achievement and vocabulary development on elementary students. The study will compare archival data from several school districts in southeastern Kentucky. I am currently enrolled in the doctoral program at the University of the Cumberlands and plan on using the information obtained as part of my dissertation.

I would greatly appreciate your support in allowing me to utilize your data and willingness to participate in this quantitative study. If approval is granted, I will access K-Prep test data from your district's school report card and use it in my analysis.

Your approval to conduct this study will be greatly appreciated. I will be happy to answer any questions or concerns that you may have. You may contact me at my email address: [mitzi.stephens@mccreary.kyschools.us](mailto:mitzi.stephens@mccreary.kyschools.us) or call me at (806) 310-1933.

If you agree, please respond to this e-mail stating your permission so that I may print it and keep for my records. Alternatively, kindly submit a signed letter of permission on your institution's letterhead acknowledging your consent and permission for me to conduct this survey/study at your institution.

Sincerely,

*Mitzi Stephens*

Melissa (Mitzi) Stephens,  
Doctoral Candidate, University of the Cumberlands

**Consent Form 2**

Consent Form/Letter  
District 2]

October 19, 2021

██████████, Superintendent  
██████████ School District

KY ██████████

Phone: (806) ██████████

RE: Permission to Utilize Archival K-Prep Test Data & MAP Data to Conduct Research Study

Dear Mr. ██████████:

I am writing to request permission to utilize your district's K-Prep test data on your annual school report cards to conduct a research study on the effect poverty has on reading achievement and vocabulary development on elementary students. The study will compare archival data from several school districts in southeastern Kentucky. I am currently enrolled in the doctoral program at the University of the Cumberlands and plan on using the information obtained as part of my dissertation.

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Your approval to conduct this study will be greatly appreciated. I will be happy to answer any questions or concerns that you may have. You may contact me at my email address: [mitzi.stephens@mccreary.kyschools.us](mailto:mitzi.stephens@mccreary.kyschools.us) or call me at (806) 310-1933.

If you agree, please respond to this e-mail stating your permission so that I may print it and keep for my records. Alternatively, kindly submit a signed letter of permission on your institution's letterhead acknowledging your consent and permission for me to conduct this survey/study at your institution.

Sincerely,

*Mitzi Stephens*

Melissa (Mitzi) Stephens,  
Doctoral Candidate, University of the Cumberlands

**Appendix D****IRB Approval**

## IRB Approval Letter

Principal Investigator: Melissa D.

Stephens From: Institutional Review Board

Subject: IRB Approved (#668-1021)

Project title: The Effect of Poverty on Student Achievement in Reading and Vocabulary Development in rural Southeastern Schools.

Approval Date: 10/21/2021

Thank you for submitting your materials to the IRB office. The above referenced research project has been reviewed by the University of the Cumberland IRB and has been declared **exempt** under 45 CFR 46.101(b). This approval is limited to the approved protocols described in the application which have been reviewed as acceptable activities outlined by the Office of Human Research Protections (HHS.org).

However, if there are changes to research project in the following areas, a modification form must be submitted to the IRB office:

- Substantial change to recruitment materials or consent documents
- Change in the data collection process
- Change in the location of the study
- Change in key personnel
- Change in instrumentation

Principal investigators are responsible for ensuring that studies are conducted according to University protocol. As a principal investigator, you have multiple responsibilities to the IRB, the research subjects and the faculty partner. If you have questions, please feel free to email me at [IRB@ucumberland.edu](mailto:IRB@ucumberland.edu)

Please continue to work with your dissertation advisor as you proceed.



Sincerely,

**IRB Office**

Graduate School, Director of Research and Ethics University of the Cumberland

## Appendix E

### E-mail Requesting Help Locating an Article

 Reply  Reply All  Forward  IM




Thu 12/9/2021 9:36 AM

Steve Harman <S.Harman@satevepost.org>

RE: Need to Locate an Article Written by J. SerVaas from 2011

To:  Stephens, Mitzi

 You replied to this message on 12/9/2021 9:42 AM.



2011\_09\_01--004\_SP--American Schools in Crisis.pdf  
5 MB

**From:** Stephens, Mitzi [<mailto:mitzi.stephens@mccreary.kyschools.us>]

**Sent:** Thursday, December 9, 2021 9:05 AM

**To:** Web Help <[webhelp@satevepost.org](mailto:webhelp@satevepost.org)>

**Subject:** Need to Locate an Article Written by J. SerVaas from 2011

To Whom It May Concern:




I am working on my dissertation and I would like a copy of an article written by J. SerVaas in one of your 2011 magazines. The only reference information I have is as follows: SerVaas, J. (2011). Poverty and educational reform. Saturday Evening Post, 283(5), 4.

I would really appreciate any help you may be able to give me.

Respectfully,

Mitzi Stephens

## E-mail Response to Request for Help Locating an Article

 Reply  Reply All  Forward  IM





Thu 12/9/2021 9:36 AM

Steve Harman <S.Harman@satevepost.org>

RE: Need to Locate an Article Written by J. SerVaas from 2011

To  Stephens, Mitzi

 You replied to this message on 12/9/2021 9:42 AM.

 2011\_09\_01--004\_SP--American Schools in Crisis.pdf  
5 MB

I think I found the article you are referring to, from the September/October 2011 issue of The Saturday Evening Post (See attached). Our Publisher, Joan Servaas, introduced the article and talked about it on a page titled 'Poverty and Educational Reform', but the main article she references is called 'American Schools in Crisis', and it is written by "Diane Ravitch, former U.S. assistant secretary of education". I've included both the article by Joan Servaas, as well as the article that she references in the enclosed attachment.

Please let me know if that is what you are looking for, and good luck with your dissertation.

Thanks for your interest in The Saturday Evening Post.

Steve

Appendix F

*G\*Power Analysis for Sample Size*

