COMPARING THE ACADEMIC GROWTH AMONG BLACK STUDENTS IN

PHILADELPHIA'S BLACK-OPERATED CHARTER SCHOOLS, NON-BLACK OPERATED

CHARTER SCHOOLS, AND TRADITIONAL PUBLIC SCHOOLS.

by

Cherryann Joseph

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

Liberty University

2022

COMPARING THE ACADEMIC GROWTH AMONG BLACK STUDENTS IN

PHILADELPHIA'S BLACK-OPERATED CHARTER SCHOOLS, NON-BLACK OPERATED

CHARTER SCHOOLS, AND TRADITIONAL PUBLIC SCHOOLS.

by

Cherryann Joseph

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

Liberty University, Lynchburg, VA

2022

APPROVED BY:

Angela Y. Ford, EdD., Committee Chair

Jeffrey S. Savage, EdD., Committee Member

ABSTRACT

This *ex post facto*, causal-comparative quantitative study assessed the math and English language arts (ELA) 7th to 8th-grade academic growth among Black students enrolled in Philadelphia's black-operated public charter schools, non-black operated charter schools, and traditional public schools while controlling for 6th-grade exam scores. Over 65 years after *Brown versus Board of Education* disallowed public school segregation, the academic achievement gap between Black and white students persists. Various parental and educational stakeholders have considered charter public schools as suitable educational alternatives for narrowing this academic gap. This condition along with an assertion by some community activists that Black leaders are best suited for educating Black children served as the impetus for this study. The sample included student scores (n = 463 for math and n= 506 for ELA) from the 2016 to 2019 Pennsylvania System of School Assessment (PSSA) exams. The researcher statistically assessed the data with a one-way analysis of covariance (ANCOVA) and used the dynamic model of educational effectiveness to theoretically analyze the findings. There were no statistically significant differences in the academic growth among Black students in the three types of schools. Further analysis of the data revealed that students in non-black operated charter schools had higher mean scores on the math and ELA exams than their counterparts. The continued failure of public schools to provide an equitable, quality education for many Black students should encourage further investigations into the possible effects of charter schools and Black leaders on academic performance.

Keywords: academic growth, black-operated schools, charter public schools, dynamic model, school-level factors, traditional public schools.

Copyright Page

Dedication

This manuscript is dedicated to those who have been instrumental to my success as a person and educator:

- Of primary importance, is my Lord and Savior Jesus Christ without him I can do nothing.

- My mother, Anita Roper, whose work ethic, love, and sacrifice enabled my success.

- My New Beginnings Church of God brothers and sisters, who diligently prayed for and encouraged me to finish this work.

Acknowledgments

Table of Contents

List of Tables

List of Figures

List of Abbreviations

African American Charter Schools Coalition (AACSC)

Analysis of covariance (ANCOVA)

Annual Charter Evaluation (ACE)

Black-operated public charter schools (BCPS)

Charter management organizations (CMO)

Charter public schools (CPS)

Common Core of Data (CCD)

Comprehensive Model (CM) of educational effectiveness

Data Recognition Corporation (DRC)

District assessment coordinator (DAC)

Educational effectiveness research (EER)

Education management organizations (EMO)

English language arts (ELA)

National Alliance for Public Charter Schools (NAPCS)

National Center for Education Statistics (NCES)

National Charter School Research Project (NCSRP)

Non-black operated charter public schools (NCPS)

Pennsylvania Department of Education (PDE)

Pennsylvania System of School Assessment (PSSA)

Philadelphia School District (PSD)

School learning environment (SLE)

School level assessment coordinators (SAC)

Science, technology, engineering, and math (STEM)

Socioeconomic status (SES)

Statistical Package for the Social Sciences (SPSS)

Traditional public schools (TPS)

Vender Operated School (VOS)

CHAPTER ONE: INTRODUCTION

Overview

This causal-comparative quantitative study sought to determine if there were differences in Black students' academic growth in Philadelphia's black-operated charter public schools (BCPS), non-Black operated public charter schools (NCPS), and traditional public schools (TPS). Chapter One shares information on the educational challenges and disparity in outcomes that many Black students have experienced. The chapter also provides an overview of the study's primary components. It begins with a brief historical overview of Black Americans' fight for equitable and quality education, the current social context of this issue, and the role of public schools in this scholastic experience. An overview of the theoretical framework and its suitability for examining the issue follows this overview. Next, the statement of the problem summarizes the extant relevant literature on this topic. The study's purpose, significance, and two research questions follow the problem statement. Chapter One concludes with a list of key terms and definitions.

Background

Despite decades of federal, state, and local educational reform, funding, and program initiatives, significant achievement, and attainment gaps continue to persist between Black and white students (Taylor et al., 2018). Over 65 years after the *Brown versus Board of Education* decision that prohibited school segregation, the debate continues about the best way to provide an equitable and quality education for all children (Cohodes, 2018; Jeynes, 2018; Taylor et al., 2018). Two assertions made by African American Charter Schools Coalition (AACSC) members brought some media attention to this issue. First, the AACSC accused the city of Philadelphia's school board of unfairly treating and targeting black-operated schools for closure (Bailey, 2020).

Philadelphia school district (PSD) data from 2014 to 2019 revealed that minorities operated almost eighty-seven percent of the charter public schools (CPS) that were closed in Philadelphia (Hann, 2019). In response, a school board representative argued that academic, financial, and other organizational shortfalls were the primary reasons for the school closures (Hann, 2019). A search of extant literature yielded a limited number of studies that provided mixed findings on this issue. Results from two multi-state studies on CPS applications and school closures showed that regulatory barriers dampened approval rates for Black and Latino applicants and that charter schools with large minority student populations had greater closure rates (Center for Research, 2017; Kingsbury et al., 2020). While a systematic review of 23 Afro-centric charter schools found that only 34% of these schools met adequate yearly progress goals (Teasley et al., 2016).

Furthermore, the AACSC argued that schools operated by Black leaders and teachers provide the best learning environments for Black children (Bailey, 2020). One study of 82,409 students from over 200 schools, found that Black students with culturally matched teachers experienced several positive effects (Egalite & Kisida, 2018). These results supported findings from other researchers which showed that children with same race teachers had a better work ethic, higher motivation, more confidence, greater self-esteem, and better academic outcomes (Egalite & Kisida, 2018; Gershenson, 2019; Gershenson, Hart, Hyman, et al., 2018; Gershenson, Holt, & Papageorge, 2016). Yet, school demographic data consistently show that white educators and leaders staff most public schools and that most Black students have insignificant exposure to same-race teachers and leaders (Bartanen & Grissom, 2021; Egalite & Kisida, 2018; Gershenson, 2019; Gershenson, Hart, Hyman, et al., 2018; Grissom, Egalite, & Lindsay, 2021).

Moreover, results from several other research studies indicated that school leaders' ethnic backgrounds correlated with positive outcomes for students in schools where minority children

are the majority. Culturally matched leaders served as role models for minority students, have

higher expectations for these children, and provided them with greater academic and other

support (Bartanen & Grissom, 2019; Grissom, Egalite, & Lindsay, 2021; Grissom, Rodriguez, &

Kern, 2017). Leaders such as this also showed a propensity for hiring ethnically diverse staff

which increased teacher-student cultural matching rates (Bartanen & Grissom, 2019, 2021;

D'Amico et al., 2017; Goff et al., 2018; Grissom, Egalite, & Lindsay, 2021). Aside from these

few studies, the extant literature on the effects of minority leaders on the persistent achievement

gap that exists between Black and white students is relatively scarce (Hussar et al., 2020). The

following sections provide a historical overview and the current social context of this issue along

with the theoretical framework and description of the study's design.

Historical Overview

Providing children with a quality education that helps them fulfill their potential is one of

the most enduring promises of public-school education (Gardner, 1983). Yet, historical, and

current practices and policies deprived many Black children of opportunities to capitalize on this

promise (Anderson, 1988; Taylor et al., 2018). The following section provides a brief historical

overview of the educational challenges experienced by Black Americans.

Slavery and Education

Black Americans' educational history contains many instances of grave injustices, but it

also includes stories of a resilient pursuit of an equitable and quality education (Bullock, 1967;

Goodridge, 2019). During the time of slavery, southern states banned education for slaves and

unjust policies in northern states denied most Blacks a quality public education (Anderson, 1988;

Bullock, 1967; Roucek, 1964). Despite these adverse conditions, some slaves and free Black

people managed to get access to vocational training and even to an academic education (Bullock,

1967; Roucek, 1964). Most notable were schools established by certain religious groups to train Black ministers and teachers (Bullock, 1967; Roucek, 1964). During and immediately after the civil war, the newly freed slaves worked with white supporters to earnestly build over 4000 schools to educate Black children and adults (Bullock, 1967; Roucek, 1964).

Separate and Unequal

However, these efforts were short-lived as unjust laws, policies, and racist activities obstructed most Blacks from getting a quality education (Bullock, 1967; Roucek, 1964). From the late 1800s to the mid-twentieth century, racist policies and violent activities led to the destruction of many schools serving Black students (Anderson, 1988; Roucek, 1964). Moreover, the remaining schools were woefully inadequate because of dilapidated facilities, poorly trained teachers, and scarce resources (Anderson, 1988; Roucek, 1964). Despite these dreadful conditions, the Black community persisted in its pursuit of educational equity and literacy rates steadily increased from 5% in 1860 to 92% in 1940 (Karpinski, 2006; Roucek, 1964; Tillman, 2004). Separate but equal policies and unequal educational funding practices became the norm in both the south and most of the north (Anderson, 1988; Roucek, 1964).

The Effects of Brown v. Board of Education

After the 1954 *Brown versus Board of Education* decision stated that separate but unequal policies were unconstitutional, Black people still had to fight for fair education and employment opportunities (Karpinski, 2006; Tillman, 2004). Several desegregation policies led to the closure of mostly inferior Black schools and unemployment for the majority of Black teachers and principals (Karpinski, 2006; Pollard, 1997; Tillman, 2004). Those Black educators were role models, mentors, and leaders with central roles in the lives of Black children and their communities (Karpinski, 2006; Pollard, 1997; Tillman, 2004). Certain scholars argue that the

loss of these Black educators and leaders is one of the main reasons that the achievement gap persists into the twenty-first century (Karpinski, 2006; Tillman, 2004).

Society-at-Large

The consequences of these integration practices along with unequal access to quality education continue to impact Black children in 21st-century public schools (Karpinski, 2006; Tillman, 2004). Most Black students attend schools with culturally mismatched educators where they encounter lower teacher expectations and experience harsher discipline outcomes than other ethnic groups (Egalite & Grissom et al., 2021; Egalite & Kisida, 2018; Lacoe & Steinberg, 2018; Lindsay & Hart., 2017). Also, a larger percentage of Black children attend TPS with fewer resources and less qualified teachers than white children (Hussar et al., 2020). As a result, Black Americans have a lower achievement and attainment gap on many academic and non-academic outcomes than whites and most other ethnic groups (de Brey et al., 2019; Howard, 2019; Hussar et al., 2020; Taylor et al., 2018; Valencia, 2015; White et al., 2016). Moreover, these Black children are not the only ones who pay a price for an inferior educational experience.

Effects of Low-Quality Education on Societal Outcomes

Black communities and American society at large pay a steep price for poorly educated and inadequately trained children. Aside from lower standardized test scores, Black students also experience disparities in grade retention, gifted and talented enrollment, school holding power (or dropout rate), college attendance, and college graduation rates (de Brey et al., 2019; Hussar et al., 2020; Valencia, 2015). Poorly educated adults (especially high school dropouts) are more likely to have lower-paying jobs, reduced lifetime earnings, a higher poverty rate, rely on public assistance, and contribute fewer taxes to the public coffers, (Howard, 2019; Taylor et al., 2018; Valencia, 2015). The costs are not limited to economics, since many of these people also

experience more health problems, have higher incarceration rates, and live in neighborhoods with poorly performing TPS that perpetuate the cycle of underachievement (Howard, 2019; Taylor et al., 2018; Valencia, 2015). Mediocre academic outcomes and several other factors serve as powerful motivations for lower-income Black parents to seek viable alternatives to their local public schools (Goodridge, 2019; McCoy & Domanico, 2020; Winters, 2020).

Responding to Historical Failures

The historical failure of many TPS to provide Black students with an equitable and quality education compels many families to send their children to CPS (Goodridge, 2019; McCoy & Domanico, 2020). Black student enrollment rates in charter schools continue to grow rapidly, especially in large urban areas (Goodridge, 2019; McCoy & Domanico, 2020). Several studies show that certain CPS improved the academic achievement of some low SES and Black students (Center for Research, 2019; Spees & Lauen, 2019). Furthermore, charter schools that show value and respect for Black, Hispanic, and other cultures tend to attract minority parents (Hentschke et al., 2017; Teasley et al., 2016). Nevertheless, much remains unknown about the effects of black-operated school policies and practices on children's academic outcomes (Gawlik, 2018b; Grissom, Rodriguez & Kern, 2017). Studying this complex issue requires a theoretical framework that can explain how school-level factors in such schools can influence positive student outcomes.

Theoretical Background

The dynamic model of educational effectiveness provides a framework to explain factors that may influence student outcomes. Numerous studies in the educational effectiveness research (EER) field provided the basis for this theoretical framework (Kyriakides et al., 2020). EER researchers examined, assessed, and explained the different variables that impact school

effectiveness (Kyriakides et al., 2020; Scheerens, 2016). Schools are complex organizations, hence researchers ought to employ wide-ranging, longitudinal, and contextualized study methods to examine the interactions of multiple variables at diverse levels (Fidan & Balcı, 2017; Kyriakides et al., 2020). Creemers and Kyriakides (2007) designed the model using concepts from psychological, sociological, economic, and organizational studies, and integrated theories (Kyriakides et al., 2020). They used a multilevel and multidimensional framework to explain how factors at four distinct levels (context, school, classroom, and student levels) influence students' cognitive and non-cognitive outcomes (Kelly, 2020; Kyriakides et al., 2020; Scheerens, 2016).

Factors at all four levels interact in many ways to impact the educational outcomes of students (Kyriakides et al., 2020). For example, context level policies stipulate teacher certification requirements which lead schools to hire particular teachers (Creemers & Kyriakides, 2007; Kyriakides et al., 2020). While certain school-level factors affect instructional quality and practices at the classroom level which directly influence student level outcomes (Creemers & Kyriakides, 2007; Kyriakides et al., 2020). Meanwhile, at the classroom level, teachers interact with student-level factors such as motivation and learning style to influence outcomes (Creemers & Kyriakides, 2007; Kyriakides et al., 2020). The dynamic model includes five dimensions (frequency, focus, stage, quality, and differentiation) that are used to measure the effects of each level on educational quality and equity (Creemers & Kyriakides, 2007; Kyriakides, Creemers, & Charalambous, 2018; Kyriakides et al., 2020). Several other longitudinal studies confirmed the model's multilevel nature, essential factors at each level, and the efficacy of the five dimensions (Azigwe et al., 2016; Creemers & Kyriakides, 2007; Panayiotou, et al., 2016). Studies also demonstrated the dynamic model's school-level factors' usefulness in assessing student outcomes

in multiple subjects in both European and African schools (Azigwe et al., 2016; Panayiotou et al., 2016). Given the available time, resources, and topic, the researcher decided to solely focus on the effects of school-level factors in the proposed study.

The dynamic model theorists also claimed that the model works best in decentralized settings where leaders have autonomy and use longitudinal data to assess school effectiveness Kyriakides et al., 2020). Using school-level factors, leaders can shape the school learning environment (SLE) and improve teaching quality to provide students with a quality and fair education (Kyriakides, Creemers, & Charalambous, 2018; Kyriakides et al., 2020; Panayiotou et al., 2016). Schools can achieve these outcomes through effective policies, practices, and stakeholder activities (Kyriakides, Creemers, & Charalambous, 2018; Kyriakides et al., 2020). The decentralized nature of charter schools makes them a very suitable context for using this theoretical framework (Gawlik, 2018b; Krowka et al., 2017; Kyriakides et al., 2020).

The background and overview presented in these sections highlight the need for further study on factors that may help Black students close the achievement gap. Despite a history of gross educational inequities, Black families continue the fight for a fair, quality education for their children (Goodridge, 2019; Karpinski, 2006; Tillman, 2004). Black students continue to trail other ethnic groups in various measures of academic achievement and attainment (de Brey et al., 2019; Howard, 2019; Hussar et al., 2020; Taylor et al., 2018; Valencia 2015; White et al., 2016). The failure of public schools to meet students' educational needs motivates families to consider charter schools as viable options Gawlik, 2018b; Goodridge, 2019; McCoy & Domanico, 2020; Winters, 2020). Yet much remains unknown about if and how CPS, especially black-operated schools can help Black students overcome the achievement gap (Ackerman & Egalite, 2017; Foreman et al., 2019; Spees & Lauen, 2019). The dynamic model is a useful

theoretical framework that explains how certain essential factors influence educational quality and equity (Kyriakides, Creemers, & Charalambous, 2018; Kyriakides et al., 2020). The researcher used dynamic model school-level factors to compare the effects of BCPS on Black students' academic growth to the growth of their NCPS and TPS peers.

Problem Statement

The last three decades of research on charter schools revealed inconsistent findings on their impacts on student achievement. Multi-state, regional, and state-level studies comparing CPS and TPS done by the Center for Research on Education Outcomes (CREDO) consistently reported mixed results (Center for Research, 2015, 2017, 2019). White and Hispanic students tend to perform equal to or below their TPS peers while Black and low SES students in urban areas surpass their TPS counterparts (Center for Research, 2015, 2017, 2019). Several other state-wide studies also presented mixed results with some reporting positive outcomes, no differences, minimal variations, or negative CPS student performance (Foreman et al., 2019; Spees & Lauen, 2019).

Some researchers attribute these varying results to unreliable methods, improper control of variables, and inadequate examination of school-level factors (Epple et al., 2016; Gawlik, 2018b; Grube & Anderson, 2018; Spees & Lauen, 2019). But only a handful of these studies examined the effects of black-operated schools on student outcomes (Bartanen & Grissom, 2019, 2021; Doyle, Hernandez-Cruz & Ellison, 2019; Doyle, Kim, & Hernandez-Cruz, 2019a, 2019b; Teasley et al., 2016). Thus, several researchers recommended more state-wide studies to examine the influence of CPS models and assess various leadership effects on students' academic growth (Ackerman & Egalite, 2017; Gawlik, 2018b; Grube & Anderson, 2018; Spees & Lauen, 2019). The problem is the gap in the research literature on the academic growth (from seventh to eighth

grade) among Black students enrolled in *black-operated public charter schools,* Black students in *non- black operated charter school*s, and Black students enrolled in *traditional public schools* when controlling for sixth-grade achievement (Ackerman & Egalite, 2017; Gawlik, 2018b; Grube & Anderson, 2018; Spees & Lauen, 2019).

Purpose Statement

The purpose of this causal-comparative, quantitative study was to compare the academic growth (from seventh to eighth grade) among Black students enrolled in *black-operated public charter schools (BCPS),* Black students in *non- black operated charter school*s *(NCPS),* and Black students enrolled in *traditional public schools (TPS)* when controlling for sixth-grade achievement. Black students and operators are people of African American descent who are not of Hispanic heritage (Hussar et al., 2020; Pennsylvania Department, 2019). The independent variable is the type of school, distinguished by the ethnicity of charter school operators or public-school leaders. Operators are individuals or groups approved by a state to operate a publicly funded K-12 charter school (National Alliance, 2008; Winters, 2020). The three levels of the independent variable are BCPS, NCPS, and TPS.

The researcher used school-level factors from the dynamic model to analyze the effects of these schools on Black students' academic growth. The two dependent variables are Black students' academic growth as measured by the difference between seventh and eighth-grade scores on the Pennsylvania System of School Assessment (PSSA) math and English Language Arts (ELA) exams (Center for Research, 2019; National Alliance, 2008). Students' sixth-grade math and ELA scores served as covariates for the study. Black eighth-grade students enrolled in Philadelphia's CPS and TPS, with a total sample of 468 Math and 510 ELA exam scores made up the target population. The Pennsylvania Department of Education (PDE) gave the researcher

access to data for this *ex post facto* study in support of a PDE call for research proposals (Pennsylvania Department, 2020c). This study attempted to fill a gap in the extant literature by investigating the effects of school-level factors in BCPS, NCPS, and TPS on Black students' academic growth.

Significance of the Study

A systematic search of the literature revealed a scarcity of studies on the effects of black-operated schools on Black students' academic outcomes. Searches in Google Scholar, ERIC, EBSCO, and other relevant databases produced very few studies on this topic. Keyword searches such as "Black operated", "Afro-centric" or "Black leaders" combined with "charter schools" returned studies that focused primarily on segregation or other charter school topics. Although CREDO's two state-wide studies and a handful of other researchers examined Pennsylvania's charter schools, none focused on *black* -operated schools' impacts. Additionally, while studies in other states investigated the effects of charter schools on achievement, only two recent studies evaluated the effects of minority-operated schools on academic outcomes (Gershenson, 2019; Gulosino & Krowka et al., 2017; Liebert, 2020; Teasley et al., 2016; Winters, 2020). This gap in the literature prompted the PDE to issue a request for research proposals on several aspects of charter schools (Pennsylvania Department, 2020c).

The findings from the study provide valuable information to PDE and other stakeholders. Student demographic trends show increasing minority enrollments in rural, urban, and suburban public schools (Hussar et al., 2020). This study presents information that can help PDE and local officials (i.e., school boards) shape policies, regulations, and funding to better support schools that meet the academic needs of Black students (Knight & Toenjes, 2020; Rapa et al., 2018).

Finally, the results equip parents with information that will assist them in making the correct school choice for their children.

Furthermore, certain studies revealed the efficacy of the dynamic model framework in explaining effectiveness and informing school improvement in several nations outside the U.S. (Kyriakides, Charalambous, Creemers, Antoniou, et al., 2019a; Kyriakides, Charalambous, Creemers, & Dimosthenous, 2019b). The findings from this study can also help U.S. schools improve both educational quality and equity outcomes. Finally, according to Epple et al. (2016), "Given the variation in charter schools, research that focuses on specific educational practices and their environments may have the most potential to be informative." (p. 203). Thus, this study will add to the literature by fostering an understanding of how school-level factors may influence Black students' academic outcomes in both charter and black-operated schools.

Research Questions

The proposed study will address the following research questions:

RQ1: Is there a difference in mathematics academic growth (from seventh to eighth grade) among Black students enrolled in *black-operated public charter schools,* Black students in *non- black operated charter school*s, and Black students enrolled in *traditional public schools* when controlling for sixth-grade math scores?

RQ2: Is there a difference in ELA academic growth (from seventh to eighth grade) among Black students enrolled in *black-operated public charter schools,* Black students in *non-black operated charter school*s, and Black students enrolled in *traditional public schools* when controlling for sixth-grade ELA scores?

Definitions

1. *Academic growth* - "The year-to-year change in academic performance relative to one's peers. Growth can be positive or negative." (Center for Research, 2019, p. vi).

2. *Academic progress* - a sign of students' academic growth or improvement on certain assessments over a period (Center for Research, 2019; National Alliance, 2008).

3. *Achievement gap* - "Occurs when an outcome—for example, average test score or level of educational attainment—is higher for one group than for another group and when the difference between the two groups' outcomes is statistically significant." (Hussar et al., 2020, p. 309).

4. *Annual Charter Evaluation (ACE)-* reports developed by the Philadelphia School District (PSD) to evaluate charter schools' academic, financial, and organizational performance after the initial charter approval and between renewal applications (Philadelphia School, 2022).

5. *Black-operated public charter schools* (BCPS) - approved charter schools that are managed by leaders from African American and non-Hispanic ethnic backgrounds (Hussar et al., 2020; Pennsylvania Department, 2019).

6. *Dynamic model* - a multilevel and multidimensional theoretical framework that explains educational effectiveness using factors at the context, school, classroom, and student levels (Kelly, 2020; Kyriakides et al., 2020; Scheerens, 2016).

7. *Equity –* "… the fair, just, and nondiscriminatory treatment of all students, the removal of barriers, the provision of resources and supports, and the creation of opportunities with the goal of promoting equitable outcomes." (Grissom, Egalite, & Lindsay, 2021, p. 3).

8. *Mathematics achievement* - changes in students' mean scale scores on the PSSA Math exam (Data Recognition, 2017b).

9. *Minority* - people of Black, Hispanic, Asian, Pacific Islander, American Indian/Alaska Native backgrounds, or those with two or more ethnic backgrounds (Hussar et al., 2020).

10. *Non-black-operated public charter schools* (NCPS) - schools with an authorized charter managed by people from ethnic backgrounds other than African American (Hussar et al., 2020; Pennsylvania Department, 2019).

11. *Public charter schools (CPS) -* publicly funded Pennsylvania K-12 schools that operate independently of school districts under a charter approved by a local board of school directors or authorizers. (Egalite, 2020; National Alliance, 2008; Pennsylvania Department, 2019).

12. *Reading achievement* - changes in students' mean scale scores on the PSSA English Language Arts (ELA) exam. (Pennsylvania Department, 2020a).

13. *School learning environment* (SLE) – according to the dynamic model, these are conditions that influence learning because of their effects on students, teachers, and other stakeholders (Kyriakides et al., 2020).

14. *School-level factors* - in the dynamic model of educational effectiveness, factors at the school level that interrelate with context, classroom, and student-level factors influence student outcomes (Kyriakides et al., 2020).

15. *School operator* - individuals or organizations sanctioned by a state authorizer to operate a publicly funded K-12 charter school (National Alliance, 2008; Winters, 2020).

16. *Student achievement* - student performance on an instrument (i.e., standardized test) at a particular point in time (Center for Research, 2019; Pennsylvania Department, 2020a; National Alliance, 2008;).

17. *Traditional public schools* (TPS) - publicly funded K-12 schools that operate under the direct authority of local school districts and a state's department of education (Egalite, 2020; Pennsylvania Department, 2019).

CHAPTER TWO: LITERATURE REVIEW

Overview

Chapter Two communicates the need for the study using a synopsis of the theoretical framework and a summary of the related literature on topics pertinent to the problem. The framework discussion begins with the origins of educational effectiveness research (EER) and theories that informed the design of the dynamic model of educational effectiveness. The related research section examines the literature on charter schools, black-operated schools, and Black student outcomes. The literature discussion also connects applicable research to the dynamic model framework and identifies the need for more study on select topics.

Theoretical Framework

Background

Many researchers acknowledged that the educational inequities experienced by Black children and low socioeconomic (SES) students in public schools inspired further research into school effectiveness (Kyriakides et al., 2020; Reynolds et al., 2014; Scheerens, 2016). The 1966 Coleman Report and other studies provided detailed descriptions of the inferior schools and poorly qualified educators that served many low SES and Black children (Hill, 2017). The principal claim made by these researchers was that public schools had little to no effect on disadvantaged students' academic outcomes (Hill, 2017; Kahlenberg & Potter, 2014). In particular, "James Coleman and colleagues …found that parental education, income, and race are strongly associated with student achievement, while school resources such as per pupil expenditures and class size are much less significant." (Hanushek et al., 2019, p. 10). Federal and state officials reacted to these reports by enacting desegregation policies that separated Black children from their communities, sent them to inhospitable white dominated schools, and

shuttered many Black-led schools (Karpinski, 2006; Pollard, 1997; Tillman, 2004). These reports also prompted EER efforts as researchers strived to determine if schools could indeed help improve student outcomes (Kelly, 2020; Kyriakides et al., 2020).

Initial EER Perspectives

The various approaches researchers used to study school effectiveness characterized the distinct stages of EER (Kyriakides et al., 2020; Scheerens, 2016). During the late 1970s to mid-1980s, researchers studied factors that influence student learning and subsequently identified correlates of effectively functioning schools (Kelly, 2020; Kyriakides et al., 2020). Ronald Edmonds' five factors of effective schools for the urban poor is an example of a model developed during this time (Kyriakides et al., 2020). Extending upon Edmonds' factors, several researchers identified seven correlates of school effectiveness that benefitted student learning (Kelly, 2020; Lezotte & Snyder, 2011). Examples of school effectiveness correlates include: "High expectations for success, strong instructional leadership, clear and focused mission, opportunity to learn/time on task, frequent monitoring of student progress, safe and orderly environment, and positive home-school relations" (Lezotte & Snyder, 2011, p. 1-2). These findings and perspectives laid the foundation for the next EER stage (Kelly, 2020; Scheerens, 2016).

During the mid-1980s to early 1990s, EER researchers concentrated on finding the most influential school-level and teaching factors (Kyriakides et al., 2020; Reynolds et al., 2014). Researchers from four major fields conducted studies that contributed to the construction of several theories and models of learning and effectiveness (Kyriakides et al., 2020). Sociological factors (e.g., SES and ethnicity), economic concepts (e.g., inputs, processes, and outputs), organizational constructs (e.g., productivity, adaptability, and responsiveness), and psychological

processes (e.g., learning and instruction) all influence school effectiveness and student outcomes (Kelly, 2020; Kyriakides et al., 2020). However, most of these early models lacked theoretical grounding, offered simplistic and incomplete explanations, were fixated on isolated factors, and lacked sufficient empirical support (Kyriakides et al., 2020; Scheerens, 2016). These shortcomings prompted researchers to further expand the capacity of EER (Kyriakides et al., 2020; Scheerens, 2016).

Integrated Theories

In this EER stage, researchers recognized that theories using concepts from a single discipline could not explain complex learning organizations (Fidan & Balcı, 2017; Kyriakides et al., 2020; Scheerens, 2016). Thus, in the late 1990s to early 2000s, researchers formulated integrated theories by using multilevel approaches and combining findings from the four major disciplines (Kelly, 2020; Kyriakides et al., 2020). Key inputs from integrated theorists include the importance of learning context (i.e., both time and place), multilevel educational factors, organizational elements, and school-level and classroom-level interactions (De Jong et al., 2004; Kelly, 2020; Kyriakides et al., 2020; Opdenakker, 2020). Bert Creemers' Comprehensive model (CM) of educational effectiveness is the immediate precursor to the dynamic model (Kyriakides et al., 2020). The CM and other integrated theories leveraged several concepts from multiple disciplines along with empirical findings to improve the theoretical basis and design of EER models (Creemers et al., 2000; De Jong et al., 2004; Kyriakides et al., 2020).

Creemers used psychologist John Carroll's levels of learning and learning time concepts to build the model (De Jong et al., 2004; Kyriakides et al., 2020). The CM consists of four levels (context, school, classroom, and student) instead of the two (school and classroom) levels in Carroll's model (De Jong et al., 2004; Kyriakides et al., 2020). Instructional quality, time, and

opportunity to learn factors were essential for learning versus the time and quality factors posited by Carroll (De Jong et al., 2004; Kyriakides et al., 2020). Both the classroom and school levels include quality, time, and opportunity to learn; higher levels exert direct or indirect influence on lower levels; and the classroom level has the most direct influence on student-level factors (De Jong et al., 2004; Kyriakides et al., 2020). Also, consistency, cohesion, constancy, and control principles help educators and leaders create effective learning conditions (Kyriakides et al., 2020). But the static features of the integrated models compelled researchers to transition to the next EER phase, which further adjusted for the adaptive characteristics of these complex learning organizations (Fidan & Balci, 2017; Kyriakides et al., 2020).

The Dynamic Model

Using the CM's four levels and other concepts, Bert Creemers and Leonidas Kyriakides designed the initial version of the dynamic model in 2003 (Kyriakides et al., 2020; Scheerens, 2016). They built the model based on assumptions that would account for cognitive and non-cognitive outcomes, included contemporary teaching and learning theories, connected effectiveness research to educational improvement, and describe the dynamic and complex nature of schools (Fidan & Balcı, 2017; Kyriakides et al., 2020). Although it also contains four levels with essential factors, several key characteristics distinguish the dynamic model from the CM. Differences include an emphasis on the interactions between the four levels, a more detailed description of the effects of factors on student outcomes, accounting for the fluctuating nature of school effectiveness, not assuming a curvilinear relationship between factors and student outcomes, and using different teaching stages to classify classroom-level factors (Kyriakides et al., 2020). Since the original version, the theorists partnered with Anastasia Panayiotou and Evi Charalambous to revise and update the model based on additional empirical evidence and

concepts (Kyriakides, Creemers, & Charalambous, 2018; Kyriakides, Georgiou, Creemers, et al., 2018; Kyriakides et al., 2020).

The dynamic model is a descriptive theory with a hierarchical and interrelated depiction of the system, school, classroom, and student levels that show the dynamic, multilevel, and multidimensional nature of educational effectiveness (Kelly, 2020; Kyriakides et al., 2020; Scheerens, 2016). Factors at the four levels directly or indirectly influence students' cognitive and non-cognitive outcomes (Kyriakides et al., 2020; Leithwood et al., 2017). Moreover, five dimensions (frequency, focus, stage, quality, and differentiation) help determine each level's impact on educational effectiveness (Kyriakides et al., 2020). For example, evaluating the frequency and quality of homework assignments or student assessments can provide information about a school's effectiveness at the classroom level (Kyriakides et al., 2020).

The Context Level

Each level in the dynamic model includes factors discovered through multiple studies that confirmed the effects of psychological, sociological, and economic factors on school effectiveness and student learning (Kyriakides et al., 2020). System or context-level factors include policies (i.e., state standards) and other elements such as stakeholder expectations that influence the school, classroom, and student levels (Kyriakides et al., 2020). The No-Child Left Behind (NCLB) legislation is an example of a national level (system) policy that significantly impacted learning and effectiveness at the lower three levels in thousands of public schools across the U.S. (Grissom, Egalite, & Lindsay, 2021). Another example is the standardized tests mandated by most states for both charter and traditional public schools. Moreover, dynamic model theorists asserted that it is most useful in decentralized schools (i.e., charter schools)

where leaders have more autonomy to evaluate school operations and make corrective decisions. (Kyriakides et al., 2020).

The School Level

  School-level factors include the policies, practices, and evaluation methods that influence the school learning environment (SLE), and instructional quality (Kelly, 2020; Kyriakides et al., 2020). Leaders shape the SLE by enacting policies and taking actions to influence student behavior, foster teacher collaboration, cultivate stakeholder partnerships, allocate resources, and reinforce school values (Kyriakides et al., 2020; Leithwood et al., 2017). These factors align with results from other large-scale and longitudinal studies that the most effective school leaders consistently engage in instruction focused interactions with teachers, build productive school climates, facilitate useful teacher collaboration and professional learning communities, and strategically manage personnel and resources (Grissom, Egalite, & Lindsay, 2021; Leithwood et al., 2017).

  School-level policies and actions that improve teaching quality are essential because classroom-level factors (i.e., time management) are the main influencers of student outcomes (Kyriakides et al., 2020; Leithwood et al., 2017). This study focused primarily on factors at this level because of resource limitations and the existence of a larger gap in the literature for charter school-level factors (Gawlik, 2018a). Moreover, "The definition of the dynamic model at the classroom level refers to factors related to the key concepts of quality, time on task, and opportunity to learn." (Kyriakides et al., 2020, p. 68). Thus, improving teaching quality requires school-level policies and evaluation methods that focus on these three elements (Kyriakides et al., 2020). Additionally, Grissom, Egalite, and Lindsay (2021) found that effective school-level

practices include data-driven instructional programs, coaching teachers, effective collaboration strategies, and sufficient support for improving teachers' practice.

The Classroom Level

The dynamic model includes eight essential classroom-level factors that directly impact student outcomes (Kyriakides et al., 2020). Based on the notion that one theory cannot fully explain effectiveness at this level, the theorists used key principles and supporting evidence from different teaching theories (i.e., constructivism, mastery learning, etc.) to select these factors (Kyriakides et al., 2020). "The eight factors included in the model are as follows: orientation, structuring, questioning, teaching-modeling, applications, time management, teacher role in making the classroom a good learning environment, and classroom assessment." (Kyriakides et al., 2020, p. 64). The close interaction between the school and classroom levels requires schools to formulate and enact policies that protect teaching time and promote good student and teacher attendance along with effective instructional planning and scheduling to increase teaching quality (Kyriakides et al., 2020). Notable in this early formulation of the dynamic model is a lack of focus on factors that promote educational equity for all students (Kyriakides, Creemers, & Charalambous, 2018). Educators who want to achieve educational equity should assess the effects of school policies and practices and adjust factors at the school and classroom levels to influence student-level factors (Grissom, Egalite, & Lindsay, 2021; Kyriakides, Creemers, & Charalambous, 2018; Kyriakides et al., 2020).

The Student Level

As the lowest level of the dynamic model student-level factors are pivotal to student outcomes and are directly and indirectly influenced by factors from the upper levels (Kyriakides et al., 2020). Previous empirical findings from psychology and sociology are the major sources

for the dynamic model's student-level factors (Kyriakides et al., 2020). The theorists organized these factors into three categories, the first group contains psychological learning factors such as perseverance, aptitude, and opportunity to learn (Kyriakides et al., 2020). The second category includes sociological (or background) factors such as SES, ethnicity, and gender (Kyriakides et al., 2020). While the final category includes factors such as student motivation, expectations, and thinking style which schools and teachers can influence (Kyriakides et al., 2020). Effective schools and teachers focus on shaping changeable student-level factors (e.g., motivation, thinking, and expectations) rather than fixed factors like ethnicity or SES (Kyriakides et al., 2020; Leithwood et al., 2017). This claim was supported by the extensive, longitudinal research done by Leithwood et al. (2017) to test the Four Paths Framework of effective school leadership. These researchers group Family Path factors into alterable and unalterable categories, with schools having the most influence over the alterable ones including parental interest in school activities, elevated expectations, support, and communication with their children and schools (Leithwood et al., 2017). The dynamic model theorists also found support for the factors in each of the four levels using results from several longitudinal empirical studies and meta-analyses.

Empirical Support

Support for the dynamic model framework and concepts comes from several studies at the international, national, and regional levels. Recent studies confirmed various aspects of the dynamic model including its multilevel nature, the factors at each level, the five dimensions of evaluation, that classroom and school-level factors influence achievement in multiple disciplines, and the overarching influence of system-level factors (Azigwe et al., 2016; Kyriakides et al., 2015; Kyriakides, Creemers, & Charalambous, 2018; Kyriakides, Georgiou, Creemers, et al., 2018). For example, Panayiotou et al. (2016) compared the influence of school-level factors on

outcomes in mathematics and reading in 50 European schools. They reported significant effect sizes for both subjects, support for the applicability of school-level factors in different subjects, and that school policies have differential effects on achievement (Panayiotou et al., 2016). Citing the need to focus on the equity dimension of education, the theorist made several updates to the model (Kyriakides et al., 2020).

The Current Model

In 2020, the theorists updated the theoretical framework to account for both quality and equity in educational effectiveness (Kyriakides et al., 2020). Those changes include defining the highest level as the context to account for differing operational environments (i.e., decentralized systems), the addition of peer influence to the student level, and using higher-level (classroom, school, and context) factors to help children overcome barriers from background factors such as SES (Kyriakides et al., 2020). There were four major revisions to the model at the school-level that had implications for this study. Those changes included greater clarity on the nature of school-level factors, their functioning, and resultant effects on school effectiveness (Kyriakides et al., 2020). First, the updated model depicts school-level factors, "… as an unstable construct, … which implies that changes in the functioning of school factors can explain changes in the effectiveness status of schools." (Kyriakides et al., 2020, p. 229). An application of this construct is seen in the treatment of results from newly opened charter schools. Researchers noted that students in new CPS tend to do poorly, school effectiveness improves with time, and the overall charter sector has improved academic outcomes in the last three decades (Baude et al., 2020; Center for Research, 2019; Spees & Lauen, 2019).

As with the earlier version, school-level policies and actions that improve teaching and the SLE have the most impact on student outcomes (Kyriakides et al., 2020). School policies and

actions indirectly affect student outcomes by setting the conditions for a conducive teaching and learning environment and supporting effective teacher-student interactions (Kyriakides et al., 2020; Leithwood et al., 2017). The theorists also emphasize the differences and interactions between school policies and stakeholder actions (Kyriakides et al., 2020). While school policies indirectly affect outcomes at the student-level, stakeholder actions due to those policies can directly impact both the SLE and teaching quality (Kyriakides et al., 2020; Leithwood et al., 2017).

The current dynamic model treats stakeholder actions and school-level evaluations as separate factors because policies can only affect the SLE if one applies them as intended (Kyriakides et al., 2020). The theorists also asserted that a reciprocal relationship exists between policies and stakeholder actions (Kyriakides et al., 2020). School policies can change stakeholder actions and stakeholders can also influence school policies (Kyriakides et al., 2020). Effective leaders communicate policy requirements, equip stakeholders to implement them, and provide support for correct implementation (Bartanen & Grissom, 2019; Kyriakides et al., 2020). A final assumption is that the effects of school policy on student outcomes are situational (Kyriakides et al., 2020; Leithwood et al., 2017). Meaning that as experts on their schools, leaders can tailor policies to suit their schools' unique needs and characteristics (Kyriakides et al., 2020; Leithwood et al., 2017). This assumption is especially important for leaders who want to promote equitable outcomes in schools with a disproportionate number of disadvantaged students (Grissom, Egalite, & Lindsay, 2021; Kyriakides et al., 2020; Leithwood et al., 2017). This aspect of the model also supports the theorists' argument that decentralized schools with more autonomy at the local level can best utilize this model to improve effectiveness (Kyriakides et al., 2020). It also aligns with the original vision for charter schools which posited that such

schools would serve as incubators of innovation that would improve the effectiveness of public schools in general (Berends et al., 2018; Kahlenberg & Potter, 2014).

These updates are significant to this study because findings from other studies show a correlation between school-level factors (i.e., discipline policy, teacher diversity, etc.) and Black student outcomes (Egalite & Kisida, 2018; Gershenson, 2019; Gershenson, et al., 2018). The related research section further elaborates on this connection. Moreover, concerning the SLE, the updated dynamic model also illustrates how school policies and practices that support positive contributions from and interactions between teachers, parents, and other stakeholders contribute to effective student learning (Kyriakides et al., 2020; Leithwood et al., 2017).

Theory Selection Criteria

Several factors contributed to the selection of the dynamic model rather than theories commonly used in comparative studies of charter public schools (CPS) and traditional public schools (TPS). By a wide margin, market theory and institutional theory dominated the research literature on charter schools (Berends, 2018; Spees & Lauen, 2019). Reasons for this include the competitive posture between CPS and TPS along with the differences in their structures and SLE (Berends, 2018; Spees & Lauen, 2019). However, this researcher wanted to focus on the original vision for charter schools, namely innovative schools that improve the educational outcomes of disadvantaged students (Berends et al., 2018; Kahlenberg & Potter, 2014). Thus, a theoretical framework focused on effectiveness rather than on competition or institutional differences seemed more appropriate. Since the purpose of the study was to determine if black-operated schools have a positive impact on Black student outcomes, it was also thought that using a theory that describes and explained school effectiveness would be more suitable for comparing the effects of CPS to TPS.

Advancing the Model

Three salient features of the dynamic model make it suitable for examining the effects of different schools on Black students' academic growth. Unlike Critical Race Theory and similar theories, the dynamic model does not simply attribute inadequate outcomes for Black students to racism (Howard, 2019; Kyriakides et al., 2020; Taylor et al., 2018). Instead, it gives a theoretical and evidence-based framework to examine the factors that influence school effectiveness and produce satisfactory outcomes for all students (Kyriakides et al., 2020; Scheerens, 2016). Also, the decentralized nature of charter schools gives leaders greater autonomy to change curricula and other school-level policies that influence student outcomes (Gawlik, 2018b; Krowka et al., 2017). Thus, findings from this study increase the understanding of the model's usefulness for investigating such schools.

Also, dynamic model theorists admitted that previous research on equity focused on the effects of SES on student learning (Kyriakides et al., 2020). Thus, they cited the need for more studies that investigate the effects of ethnic background and other variables (Kyriakides, Creemers, & Charalambous, 2018; Kyriakides et al., 2020). The researcher used the definition of equity developed by Grissom, Egalite, & Lindsay (2021) that equity is "… the fair, just, and nondiscriminatory treatment of all students, the removal of barriers, the provision of resources and supports, and the creation of opportunities with the goal of promoting equitable outcomes*."* (p. 3). This study helps reduce this gap in the literature related to equity while advancing the model's usefulness by examining the role of school-level factors in Black students' academic growth. The next section provides more details on topics relevant to the study along with descriptions of how the dynamic model will facilitate the investigation of the problem.

Related Literature

The search for an effective remedy to close the achievement gap between Black and white students continued in the first three decades of the twenty-first century (Jeynes, 2018; Taylor et al., 2018). Charter school advocates frequently promote CPS as an effective solution to this academic problem (Cohodes, 2018; Miron, 2017). This section includes a summary of the known literature on charter schools, strategies used to study their effectiveness, black-operated schools, Black student outcomes, and CPS effects on Black student achievement. The related literature section also discusses applications of the dynamic model and topics that require additional study.

Public School Challenges

Decades of public-school ineffectiveness in educating disadvantaged and Black children students served as a strong impetus for the growing charter school movement (Cohodes, 2018; Goodridge, 2019; Kahlenberg & Potter, 2014). In their 1983 *A Nation at Risk* school report, the commissioners warned that the United States was in jeopardy of falling behind international competitors because of inferior educational standards and school performance (Gardner, 1983). They recommended increasing school hours, certain curricula changes, raising academic standards and expectations, and improving teacher qualifications (Gardner, 1983). These recommendations closely align with the school-level factors found in the dynamic model's SLE and instructional quality. Almost four decades after this report, many public schools struggle to provide a fair and quality education to disadvantaged student groups (Jeynes, 2018; Taylor et al., 2018).

A New Type of School

Several years after the *A Nation at Risk* report, American Federation of Teachers president Albert Shanker promoted a vision developed by Ray Budde for a new type of school to help meet the needs of students who struggle in TPS (Kahlenberg & Potter, 2014). Charter schools would serve as innovative educational laboratories that develop solutions to the issues plaguing TPS, give greater autonomy to leaders, grant teachers a powerful voice in school operations, be highly accountable for academic results, and serve as models of racial and economic diversity (Gleason, 2017; Kahlenberg & Potter, 2014). The new schools would meet most student needs as parents choose the best options for their children's education, authorizers approve and expand quality schools, and leaders respond to the demands and expectations of constituents (Gross et al., 2019; Miron, 2017). Charter schools would also help improve TPS districts that adopt innovative CPS practices and yield to market pressure to improve academic outcomes (Gross et al., 2019; Miron, 2017).

Charter Schools

Although charter schools were developed from the vision of the professional educator class, current demand from parents and community leaders stimulates the sector's continued growth (Goodridge, 2019; Kahlenberg & Potter, 2014). Minnesota passed the first state law authorizing charter schools in 1991, now 44 U.S. states and Washington D.C. have school laws (Kahlenberg & Potter, 2014; National Alliance for Public Charter Schools, 2020). Despite their popularity with minority and low socioeconomic status (SES) families, charter schools are still the source of much debate and controversy. A common reproach is that charter schools are detrimental to public education and the public interest because they have strayed from the original charter school vision (Kahlenberg & Potter, 2014; Ladd, 2019). In particular, the charter

sector faces criticism for a lack of innovation, autonomy, diversity, and mixed academic outcomes (Gleason, 2017; Goodridge, 2019; Preston et al., 2012).

Innovation

Charter schools typically receive exemptions from many state regulations to allow them space to use innovative and experimental educational practices (Gleason, 2017; Kahlenberg & Potter, 2014). However, critics charged that many charter schools tend to use the same practices as most TPS and do not serve as laboratories for educational improvement (Gleason, 2017; Kahlenberg & Potter, 2014). Instead, CPS competed with local school districts for students, funding, and other resources (Bulkley & Henig, 2019; Ladd, 2019; Ridley & Terrier 2018). In particular, the "No Excuses" charter model is often cited for its lack of innovation due to conformity to rigid teacher-centered practices and exclusionary disciplinary measures (Gleason, 2017; Gross et al., 2019). One analysis of National Center for Education (NCES) teacher and principal survey data concludes that most charter schools retain many of the administrative features of TPS (Preston et al., 2012). In contrast, an analysis of national survey data by Berends et al. (2018) found significant evidence of innovative practices in CPS compared to their TPS counterparts. A significant percentage of CPS teachers described using a curriculum created by teachers, innovative teaching strategies, and non-traditional assessment (i.e., student portfolios) methods (Berends et al., 2018). Also, more CPS principals reported using extended time, instructional grouping, interdisciplinary teacher teams, and specific requirements (i.e., community service, volunteering, etc.) for students and parents (Berends et al., 2018).

Diversity

In a significant departure from the third tenet of the original vision, CPS exacerbated segregation by placing schools in low-income neighborhoods and recruiting disadvantaged,

minority, and immigrant students (Goodridge, 2019; Kotok et al., 2017; Mann et al., 2016; Wells et al., 2019). However, charter proponents argued that limited resources and the unique challenges faced by these communities require special settings to better meet students' educational, cultural, and other needs (Gleason, 2017; Goodridge, 2019). Also, parents seeking a culturally responsive learning environment for their children increased the demand for such institutions (Goodridge, 2019). Moreover, the improvement in Black and low SES students' academic outcomes fuels the growth of CPS, especially in urban areas (Center for Research, 2015, McCoy & Domanico, 2020; National Alliance, 2020; Winters, 2020).

Academic Outcomes

The criticism most relevant to this study is that charter schools do not significantly improve academic outcomes for most students (Goodridge, 2019; Ladd, 2019). Yet certain charter schools consistently earn high placements on the U.S. News and World Report best public high school rankings (Finn et al., 2017). Most recently, the 2021 report lists twenty-four charter schools among the top 100 schools even though CPS only comprise 16% of the evaluated schools (Finn et al., 2017; U.S. News, 2021). Yet as discussed in greater detail in the sections below, research findings on the effects of charter schools on student achievement consistently produce mixed results. As also seen in TPS, CPS student outcomes vary based on location, SES, and ethnic background (Center for Research, 2019; Spees & Lauen, 2019). Yet, despite the criticism and controversy directed at these schools, the charter sector continues to grow in popularity with parents and community leaders (Goodridge, 2019; Winters, 2020).

Charter Sector Growth

Student enrollment in charter schools has grown dramatically since they were first founded; the number of schools has doubled and student enrollment has tripled in size since the

2005-2006 school year (Cohodes, 2018; National Alliance, 2020). As of the 2018 to 2019 school year, about seven percent of public-school students attended 7,500 CPS (Hussar et al., 2020; National Alliance, 2020). Large urban areas experienced the highest growth with 30% to 50% of public-school students attending charter schools (National Alliance, 2020). The desire of Black families for quality education helped lay the foundations for the charter movement and fueled the continued growth in the number of charter schools (Goodridge, 2019; Winters, 2020). NCES data from 2017 to 2018 show the student population in CPS was 33% Hispanic and 26% Black and that more charter schools had populations with 50% or more minority students than did TPS (Hussar et al., 2020; National Alliance, 2020); while 35% of students attended high-level poverty CPS, compared to only 24% of children enrolled in TPS (Hussar et al., 2020). Public charter schools in Pennsylvania show similar growth patterns.

Pennsylvania Charter Schools

The number of charter schools in Pennsylvania has more than doubled in size since 2006 (National Alliance, 2020). Since the state's first charter school law in 1997, CPS has steadily increased and stood at 186 schools in the 2018 to 2019 school year (National Alliance, 2020). These schools served 143,201 public school students (versus 55,630 in 2006) with 25% of students enrolled in online schools (Center for Research, 2019; National Alliance, 2020). Schools in large urban areas have significant enrollments with 33.9% in Philadelphia, 13.5% in Pittsburgh, and 15.6% in Allentown (National Alliance, 2020). In contrast to national statistics that show white students as a greater percentage of the CPS population, 43% of Pennsylvania's charter students were Black, 17.4% Hispanic, and 32.1% white (National Alliance, 2020). Despite this growth and two statewide CREDO studies, the full impact of Pennsylvania's charter schools on student outcomes remains relatively unknown.

PA Charter Law

Notably, this growth occurred in an environment that many would consider hostile or at least unfriendly to charter schools (National Alliance, 2016). That hostility stems from CPS's apparent competition with district schools and a charter law that falls short of best practices (National Alliance, 2016; Ziebarth, 2020). The National Alliance for Public Charter Schools (NAPCS) model law includes requirements for performance-based contracts, comprehensive school monitoring and data collection, an effective charter authorizer and accountability system, automatic exemptions from most state laws and regulations (except for rules on health, safety, civil rights, etc.), and promotes charter model variation (National Alliance, 2016; Ziebarth, 2020). The model law, various research findings, market forces, and charter sector tools guide and support the growth of strong, quality charter schools (Baude et al., 2020; National Alliance, 2016). However, the Pennsylvania charter law does not provide clear directives on assessments, monitoring, and other elements of the model law (National Alliance, 2016; Ziebarth, 2020).

The charter school law remains virtually unchanged since its passing, with only changes to allow virtual charter schools and the merger of two or more schools or regional schools (Pennsylvania Department, 2019; Ziebarth, 2020). Since the law's enactment, regular evaluations place it in the bottom quarter of laws nationwide based on rankings from three different organizations (Ziebarth, 2020; Ziebarth & Palmer, 2018). Reasons for these low rankings include inadequate charter application and renewal processes, no clear definition of high-quality schools, lack of fiscal responsibility, insufficient funding, inconsistent authorization processes, and ineffective school closure standards (National Alliance, 2016; Ziebarth, 2020; Ziebarth & Palmer, 2018). These flaws could allow more low-performing schools to remain in operation

much longer than they should (Ziebarth, 2020). Additional research on the impact of the law on charter quality and closures could prompt legislators to improve upon these elements.

Current Research

The existing literature on Pennsylvania's charter schools contains very few studies on student achievement. Instead, research topics include CPS enrollment patterns, effects on rural areas, impacts on school district resources, transportation options and school choice, or school segregation issues (Egalite, 2020; Frankenberg et al., 2017; Kotok et al., 2017; Mann & Baker, 2019). In two studies on academic achievement, researchers used data from the Pennsylvania System of School Assessment (PSSA) Math and English Language Arts (ELA) exams to compare CPS student academic progress to that of TPS counterparts (Center for Research, 2011, 2019). A major feature of CREDO's methodology is comparing CPS student progress to virtual control record (VCR) twins designed from "…academic experiences of up to seven students who share identical characteristics to the charter school student, except for the fact that the VCR students attend a TPS that each charter school's students would have attended..." (Center for Research, 2019, p. 3). Essential VCR design criteria include TPS students' race, gender, baseline Math and ELA test scores, and SES (Center for Research, 2019; Spees & Lauen, 2019).

The most recent school-level analysis done by CREDO provided some valuable insights into the overall performance of the state's charter schools. Researchers found that 81% of CPS schools were below the state's 50th percentile standard in both reading and math for the 2015-2016 and 2016-2017 growth periods (Center for Research, 2019; Data Recognition, 2017c, 2018, 2019). Moreover, 49% of CPS had above average reading growth while 46% showed above average math growth (Center for Research, 2019). Researchers also noted that the poor academic outcomes of students in Pennsylvania's online charter schools significantly lowered overall

charter school performance (Center for Research, 2019). When online student outcomes were removed from the datasets, brick and mortar CPS students revealed significant progress from the 2011 CREDO study which show CPS students underperforming their TPS peers (Center for Research, 2011, 2019). These matched results from studies in other states which demonstrate that students in online CPS tend to underperform both physical CPS and TPS peers (Ahn & McEachin, 2017; Fitzpatrick et al., 2020).

The 2019 CREDO study also divulged relevant insights about Pennsylvania's charter students' characteristics and academic performance. Between 44% to 51% of matched CPS students were Black and 69% to 74% of the students lived in poverty (Center for Research, 2019). On average compared to TPS peers, CPS students experienced similar progress in reading but underperformed in math (Center for Research, 2019). Results from CREDO's research match findings from studies in other states that show Black students earning mean scores below that of whites in both CPS and TPS while Black and low SES CPS students outpaced TPS peers in certain regions and charter models (Center for Research, 2019; Gulosino & Liebert, 2020; Spees & Lauen, 2019). These varied results accentuate the need for further study on the effects of charter school models, location, and school-level factors on student outcomes (Gawlik, 2018b; Grube & Anderson 2018; Spees & Lauen, 2019).

Studying Charter Schools

Despite some promising results, increasing charter sector growth, and the proliferation of school studies, questions remain about the best ways to evaluate CPS effectiveness. When studying school effectiveness, researchers must select an appropriate comparison group and account for differences due to charter variation (Ackerman & Egalite, 2017; Betts & Hill, 2010). Studies on charter effectiveness have yielded mixed results, which may indicate discrepancies in

the design and methodology researchers used (Ackerman & Egalite, 2017; Grube & Anderson, 2018). However, education researchers have also identified best practices and continue to improve on methods used to study CPS effectiveness (Ackerman & Egalite, 2017; Betts & Hill, 2010).

The Debate

Findings on CPS effectiveness vary based on charter type, location, methodology, and research design (Ackerman & Egalite, 2017; Grube & Anderson, 2018). Some researchers failed to control for the effects of school-level factors caused by differences from oversubscribed (i.e., schools using lotteries to select students), other charter models, and regions (Ackerman & Egalite, 2017; Gulosino & Liebert, 2020; Spees & Lauen, 2019). Some scholars contended that variations in methodologies contribute to the inconsistencies conveyed in overall charter sector effectiveness research (Ackerman & Egalite, 2017; Grube & Anderson, 2018; Spees, & Lauen, 2019). Other debates focus on questionable participant selection methods and a failure to control certain student fixed and random effects (Ackerman & Egalite, 2017; Grube & Anderson, 2018). For example, researchers cited the need to control certain effects such as those caused by students who switch between CPS and TPS or by students who only attend charter schools (Ackerman & Egalite, 2017; Spees & Lauen, 2019). Moreover, charter school researchers encountered several challenges when conducting research based on research design (Ackerman & Egalite, 2017; Spees & Lauen, 2019). Since the inception of the charter sector, researchers have adapted study methods to account for discrepancies found in prior research.

Comparison Groups

Determining the best comparison groups for comparing the achievement of CPS students remains one of the more tenacious challenges for researchers (Ackerman & Egalite, 2017; Betts

& Hill, 2010; Spees & Lauen, 2019). The National Charter School Research Project (NCSRP) Achievement Consensus Panel documented three common ways that researchers can select valid comparison groups (Betts & Hill, 2010; Spees & Lauen, 2019). According to Betts and Hill (2010), researchers make valid comparisons by contrasting a) academic achievements for CPS students admitted via lottery versus applicants who were not accepted; b) student scores in CPS to scores in their previous TPS; or c) scores for matched TPS and CPS students using specific criteria. Most state-wide studies, including those done by CREDO, matched TPS and CPS students based on selected criteria (Center for Research, 2019; Spees & Lauen, 2019). The type of comparison group used is also dependent on whether researchers use experimental, quasi-experimental, or non-experimental designs (Ackerman & Egalite, 2017; Chabrier et al., 2016; Foreman et al., 2019; Spees & Lauen, 2019).

Experimental Studies

In experimental studies, researchers used lottery winners and losers to examine school effectiveness because the lottery process randomly assigns students to control and treatment groups (Chabrier et al., 2016; Foreman et al., 2019; Spees & Lauen, 2019). As popularized in the documentary "Waiting for Superman," most states require charter schools that cannot accept all applicants to use a lottery system to select students (Foreman et al., 2019; Spees & Lauen, 2019). "Lottery studies closely resemble randomized controlled trials and thus have strong internal validity." (Spees & Lauen, 2019, p. 421). However, researchers studying these schools may encounter challenges with insufficient or unreliable data on lottery winners and losers (Foreman et al., 2019). Moreover, most lottery studies focus on high performing, oversubscribed, "No Excuses" schools in urban areas which makes it difficult to generalize results to other types of CPS (Ackerman & Egalite, 2017; Betts & Tang, 2019; Chabrier et al., 2016; Foreman et al.,

2019; Spees & Lauen, 2019). Insufficient data from lottery schools in Pennsylvania prohibited the use of an experimental design for this study.

Non-Experimental Designs

Researchers who used non-experimental designs analyzed previously collected data and also met a separate set of challenges. CREDO's regional and state-wide studies are among the most prolific and widely known non-experimental charter school effectiveness studies (Spees & Lauen, 2019). But CREDO researchers also encountered criticism for using data for up to seven TPS students to compose a VCR "twin," low generalizability, inconsistent use of program variables (i.e., lower rate of identifying special needs students in CPS), and questions about internal validity (Ackerman & Egalite, 2017; Spees & Lauen, 2019). Within-study comparisons by Ackerman and Egalite (2017) and Spees and Lauen (2019) separately confirmed that CREDO studies had good internal validity with minimal effects of measurement error caused by inconsistent program variables and VCR use.

Consequently, this researcher opted to adapt certain selection methods used by CREDO researchers combined with techniques for controlling student effects from other state-level studies (Center for Research, 2019; Foreman et al., 2019; Spees & Lauen, 2019). The comparison method will match TPS and CPS students using specific characteristics (i.e., SES, scores, etc.) identified by the NCSRP and used by state-level researchers (Betts & Hill, 2010; Foreman et al., 2019; Spees & Lauen, 2019). Based on data quality guidance from the NCSRP and other researchers, the researcher also used several years of exam scores, value-added data (student gain), detailed descriptions of student attributes, the types of tests students take, and school characteristics (Betts & Hill, 2010; Spees & Lauen, 2019).

CPS Characteristics

Identifying the characteristics of the most effective charter schools is a common goal of researchers. Using an analytical framework akin to the dynamic model's SLE, Gleason (2017) evaluated charter schools based on the amount of instructional time, pedagogical approach, curricula focus, quality of teachers and leaders, and student traits (Kyriakides et al., 2020). Gleason (2017) determined that "The most successful charter schools tend to be urban schools, consistently enforce a comprehensive behavior system, have longer school days and/or years, and/or put their highest priority on helping students meet elevated expectations for academic achievement." (p. 577). Gleason's results were consistent with findings from studies of charter schools in Newark, New York City, and other urban areas around the country (Center for Research, 2015, 2019; Gulosino & Liebert, 2020; Winters, 2020). Additionally, intensive tutoring, coaching of teachers, consistent instructional feedback, and data-driven practices moderately influence CPS student achievement (Gleason, 2017). Thus, characteristics caused by variations in the types of CPS remained fertile ground for school-level factors that may influence school effectiveness (Gleason, 2017; Kyriakides et al., 2020).

Charter schools vary based on several factors which may influence their ability to impact student outcomes (Gleason, 2017). Researchers often categorize schools using curricula focus, location, management structure, and their philosophical approach to instruction and student behavior (David, 2018; Gleason, 2017; Woodworth et al., 2017). Popular curricula offerings include music and art, STEM (science, technology, engineering, and math), and ethnocentric schools (Ackerman & Egalite, 2017; Goodridge, 2019; Gross et al., 2019). However, much of the extant research investigated management structure, charter philosophy, cyber versus brick-and-mortar schools, safety policies, and CPS effects on school segregation (Ahn & McEachin, 2017;

Frankenberg et al., 2017; Kotok et al., 2017; Rapa et al., 2018; Woodworth et al., 2017). A few studies examined the effects of schools with curriculum approaches such as STEM, music, and art while only one study was found on ethnocentric schools (David et al., 2020; Hedgecoth, 2019; Teasley et al., 2016).

In comparison, many more studies report investigations on charter school effectiveness using physical location (i.e., urban, suburban, or rural) or online status (Ahn & McEachin, 2017; David, 2018; Fitzpatrick et al., 2020; Gulosino & Liebert, 2020). Gulosino and Liebert's (2020) examination of California's charter schools and CREDO's (2019) study of Pennsylvania's CPS produced comparable results for schools based on physical location. Students in urban charter schools tend to outperform their TPS counterparts while suburban and rural CPS students underperform or showed no significant differences from TPS peers (Center for Research, 2019; Gulosino & Liebert, 2020). Most minority-operated CPS are usually found in large urban areas near poorly performing TPS and large Black and Hispanic populations (Center for Research, 2019; Goodridge, 2019; Gulosino & Liebert, 2020). CREDO observed that less than 10% of Pennsylvania's Black students attended cyber charters and confirmed findings from other state-wide studies showing online CPS students underperforming compared to peers in brick-and-mortar CPS and TPS (Ahn & McEachin, 2017; Center for Research, 2019; Fitzpatrick et al., 2020; Mann & Baker, 2019). Due to low Black student enrollment and the sector's academic performance issues, the researcher decided to exclude black-operated cyber schools from the proposed study. Similar to location studies, CPS philosophical approaches and management structures are also popular with researchers.

CPS School-Level Factors

The dynamic model theorists stressed the essential role of school-level factors in influencing the quality and equity of educational outcomes (Kyriakides et al., 2020). School leader policies and practices that foster quality teaching and shape constructive SLEs help schools provide students with an equitable and quality education (Kyriakides, Creemers, & Charalambous, 2018; Kyriakides et al., 2020). The few studies found on CPS school-level factors examined segregation, "No Excuses" schools, and compared Education Management Organizations (EMO) effects to Charter Management Organizations (CMO) results (Brooks, 2020; Frankenberg et al., 2017; Kotok et al., 2017; Krowka et al., 2017).

"No Excuses" Schools. Studies on this charter model are immensely popular in the research literature and mainstream media. One meta-analysis and a systematic analysis found over three hundred published articles from 1991 to 2016 that examined the impact of "No Excuses" schools (Cheng et al., 2017; Krowka et al., 2017). Schools using a "No Excuses" approach have several policies and practices that focus on certain SLE aspects and instructional quality. These included policies that influence student behavior, school-stakeholder partnerships, and teacher collaboration and interactions (Cheng et al., 2017; Kyriakides et al., 2020). "No Excuses" schools emphasized instructional quality through intense and extensive teacher training and coaching in the summer and during the school year, extended school days or a longer academic year, and tutoring for struggling students (Cheng et al., 2017; Gleason, 2017; Golann & Torres, 2020). Other characteristics included leadership autonomy, a focus on performance metrics, high academic expectations, rigorous testing methods, strict discipline policies, uniform dress codes, and robust parental participation (Cheng et al., 2017; Krowka et al., 2017).

These practices and policies have led to academic success for students enrolled in such schools (Betts & Tang, 2019; Cheng et al., 2017; Krowka et al., 2017). One random-effects

meta-analysis of experimental studies (n = 13) observed that "No Excuses" schools had a more positive effect on math and literacy achievement (effect sizes were 0.25 for math and 0.17 for literacy) than other types of CPS (Cheng et al., 2017). Another systematic review (n = 18) confirms the effect of "No Excuses" schools on growth in math proficiency and to a lesser extent on literacy (Krowka et al., 2017). Betts and Tang (2019) noted gains of 12.72 points in math and 5.92 points in ELA for students in Knowledge is Power Program "No Excuses" middle schools.

Some "No Excuses" schools received acclaim for improving academic outcomes for minority students, but many also endure harsh criticisms for their disciplinary and academic philosophies (Golann & Torres, 2020). Critics asserted that "No Excuses" schools' negligence of non-cognitive outcomes, an overly narrow focus on math and ELA, paternalistic practices, high teacher turnover rates, and exclusionary discipline practices hinder the social and behavioral skills of the disadvantaged students that they often serve (Cheng et al., 2017; Golann & Torres, 2020; Krowka et al., 2017). Moreover, Cheng et al. (2017) cited a reluctance by some charter operators to explicitly identify their schools as a "No Excuses" model because of the barrage of criticism they encounter. Moreover, a National Association of Charter Authorizers analysis of almost 3,000 charter applications from 2013 to 2018 found a 15% decline in proposals for "No Excuses" schools and a 40% decline in authorizer approvals for such schools (National Association, 2019). Yet, the scarcity of such studies has allowed the prevalence of "No Excuses" schools among minority-operated schools to remain relatively unknown.

Charter Management. Charter school management is another potential source of school-level factors that may influence student outcomes. CREDO identified CMOs, Vender Operated Schools (VOS), hybrid charter schools, and independent charters (or stand-alone operators) as the most common types of operators (Woodworth et al., 2017). Charter

organizations are either for-profit or non-profits that hold charters for three or more schools and are accountable for the schools' performance (Woodworth et al., 2017). Whereas a VOS provides certain levels of contracted support (i.e., administrative, staffing, school operations, etc.) for multiple charter schools whose charters belong to a CMO or independent operator (Bulkley & Henig, 2019; Woodworth et al., 2017). Hybrid groups operated three or more schools from a single CMO, and super charter networks operate multiple CPS across the nation or in certain regions (Woodworth et al., 2017). This study used management categories defined by the NAPCS and the National Association of Charter Authorizers because they are commonly used in the research literature. These management structures are for-profit EMOs, non-profit CMOs, and independent or standalone operators (National Alliance, 2020; National Association, 2019).

A limited number of studies compared the effects of different CPS management structures on student outcomes. A 2016-2017 NAPCS overview of management approaches observed that stand-alone operators manage 65% of CPS (David, 2018; Woodworth et al., 2017). In a follow-up study to an initial 2013 study, CREDO researchers examined the performance of CPS based on management structure and profit status in twenty-four states, New York City, and Washington D.C. (Woodworth et al., 2017). Their findings indicated that students in CMOs experience significantly greater learning growth and those organizations that directly control operations (instead of using a VOS) got better performance results compared to standalone operators (Woodworth et al., 2017). Of note, Black students and low SES students tend to perform significantly better in CMOs versus their peers in independent CPS (Woodworth et al., 2017). Moreover, due to institutional knowledge and extra administrative support, new schools started by charter networks tended to fare better than newly opened stand-alone schools (Spees & Lauen, 2019; Woodworth et al., 2017).

Assessment of charter management approaches in Pennsylvania differed slightly from the overall findings in other states. NAPCS data from the 2016-2017 school year revealed that the state had 183 CPS with CMOs operating 23%, EMOs managing 12%, and 64% of schools independently operated (National Alliance, 2020). Also, 2020-2021 Pennsylvania Department of Education (PDE) school data indicates that only fifty brick-and-mortar schools belonged to CMOs with eight schools belonging to super charter networks (Pennsylvania Department, 2022). CREDO researchers found no significant differences in the academic growth of Pennsylvania students enrolled in CMOs compared to matched peers in non-CMO or independent schools (Woodworth et al., 2017). Yet, despite the proliferation of research on management structures, the effects of minority school leaders in charter organizations versus leaders in independent schools remained unknown (Grissom, Egalite, & Lindsay, 2021; Taylor et al., 2018).

Black-Operated Schools

Schools led by minority principals appear to be increasing at a faster rate in the CPS sector than in TPS (Grissom, Egalite, & Lindsay, 2021). Nationwide school data revealed that the overall percentage of minority school leaders has not kept pace with the growing minority student enrollment in public schools (Bartanen & Grissom, 2021; Grissom, Egalite, & Lindsay, 2021). An analysis of NCES Common Core of Data (CCD) from 1988 to 2018 uncovered a significant representation gap, with students of color less likely to share the same ethnic background with public-school leaders compared to white students (Grissom, Egalite, & Lindsay, 2021). Slight changes in school leader's ethnic backgrounds occurred over those thirty years with the percentage of white principals decreasing from 87% to 78%, Hispanic principals increasing from 3% to 8%, and Black principals shifting between 9.4% and 11% (Grissom, Egalite, & Lindsay, 2021).

CPS percentages are slightly better, data from the 2017-2018 National Teacher and Principal Survey showed that charter school principals were 66.5% white, 12.3% Hispanic, 16.3% Black, and 4.8% other (National Teacher, 2020). Of particular interest to this study, Philadelphia's black-operated CPS served 13,000 families by operating twenty-two of the city's 80 charter schools (Bailey, 2020). Moreover, the survey and other data indicated that most public schools with majority Black and Hispanic student populations usually have more white principals and teachers (Bartanen & Grissom, 2021; Egalite & Kisida, 2018; Grissom, Egalite, & Lindsay, 2021; National Teacher, 2020). However, the number of CPS operated by various ethnic groups continues to expand, examples include native Hawaiians, Native Americans, Hispanics, various immigrant groups (i.e., Somalis in Minnesota), and of course African Americans (Castagno et al., 2016; Goodridge, 2019; Hentschke et al., 2017; Teasley et al., 2016).

Examining how leaders in black-operated schools influence the instructional quality and shape the SLE is pivotal to determining their impact on student outcomes (Kyriakides et al., 2020). Yet as stated previously, the literature contains few studies that investigated the impacts of black-operated CPS schools on student outcomes, hence the need to examine the overall impacts of these public-school leaders (Bartanen & Grissom, 2019; Gershenson, 2019). Over the last few decades, several studies demonstrated that the impact of principals on student outcomes is second only to that of teachers and that most of that influence occurs through indirect means (Grissom, Egalite, & Lindsay, 2021; Kyriakides et al., 2020; Leithwood et al., 2017). Included among those influential methods are policies and practices on teacher recruiting, development, and retention, promoting good teacher and student attendance, disciplinary practices, creating a positive school climate, and a nurturing learning environment (Doyle, Hernandez-Cruz &

Ellison, 2019; Grissom, Egalite, & Lindsay, 2021; Kyriakides et al., 2020; Leithwood et al., 2017).

CPS Leaders

Most studies found on CPS leaders of color were from the NAPCS and other education foundations with a favorable posture toward charter schools. NAPCS published three reports describing the practices of eight exemplary CPS leaders of color as they engaged with families, recruit, and retain staff, and build supportive school climates (Doyle, Hernandez-Cruz & Ellison, 2019; Doyle, Kim, & Hernandez-Cruz, 2019a, 2019b). Of note, none of these leaders operated a "No Excuses" or super charter network school (Doyle, Hernandez-Cruz & Ellison, 2019; Doyle, Kim, & Hernandez-Cruz, 2019a, 2019c). Researchers identified common themes leaders used to shape the SLE: a) identifying shortfalls and providing opportunities for students and families to overcome them; b) focusing on the value each community member brings to the school rather than on their shortcomings; and c) providing equitable educational opportunities for students (Doyle, Hernandez-Cruz & Ellison, 2019; Doyle, Kim, & Hernandez-Cruz, 2019a, 2019b). These themes were consistent with recommendations for schools to focus on alterable student-level factors, aligned with dynamic model aspects that support equitable outcomes, and with proven methods for equipping parents to support children's educational pursuits (Goodall, 2017; Kyriakides et al., 2020; Leithwood et al., 2017). But all eight CPS leaders operated schools that were outperforming nearby TPS, so these research findings are not generalizable to the entire charter sector (Doyle, Hernandez-Cruz & Ellison, 2019; Doyle, Kim, & Hernandez-Cruz, 2019a, 2019b). Still, their experiences provided some valuable insights into how black-operated school practices and policies influence the SLE and instructional quality.

Effect on Teachers

Leader policies and practices play a key role in determining the quality of instruction in schools (Kyriakides et al., 2020; Leithwood et al., 2017). These include teacher hiring and retention policies along with evaluation practices and professional development programs (Doyle, Hernandez-Cruz & Ellison, 2019; Grissom, Egalite, & Lindsay, 2021). School leaders must take intentional and often unorthodox approaches in their quest to hire minority teachers to increase the likelihood of teacher-student cultural matches (Doyle, Hernandez-Cruz & Ellison, 2019; Grissom, Egalite, & Lindsay, 2021). The CPS leaders of color interviewed by the NAPCS recruited teachers from alternative certification programs like Teach for America and local community networks (Doyle, Hernandez-Cruz & Ellison, 2019). Of note, several leaders cited mindset and passion for children as decisive factors in deciding if teachers were suitable for schools with mostly minority children (Doyle, Hernandez-Cruz & Ellison, 2019).

Retaining high-quality teachers was a major priority for effective school leaders (Doyle, Hernandez-Cruz & Ellison, 2019; Leithwood et al., 2017). Thus, they usually provided intensive onboarding sessions, robust professional development programs, extensive support for struggling teachers, and advancement opportunities all of which are essential for retaining quality teachers (Bartanen & Grissom, 2019, 2021; Doyle, Hernandez-Cruz & Ellison, 2019; Grissom, Egalite, & Lindsay, 2021). In line with the original vision for charter schools, teachers also have a significant voice in how schools operated (Doyle, Hernandez-Cruz & Ellison, 2019; Kahlenberg & Potter, 2014). Several studies previously indicated that culturally matched teachers improved both cognitive and non-cognitive outcomes for Black students (Egalite & Kisida, 2018; Gershenson, 2019; Gershenson, et al., 2018; Lindsay & Hart, 2017). Thus, it is important to understand how a principal's race could influence teacher hiring and retention policies and practices.

Analysis of certain data sets and administrative records provided keen insights into the role of a principal's race in hiring and retaining same-race teachers. Bartanen and Grissom's (2019) analysis of state-level records and NCES CCD for 4,200 schools in Missouri (1999 to 2016) and Tennessee (2007 to 2017) found that a principal's race correlated with the hiring and retention of same-race teachers. Principals in Missouri were 5.3% more likely to hire same-race teachers while 6.8% of their peers in Tennessee had similar tendencies (Bartanen & Grissom, 2019). This resulted in a 1.9% increase in same-race teachers in Tennessee schools and a 2.3% increase in schools in Missouri (Bartanen & Grissom, 2019). These results confirmed earlier findings on same-race teacher hiring rates for Black principals during analyses of applicant pool data for a large, northeastern suburban school district and vacancy application database and staffing data in Wisconsin (D'Amico et al., 2017; Goff et al., 2018). Another finding of note was that teachers in schools with same-race principals have greater job satisfaction, gave leaders higher performance ratings, and had lower turnover rates (Bartanen & Grissom, 2019; D'Amico et al., 2017; Goff et al., 2018). These researchers did not distinguish between leaders in TPS and CPS, however, CPS leaders did have some advantages in hiring and retaining teachers (Cheng et al., 2017; Doyle, Hernandez-Cruz & Ellison, 2019).

CPS leaders have greater autonomy and latitude in the teacher hiring and retention process which allows for more opportunities to hire a more diverse teaching staff (Cheng et al., 2017; Doyle, Hernandez-Cruz & Ellison, 2019; Grissom, Egalite, & Lindsay, 2021; Lincove et al., 2018). First, most state laws allow charter schools to hire a certain percentage of uncertified teachers with some states not mandating traditional certification for CPS teachers (Gershenson, 2019; Lincove et al., 2018). Second, a lack of union protections and tenure makes it easier for CPS leaders to dismiss teachers who do not meet standards (Gawlik, 2018a; Lincove et al.,

2018). However, staff diversity may not always be a priority for charter operators, an egregious example is seen in the mass layoffs of Black educators when New Orleans transitioned its public schools to a charter-operated system (Lincove et al., 2018). Although some effects of same-race principals on teachers are known, much less is known about these leaders' impact on student outcomes (Grissom, Egalite, & Lindsay, 2021).

Effects on Students

Minority students with a same-race principal experienced certain academic and non-academic outcomes (Bartanen & Grissom, 2019, 2021; Grissom, Egalite, & Lindsay, 2021). Among those gains were greater referrals to gifted and talented programs; caring teacher-student relationships in a supportive community that mentored students to instill confidence and inspire achievement; and giving students a meaningful voice in school operations (Bartanen & Grissom, 2019, 2021; Doyle, Kim, & Hernandez-Cruz, 2019a; Grissom, Egalite, & Lindsay, 2021; Grissom, Rodriguez, & Kern, 2017). These exemplary CPS leaders were also intentional about providing mentors for at-risk students, using alternative discipline practices (i.e., restorative justice), and expanding access to enrichment programs (Doyle, Kim, & Hernandez-Cruz, 2019a, 2019b). Bartanen and Grissom's (2021) analysis of impacts on student achievement in Tennessee schools found "… positive effects on math scores (0.018 SD) of same-race students after a principal's first year in the school, with suggestive evidence that this effect is driven by Black principal-student matches." (p. 8). The researchers also reported no significant differences in average student suspension rates based on a principal's race (Bartanen & Grissom, 2021). This finding conflicted with the claims of many critics that cultural mismatch is the primary reason Black students suffer more exclusionary discipline measures (Howard, 2019; Lacoe & Steinberg, 2018; Lindsay & Hart, 2017). Moreover, helping students overcome obstacles and close the

achievement gap requires leaders to build effective relationships with parents (Doyle, Kim, & Hernandez-Cruz, 2019b; Goodall, 2017).

Effects on Partnerships with Parents

The dynamic model and other theoretical frameworks encouraged leaders to shape the SLE by focusing on influencing alterable student-level factors (Kyriakides et al., 2020; Leithwood et al., 2017). Leaders can accomplish this by actively engaging parents in ways that focus on the value they bring to the school community rather than on family disadvantages (Doyle, Kim, & Hernandez-Cruz, 2019b; Kyriakides et al., 2020). Best practices include cultivating a welcoming and supportive environment that values parental input, inviting them to school celebrations and other events, and establishing effective and consistent communication (Doyle, Kim, & Hernandez-Cruz, 2019b; Goodall, 2017; Jeynes, 2018). Exemplary CPS minority leaders used multiple methods to meaningfully connect with parents (i.e., school apps, translators, etc.) and provided information access to parents who could not attend school meetings (Doyle, Kim, & Hernandez-Cruz, 2019b; Goodall, 2017; Jeynes, 2018).

School leaders can foster good relationships with parents and influence their ability to help children in several ways. Results from Jeynes' (2018) six meta-analyses on parental influence indicated that both involvement and engagement are essential for positive student outcomes. Effective parental practices include involvement and engagement in school-based activities and implementation of home-based practices and rules that support and reinforce learning (Day & Dotterer, 2018; Doyle, Kim, & Hernandez-Cruz, 2019b; Jeynes, 2018). Schools offered classes on parenting skills, education topics, health, finances, and other useful subjects to help build capacity and cultivate positive relationships in minority communities (Doyle, Kim, & Hernandez-Cruz, 2019b; Goodall, 2017; Jeynes, 2018). Leaders should welcome comments and

feedback from parents on their experiences, perceptions of school climate, quality of support from staff, recommendations for improvements, and suggestions for activities (Doyle, Kim, & Hernandez-Cruz, 2019b; Goodall, 2017). Effective leaders also offered face-to-face opportunities (i.e., monthly breakfasts) where parents asked questions, shared concerns, and learned about school operations (Doyle, Kim, & Hernandez-Cruz, 2019b; Goodall, 2017). Interestingly, Jeynes' (2016) analysis of the parental influence on Black student outcomes found that Black parents used more subtle engagement methods than other ethnic groups.

Black Student Outcomes

The achievement gap between White and Black children persists despite decades of reforms, policy actions, increased funding, specialized programs, and other efforts (Jeynes, 2018; Taylor et al., 2018). The failure of public schools to help Black students close this gap continues to perplex researchers and public officials alike (Jeynes, 2018; Taylor et al., 2018). The complex nature of this gap requires school leaders to use a multifaceted approach that leverages parental support and other resources to help students thrive (Jeynes, 2018; Kyriakides et al., 2020; Leithwood et al., 2017; Taylor et al., 2018). The four levels of the dynamic model with its emphasis on policies and stakeholder actions for improving school effectiveness and student outcomes support such an approach (Kyriakides et al., 2020). Moreover, numerous studies on the academic achievement gap revealed several key variables that may contribute to this complex educational phenomenon (Jeynes, 2018; Taylor et al., 2018).

The Achievement Gap

Some progress in closing the gap occurred due to the Coleman Report response, but that academic growth eventually stalled (Hill, 2017; Taylor et al., 2018). Analysis of National Assessment of Educational Progress data showed the gap closing from 1973 to 1979, declining

gains between 1980 to 1988, and continuing stagnation into the twenty-first century (Taylor et al., 2018). From 1992 to 2017, NCES data trends revealed a decrease in the reading achievement gap from 32 to 26 for fourth graders but a persistent 25-point gap for eighth-grade students (de Brey et al., 2019). A similar pattern is seen with the fourth-grade math gap decreasing from 32 to 25 from 1990 to 2017 and the eighth-grade math gap remaining stagnant at around thirty-two points (de Brey et al., 2019). Reasons for the stagnation included lower teacher expectations, higher exclusionary discipline rates, higher student absentee rates, and other practices in white dominated public schools (de Brey et al., 2019; Howard, 2019; Lindsay & Hart, 2017; Taylor et al., 2018; Teasley et al., 2016). Despite the influence of these factors, one should overlook the influence of other variables on this persistent and complex achievement gap.

As commonly seen in EER, researchers from multiple disciplines study the causes, effects, and practical solutions to the achievement gap (Jeynes, 2015; Kyriakides et al., 2020). Jeynes (2015) noted concerted efforts in psychology, sociology, and educational psychology to identify and address the factors that influenced this gap. Moreover, Jeynes' (2015) meta-analysis of thirty quantitative research studies (from 1975 to 2009, with a mean sample size of 35,896) produced some surprising results about factors that reduce the gap. Jeynes' findings reiterated some of the Coleman Report results by showing that most school factors (i.e., class structure, lofty expectations, etc.) and government policy did not significantly decrease the gap (Hill, 2017; Jeynes, 2015; Kahlenberg & Potter, 2014). In contrast, statistically significant reductions in the achievement gap were associated with family factors (e.g., educational attainment), school curriculum, religious faith, and religiously oriented schools (Hill, 2017; Jeynes, 2015). These findings add further support for the recommendation that schools focus on influencing

changeable factors at the student level while using a multifaceted approach to resolve this problem (Jeynes, 2018; Kyriakides et al., 2020; Leithwood et al., 2017).

SES Effects

Previous studies have shown the compounding effects of race and SES on students' academic outcomes (Berkowitz et al., 2017; Logan & Burdick-Will, 2016; White et al., 2016). Given this correlation, it is unsurprising that a significant percentage of Black students from low SES backgrounds tend to not meet basic academic standards (Hussar et al., 2020; Taylor et al., 2018). SES factors include family income and educational attainment, with parent educational attainment showing a significant correlation with high student achievement (Day & Dotterer, 2018). NCES data for 2017 to 2018 demonstrated that 45% of Black and Hispanic students attended high-poverty level schools compared to only 8% of white students (Hussar et al., 2020; Marcotte & Dalane, 2019). Also, high SES white students consistently outperformed Black, Hispanic, and low SES students on the National Assessment of Educational Progress subject tests (Hussar et al., 2020; Taylor et al., 2018). For example, the average 2019 reading score for high SES white eighth-graders was 20 to 30 points higher than scores for other ethnic groups and students from low SES backgrounds (Hussar et al., 2020).

During that school year, the achievement gap was most egregious in urban school districts with high minority student populations (Center for Research, 2015; Hussar et al., 2020). In such districts, 42% of students attended high-poverty level schools and struggled to meet basic math and reading standards (Hussar et al., 2020; White, et al., 2016). In some cases, these districts seem unable to turn around these failing TPS (Goodridge, 2019; McCoy & Domanico, 2020). Yet, despite strident opposition from community leaders, policymakers, and educators, some parents responded to TPS failure by enrolling children in CPS (Cohodes, 2018; Egalite,

2020; Ladd, 2019; McCoy & Domanico, 2020). But due to inconsistent findings, the ability of CPS to help most Black students close the achievement gap remains tentative at best (Ackerman & Egalite, 2017; Foreman et al., 2019; Ladd, 2019; Spees & Lauen, 2019).

CPS Effects on Black Students

Research studies examining charter school effectiveness consistently revealed mixed results for Black students (Ackerman & Egalite, 2017; Foreman et al., 2019; Ladd, 2019; Spees & Lauen, 2019). Several multi-state and state-level studies indicated that low SES and Black CPS students in high-poverty and urban areas outperformed peers in nearby TPS (CREDO, 2019; Foreman et al., 2019; Spees & Lauen, 2019). But the opposite occurs in low-poverty areas where Black and Hispanic CPS students underperform TPS peers or showed moderate to little effects (Betts & Tang, 2019; Center for Research, 2019; Gulosino & Liebert, 2020; Rapa et al., 2018; Spees & Lauen, 2019). Despite several studies showing the positive CPS effects on certain Black student outcomes, the impact of black-operated charter schools on these children remains almost unknown (Gershenson, 2019; Winters, 2020). Moreover, the persistent achievement gap and mixed findings from many CPS studies justified a further examination of the CPS and black-operated school-level factors that could help Black students close this gap (Gawlik, 2018b; Grube & Anderson 2018; Spees & Lauen, 2019).

Closing the Gap

Closing the achievement gap requires meaningful changes in policies, practices, and mindsets (; Doyle, Kim, & Hernandez-Cruz, 2019a, 2019b; Jeynes, 2018; Taylor et al., 2018). Achieving this goal requires educators to adopt a value rather than deficit mindset and to look at the issue as an opportunity gap rather than focusing on children's shortcomings (; Doyle, Kim, & Hernandez-Cruz, 2019a, 2019b; Taylor et al., 2018). There were several characteristics of charter

schools associated with significant improvements in Black students' academic outcomes. These included high behavior standards, extended instructional time (school days or years), a school-wide focus on improving academic achievement, the use of formative assessments, and data-driven instructional practices (Cheng et al., 2017; Gleason, 2017; Golann & Torres, 2020). Examining the occurrence and influence of these school-level policies and practices in CPS and TPS is the primary focus of this study.

Summary

Chapter Two summarized the theoretical framework and relevant research on topics of interest to this study. This included a historical review of EER and the design of the dynamic model of educational effectiveness. Among the most overarching ideas generated by dynamic model theorists, is the need for a multilevel and multidimensional approach to describe and explain how schools achieve educational quality and equity for all students (Kyriakides et al., 2020; Kyriakides et al., 2018). The dynamic model is a useful framework for examining the effects of school-level factors on student outcomes, especially in the decentralized charter sector (Kelly, 2020; Kyriakides, et al., 2020). The charter sector includes schools with a large variation in school-level factors due to differences in management structures, curricula approaches, and ethnocentric emphases (David, 2018; Teasley et al., 2016; Woodworth et al., 2017).

However, most studies on CPS school-level factors focused on a limited number of topics and produced mixed results on student achievement (Ackerman & Egalite, 2017; Gawlik, 2018b). Examples included studies on segregation, charter management, and "No Excuses" schools. Also, school effectiveness researchers choose from among three main strategies to study CPS effects (Ackerman & Egalite, 2017; Grube & Anderson, 2018; Spees & Lauen, 2019). However, overall results from these studies provided an inconsistent understanding of CPS

effects due to procedural and other concerns (Ackerman & Egalite, 2017; Grube & Anderson, 2018; Spees & Lauen, 2019). To avoid these pitfalls, the researcher adopted certain procedures from CREDO and other state-wide CPS studies to examine the impact of black-operated schools on Black student outcomes.

A relative handful of studies provided useful, yet limited insights on same-race principals' effects on student outcomes (Bartanen & Grissom, 2021; Doyle, Hernandez-Cruz & Ellison, 2019; Doyle, Kim, & Hernandez-Cruz, 2019a, 2019b; Grissom, Rodriguez & Kern, 2017). Students in schools with same-race principals experienced several positive academic and non-academic outcomes (Bartanen & Grissom, 2019, 2021; Doyle, Hernandez-Cruz & Ellison, 2019; Doyle, Kim, & Hernandez-Cruz, 2019a, 2019b; Grissom, Egalite, & Lindsay, 2021). Moreover, results from studies in several states indicated that Black students experience the most academic improvement in CPS located in urban areas with poorly performing TPS (Center for Research, 2019; Gleason, 2017; Gulosino & Liebert, 2020). However, only one study examined the effects of black-operated charter schools on Black students' academic outcomes (Teasley et al., 2016). Chapter Three describes the study's methods for comparing the effects of black-operated schools on student outcomes to those in other CPS and TPS schools.

CHAPTER THREE: METHODS

Overview

Chapter Three conveys the details of this *ex post facto* study's research design, sampling methods, procedures, and data analysis. The chapter begins with a brief discussion of the rationale used for selecting the research design and descriptions of the variables. The research questions, hypotheses, participants, and setting follow this discussion. Descriptions of the development, validity, reliability, reporting categories, administration, rating, and usefulness of the instruments used to collect data follow the discussion. The chapter concludes with a list of procedures and a discussion of the data analysis.

Design

The researcher used a quantitative, causal-comparative design to determine if there was a significant difference between Black students' academic growth in black-operated charter public schools (BCPS) compared to outcomes in non-black-operated charter public schools (NCPS) and traditional public schools (TPS) in Philadelphia. A causal-comparative design was appropriate for at least four reasons. First, the independent variable (type of school) is nominal, and the dependent variables (academic growth) are intervals, which met causal-comparative design requirements (Gall et al., 2007). Second, this design helped determine if the groups representing distinct categories of an independent variable (school type) differ across the quantitative dependent variables (Gall et al., 2007). Third, this research design is commonly used to investigate problems in educational settings where manipulation of an independent variable is not practical (Gall et al., 2007; Patten & Newhart, 2017). Finally, several researchers used causal-comparative designs to compare charter public school (CPS) performance to that of TPS

in various state-wide studies (Ackerman & Egalite, 2017; Foreman et al., 2019; Spees & Lauen, 2019).

The Independent Variable

This study investigated the effects of three categories of an independent variable on two quantitative dependent variables while controlling for two covariates. The independent variable type of school had three independent groups. The first group consisted of Black students in *BCPS*, which are schools with an authorized charter with Black leaders (Hussar et al., 2020; Pennsylvania Department, 2019). Black students and leaders are people of African American descent who are not of Hispanic heritage (Hussar et al., 2020; Pennsylvania Department, 2019). Black students enrolled in *NCPS*, or schools led by administrators from non-black ethnic groups make up the first comparison group (Hussar et al., 2020; Pennsylvania Department, 2019). While the second comparison group consists of Black students enrolled in *TPS*, which are publicly funded K-12 schools that operate under the direct authority of local school districts (Egalite, 2020; Pennsylvania Department, 2019. The study examined the influence of the independent variable on Black students' academic growth in two subject areas.

Dependent Variables

The researcher measured students' academic growth rather than achievement at a single point in time based on the work done in previous charter studies (Betts & Hill, 2010; Center for Research, 2019; Spees & Lauen, 2019). The first dependent variable was math academic growth as measured by the difference between seventh and eighth-grade scores on the Pennsylvania System of School Assessment (PSSA) math exam with a covariate of sixth-grade scores. The second dependent variable was English Language Arts (ELA) academic growth as measured by the difference between seventh and eighth-grade scores on the PSSA ELA exam with a covariate

of sixth-grade scores. This value-added approach is commonly used in both dynamic model and charter school research because it provides a better estimation of a school or intervention's effects on student outcomes (Kyriakides et al., 2020; National Alliance, 2008; Wright, 2018). Student *academic growth* is "The year-to-year change in academic performance relative to one's peers. Growth can be positive or negative" (Center for Research, 2019, p. vi). Readers can find additional information on the PSSA math and ELA exams in the instrument section and Appendix C and Appendix D. The researcher examined the following questions in the study.

Research Questions

RQ1: Is there a difference in mathematics academic growth (from seventh to eighth grade) among Black students enrolled in *black-operated public charter schools,* Black students in *non- black operated charter school*s, and Black students enrolled in *traditional public schools* when controlling for sixth-grade math scores?

RQ2: Is there a difference in ELA academic growth (from seventh to eighth grade) among Black students enrolled in *black -operated public charter schools,* Black students in *non-black operated charter school*s, and Black students enrolled in *traditional public schools* when controlling for sixth-grade ELA scores?

Hypotheses

The null hypotheses for the study were:

$H_0 1$: There is no statistically significant difference in mathematics academic growth (from seventh to eighth grade) among Black students enrolled in *black -operated public charter schools,* Black students in *non- black operated charter school*s, and Black students enrolled in *traditional public schools* when controlling for sixth-grade math scores.

H$_0$2: There is no statistically significant difference in ELA academic growth (from seventh to eighth grade) among Black students enrolled in *black -operated public charter schools,* Black students in *non- black operated charter school*s, and Black students enrolled in *traditional public schools* when controlling for sixth grade ELA scores.

Participants and Setting

Population

Cases for the study were drawn from archival data from the 2016 to 2019 math and ELA scores of eight-grade Black students in Philadelphia's schools. The Pennsylvania Department of Education (PDE) provided school and student-level data for analysis. The target population consisted of eighth-grade Black students enrolled in Philadelphia's charter and traditional public schools during the 2018 to 2019 school year. During the 2018 to 2019 school year, there were 4079 math and 4090 ELA scores for Black students in all of Philadelphia's public schools (Philadelphia School, 2022). Using convenience sampling, the researcher selected schools serving the target population based on suitability (e.g., Black principals) and data availability (Gall et al., 2007). The inclusion criteria for selecting schools were as follows a) charter schools operated by Black principals; b) charter schools not operated by Black principals; c) traditional public schools (within the zip codes of each black-operated charter school); and d) the availability of school and student-level data from the 2017, 2018, and 2019 exams.

Participants

Using data from these schools, the researcher selected students for the BCPS group and each comparison group using convenience sampling (Gall et al., 2007). First, Black students with exam scores from all three years were selected, which reduced the population to 3470 for math and 3449 for ELA. Those scores were then filtered to include only students from low

socioeconomic status (SES) backgrounds, who were not English language learners (ELL) and had no special education codes. TPS students were selected from schools within the zip code of each BCPS to minimize differences between these naturally occurring groups (Foreman, et al., 2019; Gall et al., 2007; Patten & Newhart, 2017; Spees & Lauen, 2019). Finally, since students were usually assigned to their nearest local public school, controlling the ethnicity of TPS leaders was not practical.

Additionally, to further minimize differences only students with basic sixth-grade scores (886-999) were selected (Ackerman & Egalite, 2017; Data Recognition, 2017c, 2018, 2019; Spees & Lauen, 2019). These four selection criteria (Low SES, no ELL, no special education, and basic scores) reduced the available cases to 639 for math and 1149 for ELA students. Using case selection in the Statistical Package for the Social Sciences (SPSS), random cases were selected for each school type. The sample of math cases was eventually reduced to n = 468 Black eighth-grade students which consisted of 188 males and 280 females and ELA cases were reduced to n = 510 Black eighth-grade students which consisted of 224 males and 286 females. These procedures allowed the researcher to select samples of more than 170 cases, which exceeded the minimum requirement of 166 when assuming a medium effect size with a statistical power of 0.7 and alpha level of 0.05 for analysis of covariance (ANCOVA) testing (Gall et al., 2007, p.145).

Setting

Students in the third through eighth grades take PSSA math and ELA exams in the spring semester of each school year (Pennsylvania Department, 2022). The PDE PSSA contractor, Data Recognition Corporation (DRC) trains proctors to administer exams to students at their school's physical location or online (e.g., for cyber charter students) during the spring testing window

established by the PDE (Data Recognition, 2017c, 2018, 2019). Students get 156 minutes to complete Math exams and 166 minutes for ELA exams (Data Recognition, 2017a, 2017b). DRC's responsibilities include grading the exams along with compiling, tracking, and analyzing the data to provide district, school, and student-level reports to the PDE (Data Recognition, 2017c, 2018, 2019). Access to the 2016 to 2019 PSSA staff and student datasets occurred through the PDE's research application process, thus no other information about the setting is necessary to replicate this study. Finally, the researcher used the IBM SPSS application to analyze the data. The next section contains more information on the PSSA exams.

Instrumentation

Two major reasons supported the use of PSSA ELA and Math exam data for this study. First, with interval-scaled instruments, researchers can "… examine the absolute changes in students' achievement as opposed to the changes in their position relative to their peers." (Spees & Lauen, 2019, p. 426). Second, both educational effectiveness and charter school researchers recommended measuring changes in longitudinal data to assess student achievement rather than using one single data point (Betts & Hill, 2010; Center for Research, 2019; Kyriakides et al., 2020). Thus, the researcher chose to analyze PSSA scores using 2017, 2018, and 2019 exams which measured how well students demonstrated the ELA and Math knowledge and skills required by Pennsylvania Core Standards (Data Recognition, 2017c, 2018, 2019). See Appendix C for sample PSSA Math questions and Appendix D for sample ELA exam questions.

Development

In 2015, the PDE redesigned PSSA exams to ensure alignment with the newly updated Pennsylvania Core Standards (Data Recognition, 2017c, 2018, 2019). These criterion-referenced exams "… measure how well students acquire the knowledge and skills described in the

Pennsylvania Assessment Anchor Content Standards (Assessment Anchors) as defined by the Eligible Content for mathematics, ELA, and Science." (Data Recognition, 2019, p. 32). As part of the process, the PDE updated all subject Assessment Anchors and Eligible Content to ensure compliance with Pennsylvania Core Standards (Data Recognition, 2017c, 2018, 2019; Pennsylvania Department, 2014a, 2014b). Assessment Anchors were subject categories (i.e., skills and concepts) while Eligible Content was the subject-specific descriptions and assessment limits of skills and concepts used on PSSA exams (Data Recognition, 2017c, 2018, 2019; Pennsylvania Department, 2014a, 2014b). Other researchers used PSSA exams to compare the performance of CPS to TPS, examine the impact of certain interventions on math and reading outcomes, investigate the effects of discipline policy reform on math and ELA achievement, and study the effects of high stakes testing on student literacy (Center for Research, 2017, 2019; Hochstetler, 2018; Lacoe & Steinberg, 2018).

PSSA Exam Validity

The PDE maintains a contract with the DRC to annually develop and assess exam validity (Data Recognition, 2014). DRC researchers confirmed the exams' content, response process, internal structure, Rasch model, and other types of validity through field testing and other methods (Gall et al., 2007; Data Recognition, 2017c, 2018, 2019). They ensured that exam items aligned with Assessment Anchors and Eligible Content to accurately assess students' depth of knowledge, comprehension, cognitive level, and ability to solve grade-level appropriate problems (Data Recognition, 2017c, 2018, 2019; Pennsylvania Department, 2014a, 2014b). On the exams, students demonstrated their depth of knowledge using recall, application of skills or concepts, strategic thinking, and extended thinking at suitable cognitive levels (Data Recognition, 2017c, 2018, 2019; Pennsylvania Department, 2014a, 2014b).

Reporting Categories

Each exam has assessment and reporting categories based on Eligible Content statements and core standards (Data Recognition, 2017c, 2018, 2019). The PSSA math exam had four classifications and five categories that were evaluated at each grade level. Numbers and Operations; Algebraic Concepts; Geometry; and Data Analysis and Probability were the math Assessment Anchor classifications (Data Recognition, 2017c, 2018, 2019). The reporting categories represented the specific aspects or domains of the core math standards assessed in each classification (Data Recognition, 2017c, 2018, 2019). The categories and point ranges were Number System for 7-9 points; Expressions and Equations for 16-18 points; Functions for 10-13 points; Geometry for 9-11 points; and Statistics and Probability for 7-9 points for each math exam (Data Recognition, 2017b). Each exam had 40 multiple-choice questions and two open-ended questions with a minimum scaled score of 600 and a maximum score of 1470 (Data Recognition, 2017c, 2018, 2019). Recommended cut score ranges were below basic (600-896, 600-903, and 600-905), basic (897-999, 904-999, and 906-999), proficient (1000-1104, 1000-1108, and 1000-1107), and advanced (1105 and above, 1109 and above, and 1108 and above) respectively for 6th, 7th, and 8th-grade students (Data Recognition, 2019). See Appendix C for a math PSSA sampler.

In contrast, there were seven reporting categories for ELA exams in grades three to eight. These categories included Literature Text; Informational Text; Key Ideas and Details; Craft and Structure/Integration of Knowledge and Ideas; Vocabulary Acquisition and Use; Conventions of Standard English; and Text-Dependent Analysis (Pennsylvania Department, 2014). The ELA exams had 23 passage-based multiple-choice, nine stand-alone multiple-choice, two evidence-based selected responses, and one text-dependent analysis constructed response question

organized around the themes of Reading for 30-46 points, Writing for 9 points, and Text Dependent Analysis for 16 points (Data Recognition, 2017a). ELA exams had a minimum scaled score of 600 and a maximum of 1699 with cut score ranges of below basic (600-874, 600-844, and 600-885), basic (875-999, 845-999, and 886-999), proficient (1000-1114, 1000-1129, and 1000-1129), and advanced (1115 and above, 1130 and above, and 1130 and above) respectively for 6th, 7th, and 8th-grade students (Data Recognition, 2017a, 2017c, 2018, 2019). See Appendix D for a sample of the ELA PSSA.

Exam Administration

Requirements for PSSA test administration included annual training and various levels of responsibility (Pennsylvania Department, 2020b). Each school district had an assessment coordinator or DAC who trained school-level assessment coordinators or SAC (Pennsylvania Department, 2020b). Both DACs and SACs received training on test security measures, packet handling and accountability, and accommodations for special needs students (Pennsylvania Department, 2020b; Data Recognition, 2017c, 2018, 2019). "The SAC is then responsible to oversee all aspects of test administration in a building, including training test administrators, proctors, and other building level staff." (Pennsylvania Department, 2020b, p.1). Test administrators oversaw subject area test administration while proctors administered the exams (Pennsylvania Department, 2020b). The math exam had two sections that required 78 minutes each for students to complete (Data Recognition, 2017b). While ELA exams included three sections that required from 67 to 88 minutes to complete (Data Recognition, 2017a). DACs collect completed exams from each SAC, did accountability checks, and shipped the exams to the DRC for scoring, rating, and reporting purposes (Pennsylvania Department, 2020b).

Rating Exams

DRC maintained responsibility for all procedures related to exam processing, scoring, and reporting (Pennsylvania Department, 2020b; Data Recognition, 2017c, 2018, 2019). This involved recruiting and training raters, writing scoring guidelines, handbooks, and testing instructions as well as producing reports (Data Recognition, 2017c, 2018, 2019). DRC typically recruits raters from a pool of teachers and other subject matter experts (Data Recognition, 2017c, 2018, 2019). The raters scored written responses individually, with results from ten percent of those responses scored twice for use in calculating inter-rater agreement rates (Data Recognition, 2017c, 2018, 2019). While other raters scored multiple-choice questions using image scanners at several locations around the country (Data Recognition, 2017c, 2018, 2019). Finally, DRC provided individual student reports, school summary reports, district summary reports, and interpretive guides for each exam to the PDE (Data Recognition, 2017c, 2018, 2019). The PDE analyzed the data at the county, district, and school levels to provide annual performance data to officials and the public (Pennsylvania Department, 2020a). As stated earlier, PDE gave the researcher permission to use PSSA data for this study. See Appendix A for PDE Institutional Review Board (IRB) and data use agreement permission.

Exam Reliability

DRC researchers also assess each exam's reliability on an annual basis (Data Recognition, 2017c, 2018, 2019). DRC reported particularly good internal consistency for the 2017, 2018, and 2019 exams with Cronbach's alpha values of 0.94, 0.92, 0.91 for the Math exams and 0.92, 0.89, 0.91 for ELA exams (Warner, 2013; Data Recognition, 2017c, 2018, 2019). Finally, no permission was needed to use the instruments since the study used archival data.

Procedures

This casual-comparative *ex post facto* study included a limited number of procedures since the PDE provided all the necessary data from 2016 to 2019. The researcher received PDE IRB approval and data use access and IRB approval from Liberty University. See Appendix A for PDE approval documents and Appendix B for Liberty University's IRB approval. The data sets were divided into three main categories for each school year. That included separate files for student PSSA data and demographic data with matching PDE school numbers for 2016 to 2019. Staff data were similarly configured for each year, except those files included ethnic backgrounds. Upon receipt of the data, steps were taken to clean, screen, organize, and prepare it for SPSS analysis (Green & Salkind, 2017).

Data Preparation

The researcher followed methods commonly cited in the literature to select schools (with eligible students) for the three naturally occurring independent variable groups (Foreman et al., 2019; Gulosino & Liebert, 2020; Spees & Lauen, 2019).

Selecting Schools

The researcher began the process by using PDE data and annual reports from local charter authorizers to identify schools operated by Black and non-black principals from 2016 to 2019 (Pennsylvania Department, 2022; Philadelphia School, 2022). Using Excel, the researcher initially filtered out middle school principals from the PDE data. However, that filtered staff data excluded certain Philadelphia schools that also served sixth to eighth graders (i.e., schools serving K-6 or K-8 or 7-12). Using student test data, the researcher identified these schools and matched them to the principals using PDE school numbers. A second issue was the presence of multiple principals at certain schools (Pennsylvania Department, 2022; Philadelphia School,

2022). This was because certain schools had principals for each grade level or different principals for the years studied (Philadelphia School, 2022). In the latter cases, the researcher used the annual charter evaluation (ACE) reports from the Philadelphia school district to determine the principals for the years of interest (Philadelphia School, 2022). In the former cases, the researcher removed charter schools that had conflicting ethnicities (i.e., a white, Hispanic, Asian, or Black principal for different grade levels).

Next, the researcher matched each BCPS to traditional schools that were within their zip codes that could serve as potential feeder schools for students. Using the National Center for Education Statistics (NCES) Common Core of Data (CCD) and zip codes, the researcher selected TPS within the vicinity of each BCPS (Foreman et al., 2019; Gulosino & Liebert, 2020; Spees & Lauen, 2019). Ideally, the exact feeder schools for each BCPS should have been used in this study (Foreman et al., 2019; Gulosino & Liebert, 2020; Spees & Lauen, 2019). However, two major factors made identifying specific feeder schools for each student infeasible. First, the PDE data sets did not include feeder school data for the thousands of students in the data sets. Second, the state of Pennsylvania allows regional charter schools to serve students from multiple school districts (Pennsylvania Department, 2019). For example, one charter school in the Lehigh Valley area serves students from the city school district authorizer along with five suburban districts (Pennsylvania Department, 2019). Finally, to maintain data confidentiality, each school received a research identification code (e.g., BCPS-1 for the first black-operated charter school, NCPS-1 for the first non-black operated charter school, and TPS-1 for the first TPS) based on their assigned category (Creswell & Creswell, 2017).

Student Selection

Following the selection of schools, the researcher cleaned and prepared the student data (Green & Salkind, 2017; Warner, 2013). As recommended in the literature, the researcher requested data with student identification numbers rather than names to help maintain anonymity (Gall et al., 2007; Spees & Lauen, 2019). Student data and demographic data files were merged and those with code 3 (Black or African American (not Hispanic) were filtered out (Pennsylvania Information, 2021). From that group, the researcher narrowed down the list to only Black students with 2017, 2018, and 2019 math or ELA exam scores. That group was then allocated to each school type (BCPS, NCPS, or TPS) using PDE school numbers. For each school type, the researcher minimized differences between students by selecting only those with basic sixth-grade scores (886-999) and filtering out ELL, special education students, and those who were not economically disadvantaged (Ackerman & Egalite, 2017; Center for Research, 2019; Data Recognition, 2017c, 2018, 2019; Pennsylvania Information, 2021; Spees & Lauen, 2019).

Thus, both the math and ELA samples included students with sixth-grade scores who were not special education or ELL and who were from low SES backgrounds. This reduced the number of students with eligible math scores to 635 with 247 BCPS, 156 NCPS, and 232 TPS cases. Using case selection in SPSS, the researcher selected random samples of 156 cases for BCPS and TPS to match the sample size of NCPS for a total of 468 math cases. There were 1,149 students with eligible ELA scores that included 388 BCPS, 236 NCPS, and 525 TPS cases. Using case selection in SPSS, random samples of 170 cases for BCPS, NCPS, and TPS to ensure equal sample sizes which resulted in a total of 510 ELA cases. See Appendix E for more details on these charter schools. The researcher then proceeded to prepare the data for conducting the ANCOVA.

Data Analysis

The researcher used two one-way ANCOVAs to analyze student data for differences in math and ELA academic growth. ANCOVA is fitting since it evaluates significant differences between two or more independent groups on each dependent variable (Gall et al., 2007; Warner, 2013). Unlike the analysis of variance (ANOVA), which only tests for differences in group means, ANCOVA tests for differences in means adjusted for confounding variables (Gall et al., 2007; Warner, 2013). Thus, the one-way ANCOVA statistically controlled the covariates (i.e., students' 2017 sixth-grade math and ELA scores) that could influence outcomes, which is a useful benefit for causal-comparative designs (Gall et al., 2007; Warner, 2013). Finally, the ANCOVA increased statistical power since controlling for the covariate helped reduce the probability of Type II errors (Warner, 2013).

ANCOVA based models are commonly used in school effectiveness research for several reasons. Such models allow researchers to "… estimate the relationship between the previous and current test scores (and sometimes other variables). Students' actual scores are compared with their predicted scores and this difference is attributed to the relative causal efficacy of the school." (Wright, 2018, p. 2537). Moreover, using nonlinear growth models, propensity matching, and other techniques can help researchers compensate for the inadequacies of a basic ANCOVA (Wright, 2020). In a study like the proposed study, Spees and Lauen (2019) used a nonlinear growth model and ANCOVA (with two covariates) to conduct a study comparing CPS and TPS student performance on interval-scaled state-wide tests in North Carolina. Also, Yavuz et al., (2017) used ANCOVA to analyze the effects of specific types of schools on student outcomes. The levels of measurement of the variables were the final deciding factor for using the ANCOVA.

Measuring Variables

To meet causal-comparative design requirements, one should use variables with suitable

levels of measurement (Gall et al., 2007; Warner, 2013). The independent variable had three

nominal categories (school types) or independent groups with no known relationship between the

observations in each group or between groups (Gall et al., 2007; Warner, 2013). In contrast, the

dependent variables (academic growth) and covariates (sixth-grade scores) were interval scale

measures. Once the data met the conditions for further analysis, the researcher used data

screening steps to prepare for the ANCOVA (Green & Salkind, 2017).

Data Screening

The researcher confirmed the data's suitability for conducting one-way ANCOVAs on

data collected from the three independent variable groups by following recommended data

screening steps (Green & Salkind, 2017; Warner, 2013). Each group's covariates and dependent

variables (Math and ELA growth) and covariates (sixth-grade scores) were screened for missing

data, errors, inconsistencies, and outliers which might skew results (Green & Salkind, 2017). The

researcher clustered the covariates and dependent variables across the levels of the independent

variable to screen for inconsistencies or errors (Green & Salkind, 2017). There were no missing

data in any of the independent variable groups. Using box and whiskers plots as suggested by

Green and Salkind (2017), the researcher screened out extreme outliers in each group for both

the covariates and dependent variables. Figure 1, Figure 2, Figure 8, and Figure 9 show these

results.

Assumptions Tests

Before conducting the ANCOVA, the researcher evaluated the data for the assumptions

of normality, linearity, homogeneity of equal variance, and homogeneity of slopes (Green &

Salkind, 2017). Using SPSS, the researcher ran normality tests for each group's dependent

variable and covariate (Green & Salkind, 2017). A Kolmogorov-Smirnov test confirmed the

assumption of normality since each sample size was greater than 50 (Warner, 2013). Also, a

visual inspection of histograms for each school type confirmed normal distribution (Warner,

2013). One can assume independence of scores since each school independently conducted

testing for students (Warner, 2013). Levene's test of equality of error variances ($p < 0.05$)

assessed the quantitative data for equality of variances (Warner, 2013). A comparison of the

resulting p-value for Levene's test to an alpha of 0.05 confirmed that the data met the assumption

of the equality of variances (Warner, 2013).

One can evaluate the final assumptions using scatter plots or by looking for data

interactions (Green & Salkind, 2017; Warner, 2013). The researcher used scatter plots to

evaluate the assumption of linearity and bivariate normal distributions (Green & Salkind, 2017;

Warner, 2013). Each graph articulated a linear progression; thus, the data met the assumption of

linearity (Warner, 2013). Also, the scatter plots looked like a "cigar shape," which satisfied the

conditions for an assumption of bivariate normal distribution (Warner, 2013). The researcher

looked for interactions between the math and ELA dependent variable scores and corresponding

covariates to evaluate for homogeneity of slopes (Green & Salkind, 2017; Warner, 2013). The

significance of these interactions (0.06) is greater than alpha (0.05), thus the data satisfied the

assumption of homogeneity of slopes (Warner, 2013). Since the data met all required

assumptions, the researcher continued the parametric analysis (Warner, 2013).

Null Hypotheses Testing

Using SPSS, the researcher conducted two one-way ANCOVAs to examine the two null

hypotheses that predicted no significant differences between math and ELA academic growth in

Black students enrolled in BCPS compared to Black students in NCPS and TPS (Green &

Salkind, 2017). The researcher compared the *F*- statistic to *F*-critical and the p-values to the

alpha value (0.05) to determine whether to reject or fail to reject the null hypotheses at a 95%

confidence level (Warner, 2013). A Bonferroni correction (calculated by dividing alpha =.05 by

the total number of comparisons) is useful for helping to guard against type I errors when

conducting the ANCOVA (Warner, 2013).

An evaluation of the resulting alpha level (*p*) determined how the researcher treated each

null hypothesis (Warner, 2013). Since the p-value was less than 0.05, the researcher rejected the

null hypotheses because the data suggested that alternative hypotheses may better explain the

results (Warner, 2013). However, since causal-comparative designs only indicate weak causality,

further studies are needed to confirm these results (Gall, et al., 2007). Finally, for a one-way

ANCOVA, one can evaluate the effect size (alpha = 0.05) using partial eta-squared results

represented by η^2 (Green & Salkind, 2017). The conventional interpretation of effect size is as

follows, a) Small effect, $\eta^2 = 0.01$; b) Medium effect $\eta^2 = 0.06$; and c) Large effect $\eta^2 = 0.14$

(Warner, 2013).

CHAPTER FOUR: FINDINGS

Overview

The purpose of this quantitative causal-comparative study was to determine whether differences existed between math and ELA academic growth for Black students in black-operated charter schools (BCPS) compared to those in non-black operated charter schools (NCPS) and traditional public schools (TPS). The chapter contains information on (a) descriptive statistics, (b) assumptions tests, and (c) Analysis of covariance (ANCOVA) results for each null hypothesis. The results of the analyses are presented using data disaggregated by school type (BCPS, NCPS, and TPS) performed in response to the following two research questions.

Research Questions

RQ1: Is there a difference in mathematics academic growth (from seventh to eighth grade) among Black students enrolled in *black-operated public charter schools,* Black students in *non-black operated charter school*s, and Black students enrolled in *traditional public schools* when controlling for sixth-grade math scores?

RQ2: Is there a difference in ELA academic growth (from seventh to eighth grade) among Black students enrolled in *black-operated public charter schools,* Black students in *non-black operated charter school*s, and Black students enrolled in *traditional public schools* when controlling for sixth-grade ELA scores?

Null Hypotheses

$H_0 1$: There is no statistically significant difference in mathematics academic growth (from seventh to eighth grade) among Black students enrolled in *black-operated public charter schools,* Black students in *non- black operated charter school*s, and Black students enrolled in *traditional public schools* when controlling for sixth-grade math scores.

H$_0$2: There is no statistically significant difference in ELA academic growth (from seventh to eighth grade) among Black students enrolled in *black-operated public charter schools,* Black students in *non-black operated charter school*s, and Black students enrolled in *traditional public schools* when controlling for sixth grade ELA scores.

Descriptive Statistics

The descriptive statistics presented below give a brief overview of the findings of this study. These statistics include frequency distributions, measures of central tendency, and measures of variability which describe the relevant data (Green & Salkind, 2017; Warner, 2013). They allow the researcher to easily visualize and evaluate the data's suitability for further analysis (Green & Salkind, 2017; Warner, 2013). Descriptive statistics were obtained on the covariates (Grade 6 math and Grade 6 ELA scores) and dependent variables (Math growth and ELA growth) for each school type. Table 1, Table 2, Table 3, Table 4, Table 5, and Table 6 show the descriptive statistics for the covariates, dependent variables, and adjusted means for the data used in this study.

Math Growth

Descriptive statistics for H$_0$1 report the means and standard deviations for the covariates and dependent variables of math growth across the different levels of the independent variable (Green & Salkind, 2017; Warner, 2013). Table 1 shows the descriptive statistics for the covariate (sixth-grade scores). As part of the selection process, the researcher selected students with sixth-grade math scores that fell within the basic range (897-999) established by the PDE for the exam (Data Recognition, 2017c, 2018, 2019). Consequently, the lowest covariate score was 901 and the highest was 995 for students in all three types of schools. Table 2 presents data obtained for the dependent variable of math growth across the three different school types. Math academic

growth ranged from a low of -175 to a high of 131 in BCPS, -141 to 149 in NCPS, and -178 to 147 in TPS. While Table 3 displays statistics for the dependent variable (Adjusted Means) of math growth.

Table 1

Descriptive Statistics for $H_0 1$ *Covariate*

Covariate: Grade 6 Score

School Type	n	M	SD
1 - Black-operated charter schools (BCPS)	156	939.43	28.27
2 - Non-black operated charter schools (NCPS)	154	940.72	28.47
3 - Traditional public schools (TPS)	153	937.24	26.75

Table 2

Descriptive Statistics for $H_0 1$ *Dependent Variable*

Dependent Variable: Math Growth

School Type	n	M	SD
1 - Black-operated charter schools (BCPS)	156	-10.52	55.04
2 - Non-black operated charter schools (NCPS)	154	4.44	51.40
3 - Traditional public schools (TPS)	153	-5.65	62.52

Table 3

Descriptive Statistics for $H_0 1$ *Dependent Variable (Adjusted Means)*

Dependent Variable (Adjusted Means): Math Growth			
School Type	*n*	*M*	*SE*
1 - Black-operated charter schools (BCPS)	156	-10.48 [a]	4.52
2 - Non-black operated charter schools (NCPS)	154	4.67 [a]	4.55
3 - Traditional public schools (TPS	153	-5.94[a]	4.56

a. Covariates appearing in the model are evaluated at the following values: Grade 6 Score = 939.13

ELA Growth

Descriptive statistics for $H_0 2$ report the means and standard deviations for the covariates and dependent variables of ELA growth across the different levels of the independent variable (Green & Salkind, 2017; Warner, 2013). Table 4 shows the descriptive statistics for the covariate (sixth-grade scores). As part of the selection process, the researcher selected students with sixth-grade ELA scores that fell within the basic range (875 to 999) established by the PDE for the exam (Data Recognition, 2017a). Consequently, the lowest covariate score was 880 and the highest was 995 for students in all three types of schools. Table 5 presents data obtained for the dependent variable of ELA growth across the three different school types. ELA academic growth ranged from a low of -131 to a high of 120 in BCPS, -157 to 134 in NCPS, and -159 to 123 in TPS. While Table 6 displays statistics for the dependent variable (Adjusted Means) of ELA growth.

Table 4

Descriptive Statistics for $H_0 2$ *Covariate*

Covariate: Grade 6 Score

School Type	n	M	SD
1 - Black-operated charter schools (BCPS)	169	945.99	30.75
2 - Non-black operated charter schools (NCPS)	169	945.76	36.00
3 - Traditional public schools (TPS)	168	940.27	33.95

Table 5

Descriptive Statistics for $H_0 2$ *Dependent Variable*

Dependent Variable: ELA Growth

School Type	n	M	SD
1 - Black-operated charter schools (BCPS)	169	-16.32	52.28
2 - Non-black operated charter schools (NCPS)	169	-7.11	55.29
3 - Traditional public schools (TPS)	168	-13.30	59.75

Table 6

Descriptive Statistics for $H_0 2$ *Dependent Variable (Adjusted Means)*

Dependent Variable (Adjusted Means): ELA Growth

School Type	n	M	SE
1 - Black-operated charter schools (BCPS)	169	-16.62 [a]	4.29
2 - Non-black operated charter schools (NCPS)	169	-7.38 [a]	4.28
3 - Traditional public schools (TPS	168	-12.73 [a]	4.30

a. Covariates appearing in the model are evaluated at the following values: Grade 6 Score = 944.01.

Results

Null Hypothesis $H_0 1$

Hypothesis $H_0 1$ stated that there is no statistically significant difference in mathematics academic growth (from seventh to eighth grade) among Black students enrolled in *black-operated public charter schools,* Black students in *non-black operated charter school*s, and Black students in *traditional public schools* when controlling for sixth-grade math scores.

Data Screening

Data screening was conducted on each group's covariate and dependent variable. Screening of the covariate (sixth-grade math scores) and math academic growth dependent variable indicated no missing data, errors, or inconsistencies that could skew results (Green & Salkind, 2017). Box and whiskers plots were used to detect extreme outliers on the covariate and dependent variable. Figure 1 shows no outliers for BCPS, NCPS, or TPS on the covariate. Visual inspection of the box and whiskers plots in Figure 2 indicated five outliers for BCPS, four for NCPS, and four for TPS on the dependent variable. The researcher converted all these data

points to z-scores to determine if they were extreme outliers (Warner, 2013). Two NCPS points

(30 and 121) scores and three TPS points (369, 439, and 406) fell outside of +3 and -3 standard

deviations of the sample mean for each school (Warner, 2013, p. 153). Thus, those five points

were removed since they were extreme outliers (Green & Salkind, 2017; Warner, 2013). See

Figures 1 and 2 for the math growth box and whisker plots.

Figure 1

Box and Whisker Plots $H_0 1$ Covariate
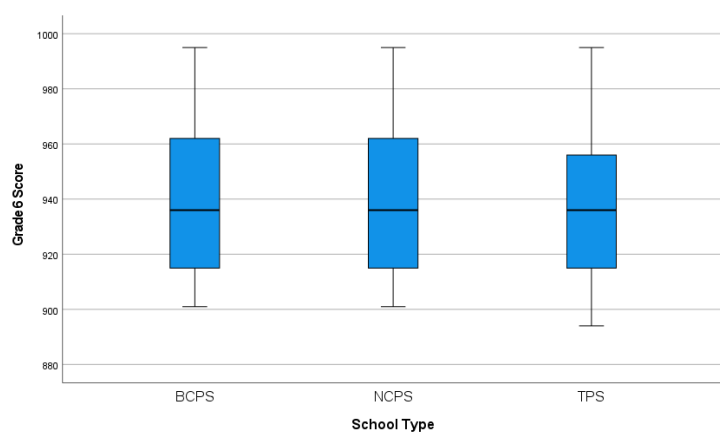
Figure 2

Box and Whisker Plots $H_0 1$ Dependent Variable
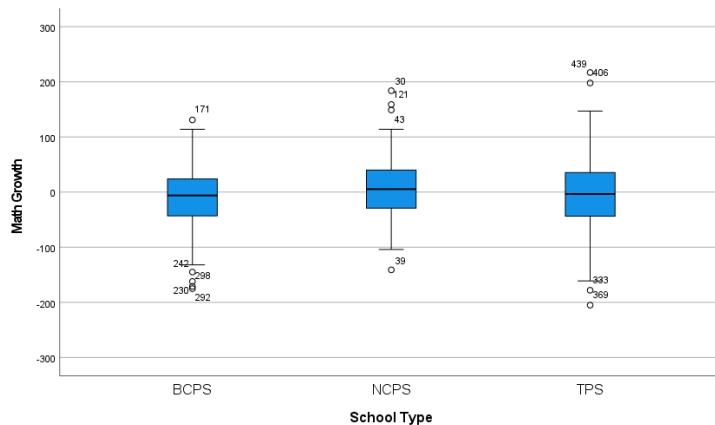
Assumption Tests

An ANCOVA was used to test this null hypothesis. The ANCOVA required that the assumptions of normality, linearity and bivariate normal distribution, homogeneity of slopes, and homogeneity of variances are met (Green & Salkind, 2017; Warner, 2013).

The Kolmogorov-Smirnov test was useful for testing the assumption of normality since the sample size (n = 463) is greater than 50 (Warner, 2013). The data showed that each school type violated normality ($p < .001$ and $p = 001$) for the covariate (sixth-grade math scores). Thus, the researcher proceeded with the analysis since ANCOVA is robust to such violations and histograms for each school type indicated a reasonably normal distribution (Warner, 2013). There were no violations of normality for the dependent variable. Thus, the data met the assumption of normality. See Table 7 for normality tests and Figure 3, Figure 4, and Figure 5 for the math covariate histograms.

Table 7

Tests of Normality for H_01

		Kolmogorov-Smirnov[a]		
	School Type	Statistic	*df*	Sig.
Grade 6 Score	1 - BCPS	.161	156	<.001
	2 - NCPS	.128	154	<.001
	3 - TPS	.098	153	.001
Math Growth	1 - BCPS	.070	156	.057
	2 - NCPS	.037	154	.200*
	3 - TPS	.051	153	.200*

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Figure 3

Histogram for Covariate $H_0 1$ (BCPS)
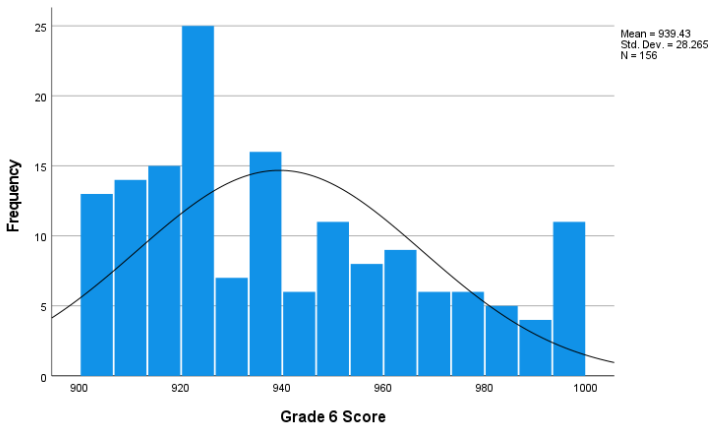
Figure 4

Histogram for Covariate $H_0 1$ (NCPS)
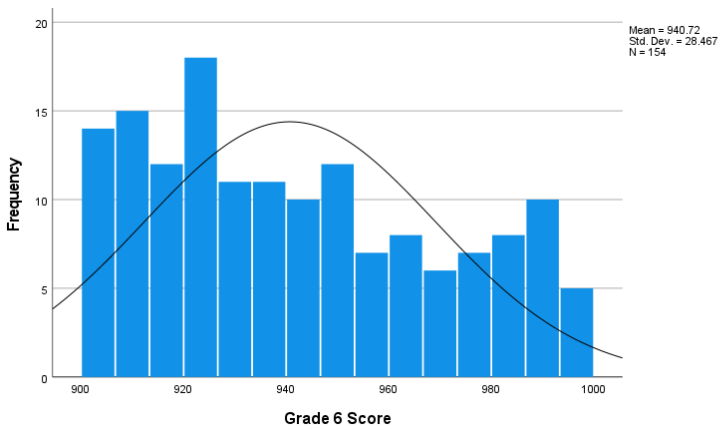
Figure 5

Histogram for Covariate $H_0 1$ (TPS)
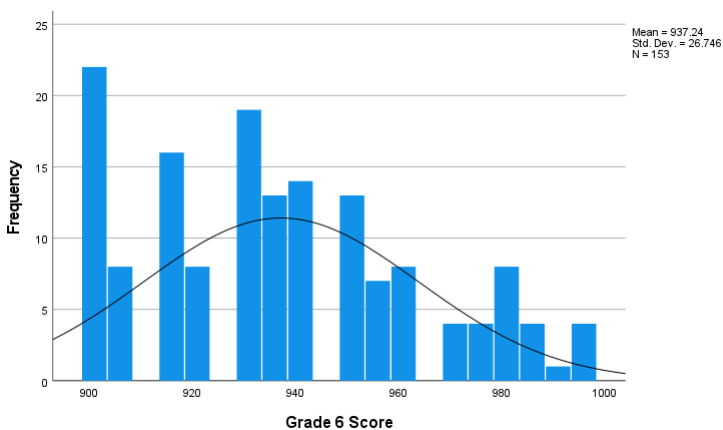
The assumptions of linearity and bivariate normal distribution were tested using scatter plots for each group. Linearity was met and bivariate normal distributions were tenable as the shapes of the distributions were not extreme (Warner, 2013). Figure 6, Figure 7, and Figure 8 show the scatter plot for the school types.

Figure 6

Scatter plot for $H_0 1$ (BCPS)
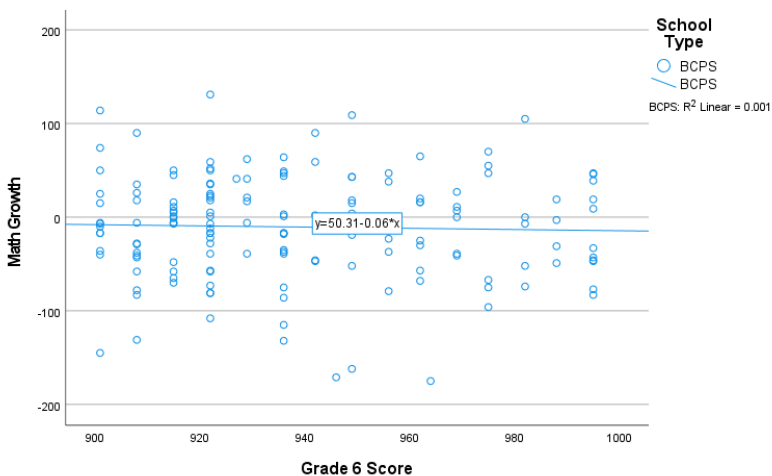
Figure 7

Scatter plot for $H_0 1$ (NCPS)
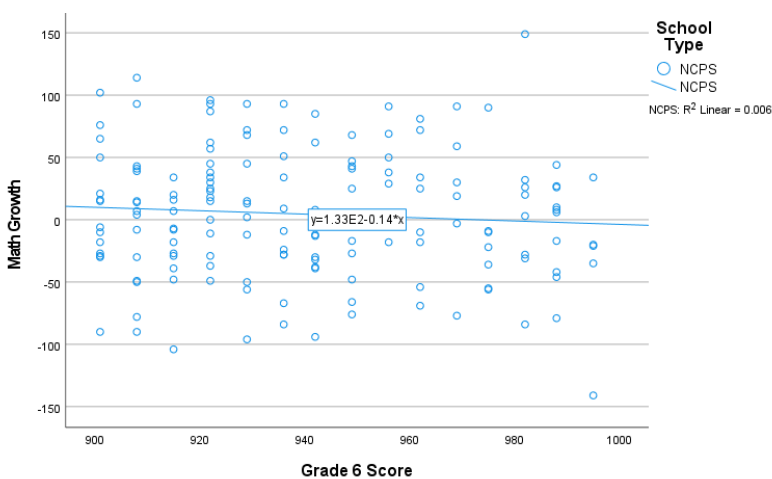
Figure 8

Scatter plot for $H_0 1$ (TPS)
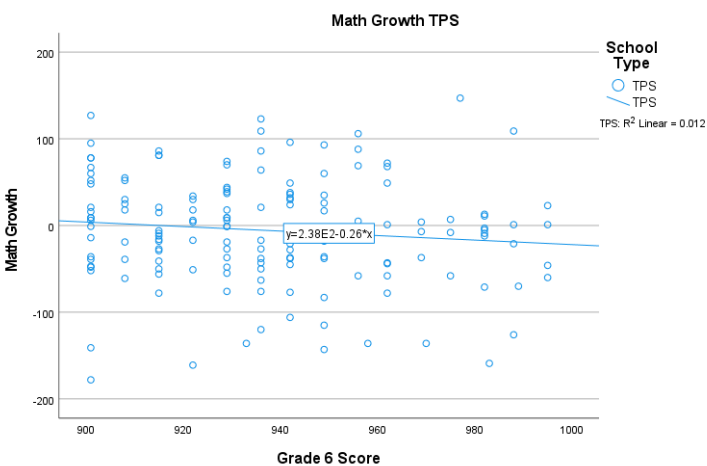
The assumption of homogeneity of slopes was tested and no interaction was found where $p = .704$ (Warner, 2013). Therefore, the assumption of homogeneity of slopes was met. The assumption of homogeneity of variances was examined using Levene's test. No violation was found where $p = .169$ (Warner, 2013). The assumption of homogeneity of variances was satisfied.

Results for Null Hypothesis (H₀1)

The researcher conducted a one-way ANCOVA to test the null hypothesis regarding the effects of three different school types on math academic growth in eighth-grade Black students while controlling for grade 6 scores. The null hypothesis was not rejected at a 95% confidence level where $F(2, 459) = 1.43$, $p = .054$, $\eta^2 = .013$ (Warner, 2013). The effect size was small and no post hoc analysis was conducted since the researcher failed to reject this null hypothesis (Warner, 2013).

Null Hypothesis H₀2

Hypothesis H₀2 stated that there is no statistically significant difference in ELA academic growth (from seventh to eighth grade) among Black students enrolled in *black-operated public charter schools,* Black students in *non-black operated charter school*s, and Black students in *traditional public schools* when controlling for sixth-grade ELA scores.

Data Screening

Data screening was conducted on each group's covariate and dependent variable. Screening of the covariate (sixth-grade scores) and ELA growth dependent variable indicated no missing data, errors, or inconsistencies that could skew results (Green & Salkind, 2017). Box and whiskers plots were used to detect extreme outliers for the covariate and dependent variables. No extreme outliers were identified for the ELA covariate points. Analysis of the plots indicated two outliers for BCPS points (170 and 23), three for NCPS (206, 298, and 248), and two for TPS (505 and 343) school types across the dependent variable. The researcher converted the data point to a z-score to determine if they were extreme outliers (Warner, 2013). One BCPS (23), one NCPS (206), and two TPS points (505 and 343) fell outside +3 and -3 standard deviations of the sample mean of each school type (Warner, 2013, p. 153). Thus, all four points were

considered extreme scores and thus removed from the data set (Green & Salkind, 2017; Warner, 2013). See Figure 8 and Figure 9 for the ELA growth box and whisker plots.

Figure 9

Box and Whisker Plots H_02 Covariate
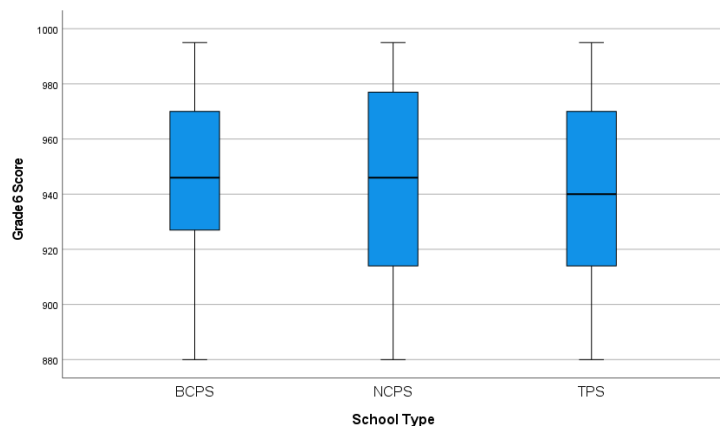
Figure 10

Box and Whisker Plots H_02 Dependent variable
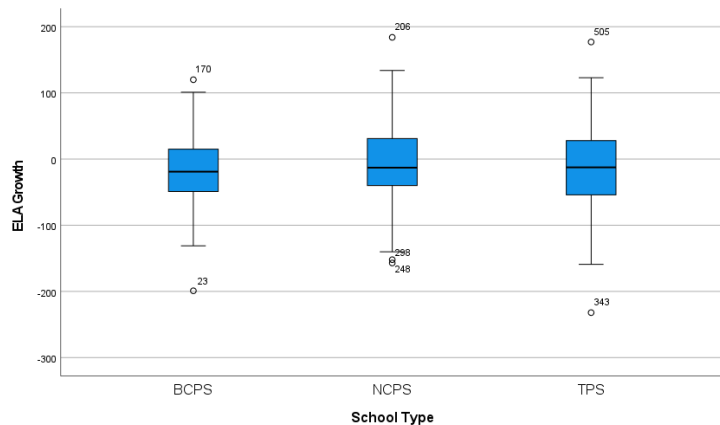
Assumption Tests

An ANCOVA was used to test this null hypothesis. The ANCOVA required that the assumptions of normality, assumption of linearity and bivariate normal distribution, assumptions of homogeneity of slopes, and homogeneity of variance, are met (Green & Salkind, 2017; Warner, 2013).

Normality was examined using a Kolmogorov-Smirnov test. Kolmogorov-Smirnov test since the sample size (n = 506) was greater than 50 (Warner, 3013). Results revealed violations of normality for BCPS (p =.003), NCPS (p <.001), and TPS (p =.001) across the covariate. Since ANCOVA is robust to violations of normality, visual inspection histograms for all three school types showed a reasonably normal distribution of the covariate (Warner, 2013). In contrast, no violations of normality were found for the dependent variable (ELA Growth). Thus, the data were suitable for an assumption of normality for an ANCOVA. See Table 8 for Tests of Normality and Figure 11, Figure 12, and Figure 13 for the ELA covariate histograms.

Table 8

Tests of Normality for $H_0 2$

		Kolmogorov-Smirnov[a]		
	School Type	Statistic	*df*	Sig.
Grade 6 Score	1 - BCPS	.088	169	.003
	2 - NCPS	.098	169	<.001
	3 - TPS	.092	168	.001
ELA Growth	1 - BCPS	.041	169	.200*
	2 - NCPS	. 058	169	.200*
	3 - TPS	.033	168	.200*

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Figure 11

Histogram for Covariate $H_0 2$ (BCPS)
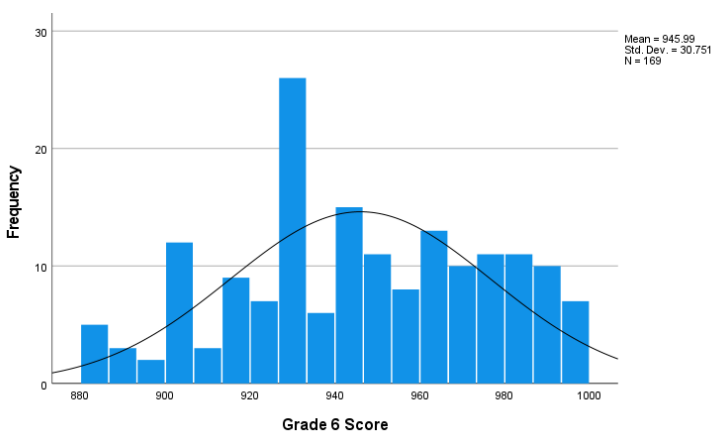
Figure 12

Histogram for Covariate $H_0 2$ (NCPS)
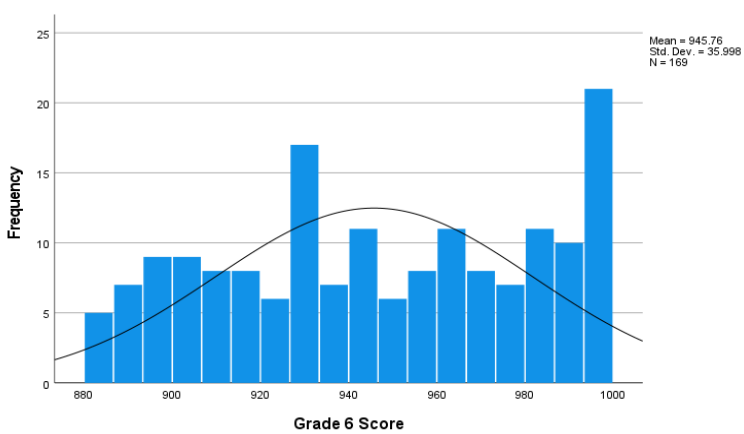
Figure 13

Histogram for Covariate H$_0$2 (TPS)
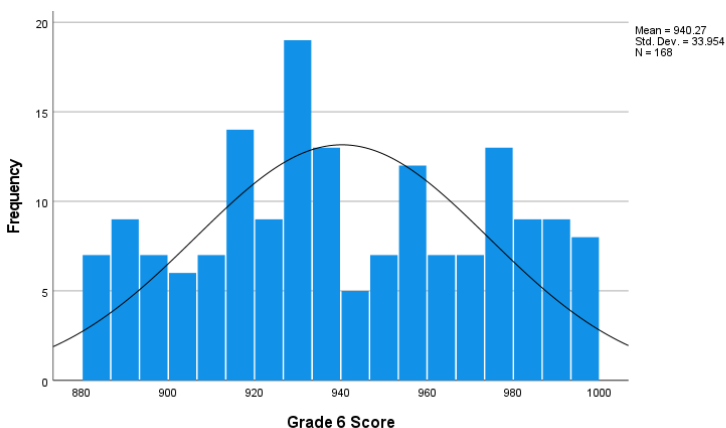
The assumptions of linearity and bivariate normal distribution were tested using scatter plots for each group (Warner, 2013). Linearity was met and bivariate normal distributions were tenable as the shapes of the distributions were not extreme (Warner, 2013). Figure 14, Figure 15, and Figure 16 show the scatter plots for the school types.

Figure 14

Scatter plot for H$_0$2 (BCPS)
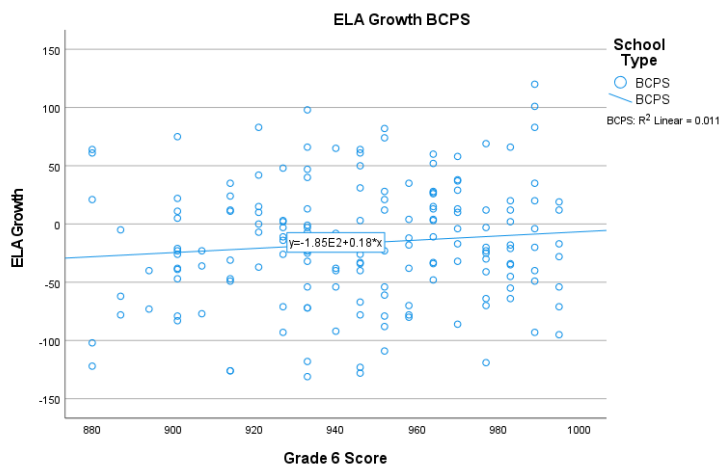
Figure 15

Scatter plot for H₀2 (NCPS)

ELA Growth NCPS

Grade 6 Score
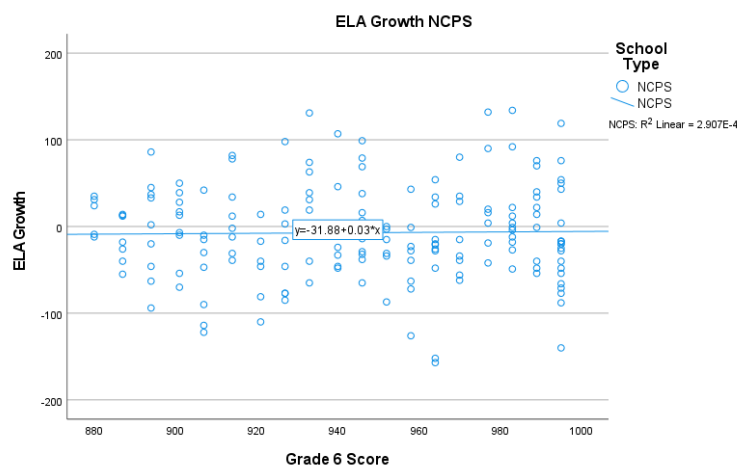
Figure 16

Scatter plot for H₀2 (TPS)

ELA Growth TPS
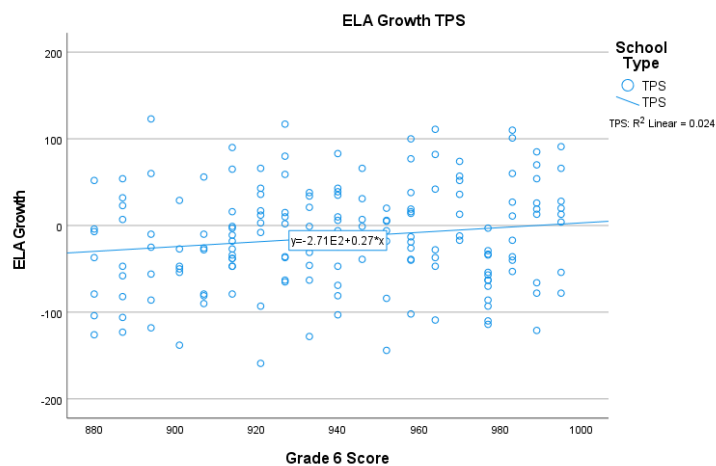
The assumption of homogeneity of slopes was tested and no interaction was found where $p = .355$ (Warner, 2013). Therefore, the assumption of homogeneity of slopes was met. The assumption of homogeneity of variances was examined using Levene's test. No violation was found where $p = .184$ (Warner, 2013). The assumption of homogeneity of variances was met.

Results for Null Hypothesis (H₀2)

The researcher conducted a one-way ANCOVA to test the null hypothesis regarding the effects of three different school types on ELA academic growth in eighth-grade Black students while controlling for sixth-grade scores. The null hypothesis was not rejected at a 95% confidence level where $F(2, 502) = 1.17$, $p = .310$, $\eta^2 = .005$ (Warner, 2013). The effect size was very small and no post hoc analysis was needed since the researcher failed to reject this null hypothesis (Warner, 2013).

CHAPTER FIVE: CONCLUSIONS

Overview

This *ex post facto* causal-comparative study sought to determine if there were differences in the academic growth of Black students enrolled in black-operated charter schools (BCPS), non-black operated charter schools (NCPS), and traditional public schools (TPS) in the Philadelphia School District (PSD). Chapter Five discusses the study's findings and compares the results to the extant relevant literature. The study's implications and limitations follow a discussion of the findings for the two research questions. Lastly, the researcher suggests recommendations for further research based on the results of the study.

Discussion

The purpose of this causal-comparative, quantitative study was to compare the academic growth (from seventh to eighth grade) between Black students enrolled in black-operated public charter schools (BCPS), non-black operated charter schools (NCPS), and in traditional public schools (TPS) when controlling for sixth-grade scores. The main intent of the study was to assess whether Black charter school leaders positively influenced the academic growth of eighth-grade Black students. The dynamic model of educational effectiveness provided a theoretical lens with which to evaluate the results of this study. According to the model, a leader's ability to positively influence the school learning environment (SLE) depends on their ability to leverage school-level factors in their practices and policies (Kyriakides, Creemers, & Charalambous, 2018; Kyriakides et al., 2020). The researcher used 463 Pennsylvania System of School Assessment (PSSA) math scores and 506 PSSA English Language Arts (ELA) scores from low-income Black students in Philadelphia to conduct this study.

Discussion of Research Questions

The researcher used two one-way analyses of covariance (ANCOVA) to examine the PSSA math and ELA data. For the first research question (RQ1), the researcher examined whether there was a difference in math academic growth (from seventh to eighth grade) among Black students enrolled in BCPS compared to those in NCPS and TPS when controlling for sixth-grade math scores. The results of the one-way ANCOVA indicated no statistically significant differences in math academic growth between students enrolled in BCPS, NCPS, and TPS. Thus, the researcher failed to reject the null hypothesis for RQ1.

For the second research question (RQ2), the researcher assessed whether there was a difference in ELA academic growth (from seventh to eighth grade) among Black students enrolled in BCPS compared to those in NCPS and TPS when controlling for sixth-grade ELA scores. The results of this one-way ANCOVA also showed no statistically significant differences in ELA academic growth between students enrolled in the three types of schools. Thus, the researcher also failed to reject the null hypothesis for RQ2.

Although the ANCOVA results for RQ1 and RQ2 were not significant for this study, other aspects of the data showed significant differences between the three types of schools. Previous studies have shown that same race principals had a positive effect on the academic performance and non-academic behaviors of Black children in certain schools (Bartanen & Grissom, 2019; 2021; Doyle, Kim & Hernandez-Cruz, 2019a; Grissom, Egalite, & Lindsay, 2021; Grissom, Rodriguez & Kern, 2017). However, the math and ELA means and adjusted means for NCPS students outpaced those for BCPS students in this study. The PSSA math academic growth mean for BCPS students was -10.52 compared to 4.44 for NCPS students. Comparable results occurred with ELA, where BCPS students attained a mean of -16.32 versus -7.11 for NCPS students. Moreover, controlling sixth-grade math and ELA scores had minimal

effects on the means for each type of school. On the math PSSA, the adjusted means for BCPS students were -10.48 for math and -16.62 for ELA. While the adjusted means for NCPS students stood at 4.67 for math and -7.38 for ELA.

Another consideration of this study was the academic performance of Black students in BCPS versus those in TPS. Previous studies revealed that Black and low-income students in charter schools located in urban areas tend to outperform their TPS counterparts (Center for Research, 2017, 2019; Gulosino & Liebert, 2020; Winters, 2020). Those findings contrast with the results of this study which showed no statistically significant differences in the math and ELA academic growth of Black students in BCPS compared to TPS counterparts in Philadelphia. Other state-wide studies reported mixed results (positive, no differences, minimal differences, and negative) CPS student performance compared to TPS (Foreman et al., 2019; Spees & Lauen, 2019). On the other hand, the descriptive data for this study showed the means and adjusted means for BCPS students were -10.52 and -10.48 for math and -16.32 and -16.62 for ELA respectively. While the means and adjusted means for TPS students were -5.65 and -5.94 for math and -13.30 and -12.73 for ELA. Thus, despite the lack of statistical significance, Black students in TPS managed to outperform their BCPS peers for both math and ELA academic growth. Additionally, findings from previous studies have shown that charter schools at the elementary and middle schools have the most positive effects on students' academic achievement (Woodworth, et al., 2017). Thus, the negative trend in both math and ELA scores from seventh to eighth grade for both TPS and CPS is of concern.

The extant research literature also revealed traits common to successful charter schools. Researchers found that most successful charter schools in urban locations enforced a wide-ranging student behavior system, increased instructional time (i.e., longer days, tutoring, etc.),

and held students to high academic expectations (Center for Research, 2015, 2019; Gleason, 2017; Gulosino & Liebert, 2020; Winters, 2020). Most of these traits fell outside the scope of this study, however other essential factors can also influence and thus improve the SLE thereby increasing school effectiveness. The PSD documented some of these factors in their annual charter evaluation (ACE) reports. See sample ACE along with background information and data for BCPS and NCPS in Appendix D.

Years in operation and affiliation with charter organizations are two key factors that may positively influence student academic outcomes in charter schools (Baude et al., 2020; Center for Research, 2019; Spees & Lauen, 2019). The BCPS in this study were operational for an average of six years with openings ranging from 1998 to 2016 (Philadelphia School, 2022). While NCPS averaged ten years of existence with openings ranging from 1997 to 2013 (Philadelphia School, 2022). Researchers also noted that new schools started by charter networks tend to perform better than their public school and independent charter operator counterparts (Spees & Lauen, 2019; Woodworth et al., 2017). The ACE reports showed that 39% of BCPS and 44% of NCPS were affiliated with charter organizations or networks (Philadelphia School, 2022). This meant that over 50% of both BCPS and NCPS were operated by independent operators. It is unknown if these slight NCPS advantages over BCPS in both average years of operation and charter network affiliation accounted for the differences in math and ELA means. See Appendix D for a summary of the data for BCPS and NCPS.

According to the dynamic model of educational effectiveness, school leaders can leverage several factors to improve organizational effectiveness and increase student academic success (; Kyriakides et al., 2020; Leithwood et al., 2017). School-level policies and practices that enhance instructional quality and improve the SLE lead to increased school effectiveness

(Kyriakides, Creemers & Charalambous, 2018; Kyriakides et al., 2020; Panayiotou et al., 2016). Decentralized school leaders have a greater influence on the school-level factors that impact effectiveness (Gawlik, 2018b; Krowka et al., 2017; Kyriakides et al., 2020; Leithwood et al., 2017). Their ability to impact the SLE is greater because they operate under fewer constraints and requirements from the context level (Gawlik, 2018b; Krowka et al., 2017; Kyriakides et al., 2020; Leithwood et al., 2017). They also have greater latitude and flexibility in determining and implementing school-level policies, selecting curricula, and in hiring practices (Gawlik, 2018b; Krowka et al., 2017).

However, leaders in Pennsylvania may not have as much influence as postulated by the dynamic theory and other school leadership experts. National charter organizations consistently rated Pennsylvania's charter law as one of the lowest and most detrimental laws to the success of these schools because they reduced flexibility (National Alliance, 2016; Ziebarth, 2020; Ziebarth & Palmer, 2018). Other reasons for the low rating included insufficient funding and requirements for standardized tests such as the PSSAs and Keystone exams which may reduce the selection of curriculum and hinder other school-level factors (Kyriakides et al., 2018; Kyriakides et al., 2020; National Alliance, 2016; Ziebarth, 2020; Ziebarth & Palmer, 2018). A preliminary review of the charter schools' websites showed that 39% (9 of 23) of MCPS had specialized curricula that focus either on STEM, culture, music, art, or language (Philadelphia School, 2022). The 14 (61%) that had no special curricula emphasized their alignment with Pennsylvania state standards which are based on the Common Core (Philadelphia School, 2022). None of the special curricula MCPS belonged to a charter network while 64% (9 of 14) of the schools lacking a special curriculum focus belonged to a network or organization. In contrast, 40% (10 of 25) of NCPS schools had a special curriculum focus and 40% of them belonged to a network or

organization. While 15 of 25 had no special curriculum with 58% belonging to a network or organization. See Appendix D for a summary of background information for BCPS and NCPS.

Dynamic model theorists also suggested that school leaders who focus on changing alterable factors (e.g., motivation, thinking, expectations, etc.) contribute to greater student academic success (Kyriakides et al., 2020; Leithwood et al., 2017). Moreover, schools that provide tutoring and other academic support for students, coaching and feedback for teachers, and data-driven instructional practices help improve student achievement (Gleason, 2017; Grissom, Egalite, & Lindsay, 2021). A preliminary review of the CPS websites included mission and vision statements which indicated that such schools do indeed have elevated expectations, sought to improve thinking, and help students fulfill their potential. Moreover, a review of BCPS websites and comprehensive plans found only five mentioned the use of data to drive instruction, two mentioned tutoring and extra instructional support for students, and 6 described extensive professional development and coaching support to improve teacher quality (Philadelphia School, 2022). For NCPS, seven mentioned using data to inform instruction, five had intensive tutoring services, and nine provided extensive professional development and training for teachers (Philadelphia School, 2022). Despite most schools missing this type of information, one can safely assume that since most of them (except for three NCPS) are Title I schools have additional student (tutoring, etc.) and staff support (professional development, etc.) and resources to comply with federal regulations.

The abundance of Title I schools (those with 40% or more low SES students) with underperforming students in Philadelphia is consistent with findings from previous studies. Research has shown that students in schools with higher poverty rates score significantly lower on standardized tests (Hussar et al., 2020; Taylor et al., 2018). The BCPS in this study had

average poverty rates of 75.5, 80.8, and 81 percent for the school years of 2016-2017, 2017-2018, and 2018-2019 (Philadelphia School, 2022). For NCPS the rates were 57.5, 59.3, and 64 percent for those school years (Philadelphia School, 2022). The average poverty rates for Philadelphia's entire charter sector were 62, 64, and 67 percent (Philadelphia School, 2022). While SES rates for the Philadelphia school district (TPS) were 74, 73, and 70 percent (Philadelphia School, 2022). Thus, the SES rate for BCPS was higher than the rates for NCPS, the entire charter sector, and district schools which was consistent with research showing that most Black students tend to attend CPS with higher poverty rates (Hussar et al., 2020; National Alliance, 2020; Philadelphia School, 2022). See Appendix D for a summary of the SES data for BCPS and NCPS.

High poverty rates combined with the prevalence of certain ethnic groups in schools were correlated with lower academic performance (Hussar et al., 2020). Students in schools with remarkably high percentages of Black or Hispanic students tend to experience lower academic achievement (Berkowitz et al., 2017; Logan & Burdick-Will, 2016; White et al., 2016). The BCPS in this study had Black student population averages of 72.7, 72.2, and 71.8 percent for the school years of interest (Philadelphia School, 2022). Only three (out of 23) BCPS schools had Black student populations below sixty percent (Philadelphia School, 2022). In comparison, the NCPS averages were 39.9, 39.4, and 39.6 percent for Black students in 2016-2017, 2017-2018, and 2018-2019 (Philadelphia School, 2022). While the PSD had average Black student populations of 50 and 48 percent for the 2017-2018 and 2018-2019 school years respectively, no comparative data were listed for 2016-2017 (Philadelphia School, 2022). See Appendix D for a summary of the student race data for BCPS and NCPS.

The high poverty rates and the high percentage of Black students in Philadelphia's charter schools were consistent with that found by the Center for Research on Education Outcomes (CREDO) in their most recent statewide study (Center for Research, 2019). CREDO researchers found that all CPS students matched their TPS counterparts in ELA achievement and lagged behind them in math (Center for Research, 2019). In contrast, this study found that Black students in BCPS underperformed their TPS and NCPS peers. While NCPS students had higher math and ELA means than similar students in BCPS and TPS. Of note, all the NCPS had citywide admissions policies while only 69.5% (16 of 23) of BCPS admitted students from across Philadelphia (Philadelphia School, 2022). See Appendix D for a summary of BCPS and NCPS admissions policies. The effect of those admission policies on student performance remains unknown. The following section contains some pertinent implications that resulted from this study's findings.

Implications

The expressed purpose of this study was to examine the effects of Black principals on the academic growth of Black students in CPS. The intent was to gather the information that would guide the decision making of the PDE and local school officials as they seek to address the challenges facing Black students in Philadelphia's public schools. Black and Hispanic students along with children from low-income backgrounds usually lag behind their Caucasian and Asian peers on standardized tests, high school graduation rates, college enrollment, and other indicators (Berkowitz et al., 2017; de Brey et al., 2019; Howard, 2019; Hussar et al., 2020; Logan & Burdick-Will, 2016; White et al., 2016). This present study examined the effects of same race principals on the math and ELA academic growth of Black students in Philadelphia's charter schools. Although the results demonstrated no statistically significant differences in the academic

growth of BCPS students compared to those in NCPS and TPS, there are certain meaningful implications that the education community, policymakers, and other key stakeholders should seriously consider.

First, the extant literature reported inconsistent findings about the academic performance of Black students in charter schools compared to those in traditional public schools (Center for Research, 2015, 2017, 2019; Foreman et al., 2019; Spees & Lauen, 2019). According to certain studies, Black students enrolled in CPS in urban settings tend to outperform their peers in TPS. However, those enrolled in CPS in other contexts (i.e., suburban schools) had minimal positive outcomes, showed no significant differences, or underperformed compared to their peers (Foreman et al., 2019; Spees & Lauen, 2019). Notably, the data examined in this study revealed an overall downward trend in the PSSA scores for both charter and TPS students. The math academic growth for students in CPS and TPS was negative and while NCPS students experienced a growth of 4.44. Black students in all three types of schools experienced negative academic growth on the ELA exams. A review of these schools' performance on their ACE reports along with this study's findings underscored the need to address the academic struggles of Black students at the middle school level.

This study also adds to the existing literature since it provides further insights into the challenges faced by both charter schools and Black students. Many TPS officials, teachers' unions, and other education stakeholders view charter schools as threats and adversaries (due to competition for students, funding, etc.) instead of education partners (Bulkley & Henig, 2019; Ladd, 2019; Ridley & Terrier 2018). The response of Philadelphia's African American Charter Schools Coalition (AACSC) to charter school closures exemplifies this animosity (Bailey, 2020). This researcher also witnessed this adversarial stance firsthand on two separate occasions. First,

the newly appointed superintendent of a large urban Pennsylvania school district listed charter schools as a threat in the SWOT analysis during a public presentation on the state of the district. On another occasion, the superintendent of a neighboring city district posted a message stating that charter schools were not accountable to taxpayers. These claims were quite perplexing since local school districts approve charter applications, assess performance, and renew charters (Gross et al., 2019; Miron, 2017; National Alliance, 2019; Philadelphia School, 2022).

Despite the hostility and tensions that exist between TPS and CPS, we should no longer disregard the clamor of Black parents for better educational opportunities. TPS continually fails to meet the obligation to provide high quality and equitable educational opportunities for disadvantaged children (Goodridge, 2019; Kahlenberg & Potter, 2014; Winters, 2020). Perhaps it is time to revisit Albert Shanker's original vision in which CPS serve as incubators for innovation and positive change, especially for the most disadvantaged students (Gleason, 2017; Gross et al., 2019; Kahlenberg & Potter, 2014; Miron, 2017). The PDE and local officials should promote and incentivize collaboration and partnerships between TPS and CPS so that they can work together to ensure a high-quality and equitable education for the most disadvantaged children. Such collaboration would allow both types of schools to benefit from instructional and professional development strategies that leverage school-level factors to positively impact students' academic performance (Berends et al., 2018; Kyriakides et al., 2020).

Limitations

Certain external and internal threats limit the generalizability and internal validity of this *ex post facto* causal-comparative study. First, the study only included Black students in Philadelphia's CPS and TPS. Thus, because of this limitation, results are not necessarily generalizable to schools in other Pennsylvania locations or other states (Gall et al., 2007).

Secondly, the researcher only used academic growth based on math and ELA scores for Black students from low SES backgrounds without special education and English language learner requirements. The research set these conditions to limit the differences among the students to increase internal validity (Gall et al., 2007). So, it is safe to assume that these academic growth metrics were not complete and accurate assessments of these schools and their leaders.

Two significant threats to internal validity center around the selection of schools and Black principals. The researcher filtered the data to select schools with Black principals during the 2016 to 2019 school years and then for TPS in the same zip codes as the BCPS (Pennsylvania Department, 2022; Philadelphia School, 2022). This process did not allow for controlling for school size, student to teacher ratio, teacher experience, curricula focus, years in operation, differences in resources, or other factors that according to the dynamic model could influence school effectiveness (Kyriakides et al., 2020; Leithwood et al., 2017). For instance, several schools had STEM curricula while others had language, culture, music, or art as their specialties. Thus, one can reasonably expect the STEM schools to have better results on the math PSSA. Interestingly, all the NCPS accepted students from the entire city, which gave them access to students with more diverse academic and SES backgrounds (Philadelphia School, 2022). While 48% of BCPS had neighborhood acceptance policies, which may explain why these schools had much higher percentages of Black and low SES students (Philadelphia School, 2022).

Additionally, the research did not control for other pertinent students and principal factors that could affect academic growth. The scope of the research did not allow for the control of gender, length of time spent in the school, and other factors that may influence student performance (Ackerman & Egalite, 2017; Spees & Lauen, 2019). Key elements that could affect a principal's ability to influence students' academic performance include leadership experience,

philosophy, and style, policies, practices, and tenure within the school building (Doyle, Hernandez-Cruz & Ellison, 2019; Grissom, Egalite, & Lindsay, 2021; Kyriakides et al., 2020; Leithwood et al., 2017). This study's scope and design limited the researcher's ability to further investigate these factors.

Recommendations for Future Research

Extant literature contains few studies on the effects of same race principals on their students in any educational context. The study intended to help fill this gap in the literature by determining if same race principals in the charter school context helped low SES Black children overcome the academic struggles that have disproportionately plagued this student subgroup. The inconclusive results of this study and the persistent nature of this problem should compel researchers to conduct studies in several areas. Since this was an *ex post facto,* causal-comparative quantitative study only standardized test scores, demographic data, and information gleaned from school websites were used to examine the effects of school-level factors in charter schools. Thus, a qualitative or mixed methods study could provide invaluable descriptive data and other information on the actual policies and practices of Black principals. Areas of interest could be the specific policies and practices in charter schools that influence both instructional quality and the SLE (Kyriakides et al., 2020; Leithwood et al., 2017). Finally, studying the non-academic effects of same race principals on Black students and parents may useful yield information for policymakers.

Secondly, a comparison of the practices and policies in NCPS and BCPS might also yield meaningful information and help promote collaboration. Most of the BCPS and NCPS had high percentages of Black and some also had a higher percentage of Hispanic students from low SES backgrounds, a combination that usually results in lower academic performance (Philadelphia

School, 2022; Hussar et al., 2020; Logan & Burdick-Will, 2016; White et al., 2016). Yet, NCPS students earned higher math and ELA scores than BCPS and TPS. A study that examines the NCPS strategies that enable success could be helpful to both BCPS and TPS. Finally, sharing these successful practices and policies can help guide PDE decision makers and state policymakers as well as promote further collaboration between CPS and TPS.

REFERENCES

Ackerman, M., & Egalite, A. J. (2017). A critical look at methodologies used to evaluate charter school effectiveness. *Educational Assessment, Evaluation and Accountability*, *29*(4), 363–396.

Ahn, J. & McEachin, A. (2017) Student Enrollment Patterns and Achievement in Ohio's Online Charter Schools. *Educational Researcher*. 46(1):44-57.

Anderson, J. D. (1988). *The education of blacks in the south*, 1860-1935, University of North Carolina Press.

Azigwe, J. B., Kyriakides, L., Panayiotou, A., & Creemers, B. P. (2016). The impact of effective teaching characteristics in promoting student achievement in Ghana. *International Journal of Educational Development*, *51*, 51-61.

Bailey, S. (2020). New group challenges treatment of charter schools. *Philadelphia Tribune* https://www.phillytrib.com/news/new-group-challenges-treatment-of-charter-schools/article_e3a9c957-4af5-557d-8324-3fe24c9be7ef.html

Bartanen, B., & Grissom, J. A. (2019). School principal race and the hiring and retention of racially diverse teachers. *Working Paper.* Annenberg Institute at Brown University EdWorkingPaper. Retrieved from: https://www.edworkingpapers.com/ai19-59.

Bartanen, B., & Grissom, J. A. (2021). School principal race, teacher racial diversity, and student achievement. *Journal of Human Resources*, 0218-9328R2

Baude, P. L., Casey, M., Hanushek, E. A., Phelan, G. R., & Rivkin, S. G. (2020). The evolution of charter school quality. *Economica*, *87*(345), 158-189.

Berends, M. (2018). The continuing evolution of school choice in America. *Handbook of education policy*, 97-118.

Berends, M., Peñaloza, R. V., Cannata, M., & Goldring, E. B. (2018). Innovation in charter schools: An exploratory analysis. In *School choice at the crossroads* (pp. 92-106). Routledge.

Berkowitz, R., Moore, H., Astor, R. A., & Benbenishty, R. (2017). A research synthesis of the associations between socioeconomic background, inequality, school climate, and academic achievement. *Review of Educational Research*, *87*(2), 425-469.

Betts, J. R., & Hill, P. T. (Eds.). (2010). *Taking measure of charter schools: Better assessments, better policymaking, better schools*. R&L Education.

Betts, J. R., & Tang, Y. E. (2019). The effect of charter schools on student achievement. *School Choice at the Crossroads: Research perspectives*, 67-89.

Brooks, E. (2020). Market-centered mania and network charter schools. In *Education Reform in the Twenty-First Century* (pp. 1-27). Palgrave MacMillan, Cham.

Bulkley, K. E., & Henig, J. R. (2019). Charter school governance and politics. *Handbook of Research on School Choice*, 118-131.

Bullock, H. A. (1967). *A history of Negro education in the south from 1619 to the present*. Harvard University Press.

Castagno, A. E., Garcia, D. R., & Blalock, N. (2016). Rethinking school choice: Educational options, control, and sovereignty in Indian country. *Journal of School Choice*, *10*(2), 227-248.

Center for Research on Education Outcomes (CREDO) (2011). *Charter school performance in Pennsylvania*. Stanford University. https://credo.stanford.edu.

Center for Research on Education Outcomes (CREDO) (2015). *Urban charter school study*. Stanford University. https://credo.stanford.edu.

Center for Research on Education Outcomes (CREDO) (2017). *Lights off: Practice and impact of closing low-performing schools*. Stanford University. https://credo.stanford.edu.

Center for Research on Education Outcomes (CREDO) (2019). *Charter school performance in Pennsylvania*. Stanford University. https://credo.stanford.edu.

Chabrier, J., Cohodes, S., & Oreopoulos, P. (2016). What can we learn from charter school lotteries? *Journal of Economic Perspectives, 30*(3), 57–84.

Cheng, A., Hitt, C., Kisida, B., & Mills, J. N. (2017). "No excuses" charter schools: A meta-analysis of the experimental evidence on student achievement. *Journal of School Choice*, *11*(2), 209-238.

Cohodes, S. (2018). Policy issue: Charter schools and the achievement gap. *The Future of Children*, 1-16.

Creemers, B., Scheerens, J., & Reynolds, D. (2000). Theory development in school effectiveness research. *The international handbook of school effectiveness research*.

Creemers, B. P. M., & Kyriakides, L. (2007). *The dynamics of educational effectiveness. A contribution to policy, practice, and theory in contemporary schools*. Routledge.

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage Publications.

D'Amico, D., Pawlewicz, R. J., Earley, P. M., & McGeehan, A. P. (2017). Where are all the black teachers? Discrimination in the teacher labor market. *Harvard Educational Review*, *87*(1), 26-49,155-156.

Data Recognition Corporation (2014). *Pennsylvania System of School Assessment (PSSA) technical report.* https://www.education.pa.gov/K-12/Assessment%20and%20Accountability/PSSA/Pages/PSSA-Technical-Reports.aspx

Data Recognition Corporation (2017a). *Pennsylvania System of School Assessment (PSSA) English language arts (ELA) test design*. https://www.education.pa.gov/K-12/Assessment%20and%20Accountability/PSSA/Pages/ELAs.aspx

Data Recognition Corporation (2017b). *Pennsylvania System of School Assessment (PSSA) mathematics test design* (2017). https://www.education.pa.gov/K-12/Assessment%20and%20Accountability/PSSA/Pages/Mathematics.aspx

Data Recognition Corporation (2017c). *Pennsylvania System of School Assessment (PSSA) technical report*. https://www.education.pa.gov/K-12/Assessment%20and%20Accountability/PSSA/Pages/PSSA-Technical-Reports.aspx

Data Recognition Corporation (2018). *Pennsylvania System of School Assessment (PSSA) technical report. https://www.education.pa.gov/K-12/Assessment%20and%20Accountability/PSSA/Pages/PSSA-Technical-Reports.aspx*

Data Recognition Corporation (2019). *Pennsylvania System of School Assessment (PSSA) technical report. https://www.education.pa.gov/K-12/Assessment%20and%20Accountability/PSSA/Pages/PSSA-Technical-Reports.aspx*

David, R. (2018). *National charter school management overview: 2016-17 school year*. National Alliance for Public Charter Schools. https://data.publiccharters.org/.

David, B. G., Marder, M., Marshall, J., & González-Howard, M. (2020). How do students experience choice? Exploring STEM course-offerings and course-taking patterns in Texas charter and non-charter public schools. E*ducation Policy Analysis Archives*, *28*, 123.

Day, E., & Dotterer, A. M. (2018). Parental involvement and adolescent academic outcomes: Exploring differences in beneficial strategies across racial/ethnic groups. *Journal of Youth and Adolescence*, *47*(6), 1332-1349.

de Brey, C., Musu, L., McFarland, J., Wilkinson-Flicker, S., Diliberti, M., Zhang, A., Branstetter, C., Wang, X. (2019). Status and trends in the education of racial and ethnic groups 2018. NCES 2019-038. *National Center for Education Statistics*.

De Jong, R., Westerhof, K. J., & Kruiter, J.H. (2004). Empirical evidence of a comprehensive model of school effectiveness: A multilevel study in mathematics in the 1st year of junior general education in The Netherlands. *School Effectiveness and School Improvement*, 15, 3–31.

Doyle, D., Hernandez-Cruz, I., & Ellison, S. (2019). Identity and charter school leadership. Profiles of leaders of color: Building an effective staff. *Public Impact.*

Doyle, D., Kim, J., & Hernandez-Cruz, I. (2019a). Identity and charter school leadership. Profiles of leaders of color: Building a strong school culture. *Public Impact.*

Doyle, D., Kim, J., & Hernandez-Cruz, I. (2019b). Identity and charter school leadership. Profiles of leaders of color: Engaging families. *National Alliance for Public Charter Schools*.

Egalite, A. J. (2020). The national charter school landscape. *Hoover Institution*, Stanford University

Egalite, A. J., & Kisida, B. (2018). The effects of teacher match on students' academic perceptions and attitudes. *Educational Evaluation and Policy Analysis*, *40* (1), 59-81.

Epple, D., Romano, R., & Zimmer, R. (2016). Charter schools: A survey of research on their characteristics and effectiveness. *Handbook of the Economics of Education*, *5*, 139-208.

Fidan, T., & Balcı, A. (2017). Managing schools as complex adaptive systems: A strategic perspective. *International electronic journal of elementary education*, *10*(1), 11-26.

Finn, C. E., Manno, B. V., & Wright, B. L. (2017). The district and charter sectors of American K-12 education: Pros and cons. Journal of School Choice, 11(1), 9-28.

Fitzpatrick, B. R., Berends, M., Ferrare, J. J., & Waddington, R. J. (2020). Virtual illusion: Comparing student achievement and teacher and classroom characteristics in online and brick-and-mortar charter schools. *Educational Researcher*, *49*(3), 161-175.

Foreman, L. M., Anderson, K. P., Ritter, G. W., & Wolf, P. J. (2019). Using "broken" lotteries to check the validity of charter school evaluations using matching designs. *Educational Policy, 33*(7), 977-1001.

Frankenberg, E., Kotok, S., Schafft, K., & Mann, B. (2017). Exploring school choice and the consequences for student racial segregation within Pennsylvania's charter school transfers. *Education Policy Analysis Archives* (25), 1-34.

Gall, M., Gall, J., & Borg, W. (2007). *Educational research : An introduction* (Eighth edition.). Pearson/Allyn & Bacon.

Gardner, D. P. (1983). A nation at risk: The imperative for educational reform. An open letter to the American people. *A Report to the Nation and the Secretary of Education*.

Gawlik, M. (2018a). Instructional leadership and the charter school principal. *School Leadership & Management*, *38*(5), 539-565.

Gawlik, M. A. (2018b). Leadership knowledge and practices in the context of charter schools. *Leadership and Policy in Schools*, 17(4), 422-453.

Gershenson, S. (2019). Student-teacher race match in charter and traditional public schools. *Thomas B. Fordham Institute*.

Gershenson, S., Hart, C. M., Hyman, J., Lindsay, C., & Papageorge, N. W. (2018). *The long-run impacts of same-race teachers* (No. w25254). National Bureau of Economic Research.

Gershenson, S., Holt, S. B., & Papageorge, N. W. (2016). Who believes in me? The effect of student–teacher demographic match on teacher expectations. *Economics of Education Review*, *52*, 209-224.

Gleason, P. M. (2017). What's the secret ingredient? Searching for policies and practices that make charter schools successful. *Journal of School Choice*, *11*(4), 559-584.

Goff, P., Rodriguez-Escutia, Y., & Yang, M. (2018). *Through the labor market looking glass: An inquiry into principal-teacher race congruence. WCER Working Paper No. 2018-13*. Wisconsin Center for Education Research.

Golann, J. W., & Torres, A. C. (2020). Do no-excuses disciplinary practices promote success? *Journal of Urban Affairs*, *42*(4), 617-633.

Goodall, J. (2017). *Narrowing the achievement gap: Parental engagement with children's learning*. Routledge.

Goodridge, S. (2019). Tracing the historical DNA and unlikely alliances of the American charter school movement. *Journal of Policy History*, *31*(2), 273-300.

Green, S. B., & Salkind, N. J. (2017). Using SPSS for Windows and Macintosh: Analyzing and understanding the data (8th ed.). Pearson.

Grissom, J. A., Egalite, A. A, & Lindsay, C.A. (2021). "How principals affect students and schools: A systematic synthesis of two decades of research." The Wallace Foundation. Available at http://www.wallacefoundation.org/principalsynthesis.

Grissom, J. A., Rodriguez, L. A., & Kern, E. C. (2017). Teacher and principal diversity and the representation of students of color in gifted programs: Evidence from national data. *Elementary School Journal*, *117*(3), 396–422.

Gross, B., Campbell, C., Tuchman, S., & Sharma, R. (2019). Charter Schools in 2018. Handbook of Research on School Choice, 103.

Grube, L., & Anderson, D. (2018). School choice and charter schools in review: What have we learned? *Journal of Private Enterprise*, *33*(4), 21-44.

Gulosino, C., & Liebert, J. (2020). Examining variation within the charter school sector: Academic achievement in suburban, urban, and rural charter schools. *Peabody Journal of Education*, *95*(3), 300-329.

Hann, M. (2019, June 4). Pa. charter-school students lag in math, with cyber results 'overwhelmingly negative,' study says. *Philadelphia Inquirer*. https://www.inquirer.com/.

Hanushek, E. A., Peterson, P. E., Talpey, L. M., & Woessmann, L. (2019). The achievement gap fails to close. *Education Next*, *19*(3), 8-17.

Hedgecoth, D. M. (2019). Charter schools and musical choice. *Philosophy of Music Education Review*, *27*(2), 192-209.

Hentschke, G. C., Fox, R. A., & Buchanan, N. K. (2017). A brief and future history of school choice. In Fox, R. A., Buchanan, N. K. (Eds.), *The Wiley handbook of school choice*, 28-45.

Hill, H. C. (2017). The Coleman Report, 50 years on: What do we know about the role of schools in academic inequality? *The ANNALS of the American Academy of Political and Social Science*, *674*(1), 9-26.

Hochstetler, S. (Ed.). (2018). *Reform and literacy education: History, effects, and advocacy*. Routledge.

Howard, T. C. (2019). *Why race and culture matter in schools: Closing the achievement gap in America's classrooms*. Teachers College Press.

Hussar, B., Zhang, J., Hein, S., Wang, K., Roberts, A., Cui, J., Smith, M., Mann, F. B., Barmer, A. & Dilig, R. (2020). The Condition of Education 2020. NCES 2020-144. *National Center for Education Statistics*.

Jeynes, W. H. (2015). A meta-analysis on the factors that best reduce the achievement gap. *Education and Urban Society*, *47*(5), 523-554.

Jeynes, W. H. (2016). A meta-analysis: The relationship between parental involvement and African American school outcomes. *Journal of Black Studies*, *47*(3), 195-216.

Jeynes, W. H. (2018). A practical model for school leaders to encourage parental involvement and parental engagement. *School Leadership & Management*, *38*(2), 147-163.

Kahlenberg, R. D., & Potter, H. (2014). *Smarter charter: Finding what works for charter schools and public education*. Teachers College Press.

Karpinski, C. F. (2006). Bearing the burden of desegregation: Black principals and Brown. *Urban Education*, *41*(3), 237-276.

Kelly, A. (2020). The fifth phase of educational effectiveness research: The philosophy and measurement of equity. In *International Perspectives in Educational Effectiveness Research* (pp. 71-99). Springer, Cham.

Kingsbury, I., Maranto, R., & Karns, N. (2020). Charter school regulation as a disproportionate barrier to entry. *Urban Education*. https://doi.org/10.1177/0042085920923011

Knight, D. S., & Toenjes, L. A. (2020). Do charter schools receive their fair share of funding? School finance equity for charter and traditional public schools. *Education Policy Analysis Archives*, *28*, 51.

Kotok, S., Frankenberg, E., Schafft, K. A., Mann, B. A., & Fuller, E. J. (2017). School choice, racial segregation, and poverty concentration: Evidence from Pennsylvania charter school transfers. *Educational Policy*, *31*(4), 415-447.

Krowka, S., Hadd, A., & Marx, R. (2017). "No Excuses" charter schools for increasing math and literacy achievement in primary and secondary education: a systematic review. *Campbell Systematic Reviews*, *13*(1), 1-67.

Kyriakides, L., Charalambous, E., Creemers, B. P. M., Antoniou, P., Devine, D., Papastylianou, D., & Fahie, D. (2019a). Using the dynamic approach to school improvement to promote quality and equity in education: A European study. *Educational Assessment, Evaluation and Accountability*, *31*(1), 121–149.

Kyriakides, L., Charalambous, E., Creemers, B. P. M., & Dimosthenous, A. (2019b). Improving quality and equity in schools in socially disadvantaged areas. *Educational Research*, *61*(3), 274–301.

Kyriakides, L., Creemers, B. P. M., Antoniou, P., Demetriou, D., & Charalambous, C. (2015). The impact of school policy and stakeholders' actions on student learning: A longitudinal study. *Learning and Instruction*, *36*, 113–124.

Kyriakides, L., Creemers, B., & Charalambous, E. (2018). Quality and equity dimensions of educational effectiveness: An introduction. *Equity and Quality Dimensions in Educational Effectiveness*, 1-21.

Kyriakides, L., Creemers, B. P., Panayiotou, A., & Charalambous, E. (2020). *Quality and equity in education: Revisiting theory and research on educational effectiveness and improvement*. Routledge.

Kyriakides, L., Georgiou, M. P., Creemers, B. P. M., Panayiotou, A., & Reynolds, D. (2018). The impact of national educational policies on student achievement: A European study. *School Effectiveness and School Improvement*, *29*(2), 171–203.

Lacoe, J., & Steinberg, M. P. (2018). Rolling back zero tolerance: The effect of discipline policy reform on suspension usage and student outcomes, *Peabody Journal of Education*, 93:2, 207-227.

Ladd, H. F. (2019). How charter schools threaten the public interest. *Journal of Policy Analysis and Management*, *38*(4), 1063-1071.

Leithwood, K., Sun, J., & Pollock, K. (Eds.). (2017). *How school leaders contribute to student success: The four paths framework* (Vol. 23). Springer.

Lezotte, L. W., & Snyder, K. M. (2011). *What effective schools do: Re-envisioning the correlates*. Solution Tree Press.

Lincove, J. A., Barrett, N., & Strunk, K. O. (2018). Lessons from Hurricane Katrina: The employment effects of the mass dismissal of New Orleans teachers. *Educational Researcher*, *47*(3), 191-203.

Lindsay, C. A., & Hart, C. M. (2017). Exposure to same-race teachers and student disciplinary outcomes for Black students in North Carolina. *Educational Evaluation and Policy Analysis*,*39*(3), 485-510.

Logan, J. R., & Burdick-Will, J. (2016). School segregation, charter schools, and access to quality education. *Journal of Urban Affairs*, *38*(3), 323-343.

Mann, B., & Baker, D. P. (2019). Cyber charter schools and growing resource inequality among

    public districts: Geospatial patterns and consequences of a statewide choice policy in

    Pennsylvania, 2002–2014. *American Journal of Education*, *125*(2), 147-171.

Mann, B., Kotok, S., Frankenberg, E., Fuller, E., & Schafft, K. (2016). Choice, cyber charter

    schools, and the educational marketplace for rural school districts. *The Rural Educator*,

    37(3).

Marcotte, D. E., & Dalane, K. (2019). Socioeconomic segregation and school choice in

    American public schools. *Educational Researcher*, 48(8), 493–503.

McCoy, B., & Domanico, R. (2020). School choice: Public opinion in five battleground states.

    Manhattan Institute.

Miron, G. (2017). Description and brief history of charter schools. In Fox, R. A., Buchanan, N.

    K. (Eds.), *The Wiley Handbook of School Choice*, 224.

National Alliance for Public Charter Schools (NAPCS) (2008). A framework for academic

    quality: A report from the national consensus panel on charter school academic quality.

    http://www.publiccharters.org/

National Alliance for Public Charter Schools (NAPCS) (2016). A model law for supporting the

    growth of high-quality charter schools, 2nd Edition**.** http://www.publiccharters.org/

National Alliance for Public Charter Schools (NAPCS) (2020, October 26). The data dashboard.

    https://data.publiccharters.org.

National Association of Charter Authorizers (NACA) (2019). Reinvigorating the pipeline:

    Insights into proposed and approved charter schools. www.qualitycharters.org.

National Teacher and Principal Survey (NTPS) (2020). *National Center for Education Statistics*.

    https://nces.ed.gov/

Opdenakker, M. C. (2020). Three decades of educational effectiveness research in Belgium and The Netherlands: Key studies, main research topics and findings. In *International Perspectives in Educational Effectiveness Research* (pp. 231-286). Springer, Cham.

Panayiotou, A., Kyriakides, L., & Creemers, B. P. (2016). Testing the validity of the dynamic model at school level: A European study. *School Leadership & Management*, *36*(1), 1-20

Patten, M. L., & Newhart, M. (2017). Understanding research methods: An overview of the essentials. Taylor & Francis

Pennsylvania Department of Education (2014a). *English language arts (ELA) assessment anchors and eligible content*. www.pdesas.org

Pennsylvania Department of Education (2014b). *Mathematics assessment anchors and eligible content*. www.pdesas.org

Pennsylvania Department of Education (PDE) (2019, May 22). *Charter schools 24 P.S. §§ 17-1701-A - 17-1732-A - amended for act 70.* www.education.pa.gov

Pennsylvania Department of Education (PDE) (2020a). *Data and Reporting*. https://www.education.pa.gov.

Pennsylvania Department of Education (PDE) (2020b). *Handbook for secure test administration*. www.education.pa.gov.

Pennsylvania Department of Education (PDE) (2020c, November). *Research Agenda* https://www.education.pa.gov.

Pennsylvania Department of Education (2022). *Schools*. https://www.education.pa.gov/Schools/Pages/default.aspx

Pennsylvania Information Management System (PIMS), (2021). https://www.education.pa.gov/Documents/Teachers-

Administrators/PIMS/PIMS%20Manuals/2021-

2022%20PIMS%20Manual%20Vol%201.pdf

Philadelphia School District (PSD) (2022). *Charter Directory*.

https://www.philasd.org/charterschools/directory/

Pollard, D. (1997). Race, gender, and educational leadership: Perspectives from African-

American principals. *Educational Policy*, 11(3), 353-374

Preston, C., Goldring, E., Berends, M., & Cannata, M. (2012). School innovation in district

context: Comparing traditional public schools and charter schools. *Economics of

Education Review*, *31*(2), 318–330.

Rapa, L. J., Katsiyannis, A., & Ennis, R. P. (2018). Charter school enrollment effects: A review

of results from recent large-scale studies. *Journal of Child and Family Studies*, *27*(10),

3132-3140.

Reynolds, D., Sammons, P., De Fraine, B., Van Damme, J., Townsend, T., Teddlie, C., &

Stringfield, S. (2014). Educational effectiveness research (EER): A state-of-the-art

review. *School effectiveness and School Improvement*, *25*(2), 197-230.

Ridley, M., & Terrier, C. (2018). *Fiscal and education spillovers from charter school expansion.*

(Working Paper No. 25070). Cambridge, MA: National Bureau of Economic Research.

Roucek, J. S. (1964). Milestones in the history of the education of the Negro in the United States.

International Review of Education, 162-178.

Scheerens, J. (2016). Modelling School Effectiveness. In *Educational Effectiveness and

Ineffectiveness* (pp. 77-103). Springer, Dordrecht.

Spees, L. P., & Lauen, D. L. (2019). Evaluating charter school achievement growth in North Carolina: Differentiated effects among disadvantaged students, stayers, and switchers. *American Journal of Education, 125*(3), 417-451.

Taylor, J., Kyere, E., & King, È. (2018). A gardening metaphor: a framework for closing racial achievement gaps in American public education system. *Urban Education*, 0042085918770721.

Teasley, M., Crutchfield, J., Jennings, S. A. W., Clayton, M. A., & Okilwa, N. S. (2016). School choice and Afrocentric charter schools: A review and critique of evaluation outcomes. *Journal of African American Studies*, *20*(1), 99-119.

Tillman, L. C. (2004). (Un) intended consequences? The impact of the Brown v. Board of Education decision on the employment status of Black educators. *Education and Urban Society*, *36*(3), 280-303.

U.S. News & World Report. (2021, April 27). U.S. News announces 2021 best high schools rankings. *U.S. News & World Report*. http://www.usnews.com.

Valencia, R. R. (2015). *Students of color and the achievement gap: Systemic challenges, systemic transformations*. Routledge.

Warner, R. M. (2013). *Applied statistics: From bivariate through multivariate techniques* (2nd ed.). Sage Publications.

Wells, A. S., Keener, A., Cabral, L., & Cordova-Cobo, D. (2019). The more things change, the more they stay the same: The resegregation of public schools via charter school reform. *Peabody Journal of Education*, *94*(5), 471-492.

White, G. W., Stepney, C. T., Hatchimonji, D. R., Moceri, D. C., Linsky, A. V., Reyes-Portillo, J. A., & Elias, M. J. (2016). The increasing impact of socioeconomics and race on

standardized academic test scores across elementary, middle, and high school. *American Journal of Orthopsychiatry*, *86*(1), 10.

Winters, M. A. (2020). Charter schools in Newark: The effect on student test scores. *Manhattan Institute for Policy Research*.

Woodworth, J., Raymond, M., Han, C., Negassi, Y., Richardson, P., & Snow, W. (2017). *Charter management organizations*. https://credo.stanford.edu.

Wright, D. B. (2018). Estimating school effectiveness with student growth percentile and gain score models. *Journal of Applied Statistics*, *45*(14), 2536-2547.

Wright, D. B. (2020). Gain scores, ANCOVA, and propensity matching procedures for evaluating treatments in education. *Open Education Studies*, *2*(1), 45-65.

Yavuz, O., Cayirdag, N., Dahir, C., & Gümüşeli, A. İ. (2017). Improving student achievement through strengthening principal and school counselor partnership. *International Journal of Educational Reform*, *26*(2), 176-201.

Ziebarth, T. (2020). Measuring up to the model: A ranking of state public charter school laws. *National Alliance for Public Charter Schools*.

Ziebarth, T., & Palmer, L. B. (2018). Measuring up to the model: A ranking of state public charter school laws. *National Alliance for Public Charter Schools*.

APPENDIX A

PA DEPARTMENT OF EDUCATION IRB APPROVAL LETTER

AND DATA USE AGREEMENT

pennsylvania
DEPARTMENT OF EDUCATION

Date: October 22, 2021

To: Cherryann Joseph, Principal Investigator
From: Pennsylvania Department of Education Institutional Review Board
Protocol Title: Comparing academic growth among Black students in Pennsylvania's minority-run charter schools, non-minority-run charter schools, and traditional public schools
IRB Number: 2021-E036

Effective October 22, 2021 the Pennsylvania Department of Education Institutional Review Board (IRB) conditionally approved the above-mentioned research protocol based on the response to the request for the Date of Birth.

The department is hesitant to provide student date of birth. Do you feel that date of birth is a necessity given the data you are requesting is specific to certain grades and age ranges? Children would tend to fall within a certain age range based on their grade, therefore, date of birth may not provide much variation in terms of utilization as a covariate. If you feel date of birth is needed, please provide in detail why it should be included in the data request. Is it possible to only provide the birth year?

This initial approval provides permission to begin work on the human subject activities contained in the IRB-approved protocol and supporting documents.

Please note any plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

PROTOCOL INFORMATION:
Approved As: Comparing academic growth among Black students in Pennsylvania's minority-run charter schools, non-minority-run charter schools, and traditional public schools
Protocol Approval Date: October 22, 2021
Protocol Expiration Date: May 20, 2022
Continuing Review Due Date*: May 19, 2022
*Date a Continuing Review application is due to the IRB if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:
Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal/work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which PA is not the primary awardee.

From: Kennedy, Janet <c-janekenn@pa.gov>
Sent: Monday, October 25, 2021 12:09 PM
To: Joseph, Cherryann <cjoseph11@liberty.edu>
Cc: Miller, Candy <c-candmill@pa.gov>
Subject: [External] 2021-E036, PDE IRB Conditional Approval Letter - Response Needed

---

[EXTERNAL EMAIL: Do not click any links or open attachments unless you know the sender and trust the content.]

Hello Cherryann,

The Pennsylvania Department of Education (PDE) IRB has conditionally approved your application, 2021-E036. Please find attached your applications Conditional Approval letter along with our concern and question regarding your need to collect the date of birth. Please send your response to Candy Miller and myself and we will forward it for further review.

Once approved your next steps are:
1. Your Data Use Agreement will be sent to you within 2 weeks
2. Candy Miller will be in contact with you regarding your Data Requests following receipt of your Data Use Agreement
3. Your PDE primary contact will be the Research Manager, Candy Miller, c-candmill@pa.gov

We wish you all the best in your research and analysis. If you have any questions, please let me know.

Thank you,
Janet

Janet Kennedy | Subject Matter Expert
Office of Data Quality | Pennsylvania Department of Education
333 Market Street | Harrisburg, PA 17126
Phone: 717.736.7273 | www.education.pa.gov

PRIVILEGED AND CONFIDENTIAL COMMUNICATION
This message is intended only for the use of the individual or entity to which it is addressed and may contain information that is confidential. If the reader of this message is not the intended recipient, or the employee or agent responsible for delivering the message to the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please immediately notify the sender and then delete the communication from your electronic mail system.

RE: [External] 2021-E036, PDE IRB Conditional Approval Letter - Response Needed

Kennedy, Janet <c-janekenn@pa.gov>
Tue 10/26/2021 10:50 AM
To: Joseph, Cherryann <cjoseph11@liberty.edu>
Cc: Miller, Candy <c-candmill@pa.gov>

Thank you Cherryann for your response to only use the birth year and not the date of birth.

Janet
IRB Secretary

Janet Kennedy | Subject Matter Expert
Office of Data Quality | Pennsylvania Department of Education
333 Market Street | Harrisburg, PA 17126
Phone: 717.736.7273 | www.education.pa.gov

PRIVILEGED AND CONFIDENTIAL COMMUNICATION
This message is intended only for the use of the individual or entity to which it is addressed and may contain information that is confidential. If the reader of this message is not the intended recipient, or the employee or agent responsible for delivering the message to the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please immediately notify the sender and then delete the communication from your electronic mail system.

From: Joseph, Cherryann <cjoseph11@liberty.edu>
Sent: Tuesday, October 26, 2021 10:16 AM
To: Kennedy, Janet <c-janekenn@pa.gov>
Cc: Miller, Candy <c-candmill@pa.gov>
Subject: Re: [External] 2021-E036, PDE IRB Conditional Approval Letter - Response Needed

Good morning,

I agree with the IRB, it is not necessary to get each student's date of birth. Birth year is sufficient for establishing the age range of the students.

Please let me know if you need anything else to support my response.

Thank you for your support,
Cherryann

AMENDMENT#1
AGREEMENT TO CONDUCT A STUDY USING UNIT LEVEL DATA FROM THE
PENNSYLVANIA INFORMATION MANAGEMENT SYSTEM (PIMS)

THIS AMENDMENT is entered into by and between the Commonwealth of Pennsylvania, ("Commonwealth") through its Pennsylvania Department of Education, ("PDE") and **Liberty University, INC.,** ("Researcher").

WITNESSETH:

WHEREAS, PDE and the Researcher entered into an Agreement on February 8, 2022 to conduct a study that will compare the academic growth (on PSSA Math and ELA tests) of Black students enrolled in charter schools operated by minority leaders to those of Black students in other charter schools and traditional public schools; and

WHEREAS, the term of the agreement is February 8, 2022 to June 19, 2022;

WHEREAS, the Researcher requires additional time to complete the study; and

NOW, THEREFORE, in consideration of the foregoing, the Department and Researcher desire to enter into an agreement, pursuant to the following terms and conditions.

1. Paragraph 2 of the Agreement shall be modified to extend the term of the Agreement and now requires that data to be destroyed by January 14, 2023.

2. All terms and conditions of the original Agreement not changed or modified by this amendment shall remain in full force and effect.

The parties, through their authorized representatives, have properly executed this Amendment on the date of the last Commonwealth signature below.

Pennsylvania Department of Education

By _____
Digitally signed by Lori Graham
Date: 2022.06.02 10:30:10 -04'00'

Deputy Secretary, Office of Administration
TITLE

_____6/2/2022_____
Date

Liberty University, INC., Researcher

_____
Digitally signed by Justin L. Wilson
Date: 2022.06.01 07:59:03 -04'00'

Contracts Administrator II

_____6/1/2022_____
Date

APPENDIX B

LIBERTY UNIVERSITY IRB APPROVAL LETTER

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

September 14, 2021

Cherryann Joseph
Angela Ford

Re: IRB Conditional Approval - IRB-FY21-22-171 Comparing the academic growth among Black students in Pennsylvania's minority-run charter schools, non-minority-run charter schools, and traditional public schools.

Dear Cherryann Joseph, Angela Ford:

We are pleased to inform you that your study has been **conditionally** approved by the Liberty University Institutional Review Board (IRB). Conditional approval means that your complete approval is pending our receipt of certain items, which are listed below:

Documented approval from each research site you are enrolling in your study. Acceptable forms of documentation include a letter on official letterhead or a time-and-date stamped email from a person with the authority to grant permission.

Please keep in mind that you are not permitted to begin recruiting participants or collecting data until you have submitted the above item(s) and have been granted complete approval by the Liberty University Institutional Review Board.

Thank you for your cooperation with the IRB, and we wish you well as you continue working toward complete approval.

Sincerely,

G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
Research Ethics Office

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

November 3, 2021

Cherryann Joseph
Angela Ford

Re: IRB Exemption - IRB-FY21-22-171 Comparing the academic growth among Black students in Pennsylvania's minority-run charter schools, non-minority-run charter schools, and traditional public schools.

Dear Cherryann Joseph, Angela Ford,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d):

(4) Secondary research for which consent is not required: Secondary research uses of identifiable private information or identifiable biospecimens, if at least one of the following criteria is met:

(ii) Information, which may include information about biospecimens, is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained directly or through identifiers linked to the subjects, the investigator does not contact

the subjects, and the investigator will not re-identify subjects;

Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
Research Ethics Office

APPENDIX C

The Pennsylvania System of School Assessment (PSSA)

Mathematics Item and Scoring Sampler 2018-2019 (Grade 8)

pennsylvania
DEPARTMENT OF EDUCATION

The Pennsylvania System of School Assessment

**Mathematics
Item and Scoring Sampler**

**2018–2019
Grade 8**

Pennsylvania Department of Education Bureau of Curriculum, Assessment and Instruction—September 2018

TABLE OF CONTENTS

INFORMATION ABOUT MATHEMATICS

INFORMATION ABOUT MATHEMATICS

INTRODUCTION

General Introduction

The Pennsylvania Department of Education (PDE) provides districts and schools with tools to assist in delivering focused instructional programs aligned with the Pennsylvania Core Standards (PCS). These tools include Academic Standards, Assessment Anchor documents, assessment handbooks, and content-based item and scoring samplers. This Item and Scoring Sampler is a useful tool for Pennsylvania educators in preparing local instructional programs. It can also be useful in preparing students for the statewide assessment.

This Item and Scoring Sampler is available in Braille format. For more information regarding Braille call (717) 901-2238.

Pennsylvania Core Standards (PCS)

This sampler contains examples of test questions designed to assess the Pennsylvania Assessment Anchors and Eligible Content aligned to the Pennsylvania Core Standards. The Mathematics, Reading, and Writing PSSA transitioned to PCS-based operational Mathematics and English Language Arts assessments starting with the spring 2015 PSSA administration.

The 2013 PCS-aligned Assessment Anchor and Eligible Content documents are posted on this portal:

> ➤ *www.education.pa.gov* [Roll over 'DATA AND REPORTING' in the dark blue bar across the top of the page. Select 'ASSESSMENT AND ACCOUNTABILITY'. Click on the link that reads 'Pennsylvania System of School Assessment (PSSA)'. Then click on 'Assessment Anchors/Eligible Content.']

What Is Included

This sampler contains test questions (items) that have been written to align to the Assessment Anchors that are based on the Pennsylvania Core Standards (PCS). The test questions provide an idea of the types of items that will appear on an operational, PCS-based PSSA. Each sample test question has been through a rigorous review process to ensure alignment with the Assessment Anchors.

Purpose and Uses

The items in this sampler may be used as examples for creating assessment items at the classroom level, and they may also be copied and used as part of a local instructional program.[1] Classroom teachers may find it beneficial to have students respond to the open-ended item in this sampler. Educators can then use the sampler as a guide to score the responses either independently or together with colleagues within a school or district.

Item Format and Scoring Guidelines

The multiple-choice (MC) items have four answer choices. Each correct response to an MC item is worth one point.

Each open-ended (OE) item is designed to take approximately ten to fifteen minutes to complete. During the administration of the PSSA, students are given additional time as necessary to complete the test items. Each OE item in mathematics is scored using an item-specific scoring guideline based on a 0–4-point scale. In this sampler, every item-specific scoring guideline is combined with examples of student responses that represent each score point to form a practical, item-specific scoring guide.

This sampler also includes the *General Description of Scoring Guidelines for Mathematics Open-Ended Questions* that students will have access to during a PSSA mathematics administration. The general description of scoring guidelines can be distributed to students for use during local assessments and can also be used by educators when scoring local assessments.[1]

---

[1] The permission to copy and/or use these materials does not extend to commercial purposes.

INFORMATION ABOUT MATHEMATICS

Item Alignment

All PSSA items are aligned to statements and specifications included in the *Assessment Anchors and Eligible Content Aligned to the Pennsylvania Core Standards*. The mathematics content, process skills, directives, and action statements included in the PSSA mathematics questions align with the Assessment Anchor Content Standards. The Eligible Content statements represent the limits of the content of the mathematics questions.

Testing Time and Mode of Testing Delivery for the PSSA

The PSSA is delivered in traditional paper-and-pencil format as well as in an online format. The estimated time to respond to a test question is the same for both methods of test delivery. During an official testing administration, students are given additional time as necessary to complete the test questions. The following table shows the estimated response time for each item type.

Mathematics Item Type	MC	OE
Estimated Response Time (minutes)	2	10 to 15

Mathematics Reporting Categories

The Assessment Anchors are organized into four classifications as listed below.

• A = Numbers and Operations	• C = Geometry
• B = Algebraic Concepts	• D = Data Analysis and Probability

These four classifications are used throughout the grade levels. In addition to these classifications, there are five Reporting Categories for each grade level. The first letter of each Reporting Category represents the classification; the second letter represents the Domain as stated in the Common Core State Standards for Mathematics. Listed below are the Reporting Categories for Grade 8.

- A-N = The Number System
- B-E = Expressions and Equations
- B-F = Functions
- C-G = Geometry
- D-S = Statistics and Probability

Examples of multiple-choice and open-ended items assessing these categories are included in this booklet.

INFORMATION ABOUT MATHEMATICS

General Description of Scoring Guidelines for Mathematics Open-Ended Questions

4— The response demonstrates a *thorough* understanding of the mathematical concepts and procedures required by the task.

The response provides correct answer(s) with clear and complete mathematical procedures shown and a correct explanation, as required by the task. Response may contain a minor "blemish" or omission in work or explanation that does not detract from demonstrating a *thorough* understanding.

3— The response demonstrates a *general* understanding of the mathematical concepts and procedures required by the task.

The response and explanation (as required by the task) are mostly complete and correct. The response may have minor errors or omissions that do not detract from demonstrating a *general* understanding.

2— The response demonstrates a *partial* understanding of the mathematical concepts and procedures required by the task.

The response is somewhat correct with *partial* understanding of the required mathematical concepts and/or procedures demonstrated and/or explained. The response may contain some work that is incomplete or unclear.

1— The response demonstrates a *minimal* understanding of the mathematical concepts and procedures required by the task.

0— The response has no correct answer and *insufficient* evidence to demonstrate any understanding of the mathematical concepts and procedures required by the task for that grade level.

Special Categories within zero reported separately:

Blank..	Blank, entirely erased, entirely crossed out, or consists entirely of whitespace
Refusal......................................	Refusal to respond to the task
Off Task....................................	Makes no reference to the item but is not an intentional refusal
Foreign Language.................	Written entirely in a language other than English
Illegible	Illegible or incoherent

INFORMATION ABOUT MATHEMATICS

Item and Scoring Sampler Format

This sampler includes the test directions and scoring guidelines that appear in the PSSA Mathematics assessments. Each multiple-choice item is followed by a table that includes the alignment, the answer key, the depth of knowledge (DOK) level, the percentage[2] of students who chose each answer option, and a brief answer-option analysis or rationale. The open-ended item is followed by a table that includes the item alignment, DOK level, and mean student score. Additionally, each of the included item-specific scoring guidelines is combined with sample student responses representing each score point to form a practical, item-specific scoring guide. The *General Description of Scoring Guidelines for Mathematics Open-Ended Questions* used to develop the item-specific scoring guidelines should be used if any additional item-specific scoring guidelines are created for use within local instructional programs.

Example Multiple-Choice Item Information Table

Item Information	
Alignment	Assigned AAEC
Answer Key	Correct Answer
Depth of Knowledge	Assigned DOK
p-value A	Percentage of students who selected each option
p-value B	Percentage of students who selected each option
p-value C	Percentage of students who selected each option
p-value D	Percentage of students who selected each option
Option Annotations	Brief answer-option analysis or rationale

Example Open-Ended Item Information Table

Alignment	Assigned AAEC	Depth of Knowledge	Assigned DOK	Mean Score	

---

[2] All *p*-value percentages listed in the item information tables have been rounded.

INFORMATION ABOUT MATHEMATICS

Grade 8 Formula Sheet

Formulas that you may need on this test are found below.
You may refer back to this page at any time during the mathematics test.
You may use calculator π or the number 3.14 as an approximation of π.

2018
Grade 8

Exponential Properties

$$a^m \cdot a^n = a^{m+n}$$

$$(a^m)^n = a^{m \cdot n}$$

$$\frac{a^m}{a^n} = a^{m-n}$$

$$a^{-1} = \frac{1}{a}$$

Algebraic Equations

Slope: $m = \dfrac{y_2 - y_1}{x_2 - x_1}$

Slope-Intercept Form: $y = mx + b$

Pythagorean Theorem
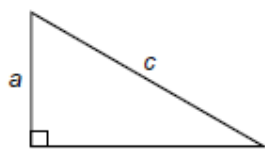
$$a^2 + b^2 = c^2$$

Cone
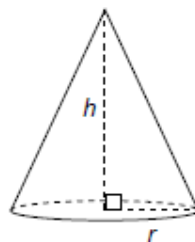
$$V = \frac{1}{3}\pi r^2 h$$

Cylinder
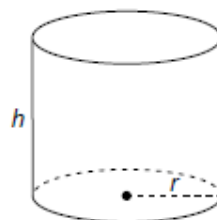
$$V = \pi r^2 h$$

Sphere
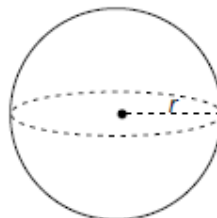
$$V = \frac{4}{3}\pi r^3$$

PSSA MATHEMATICS GRADE 8

Mathematics Test Directions

On the following pages are the mathematics questions.

- You may <u>not</u> use a calculator for question 1. You may use a calculator for all other questions on this test.

Directions for Multiple-Choice Questions:

Some questions will ask you to select an answer from among four choices.

For the multiple-choice questions:

- First solve the problem on scratch paper.
- Choose the correct answer and record your choice in the answer booklet.
- If none of the choices matches your answer, go back and check your work for possible errors.
- Only one of the answers provided is the correct response.

Directions for Open-Ended Questions:

Some questions will require you to write your response.

For the open-ended questions:

- These questions have more than one part. Be sure to read the directions carefully.
- You cannot receive the highest score for an open-ended question without completing all tasks in the question. For example, if the question asks you to show your work or explain your reasoning, be sure to show your work or explain your reasoning in the space provided.
- If the question does **not** ask you to show your work or explain your reasoning, you may use the space provided, but only those parts of your response that the question specifically asks for will be scored.
- Write your response in the appropriate location within the response box in the answer booklet. Some answers may require graphing, plotting, labeling, drawing, or shading. If you use scratch paper, be sure to transfer your final response and any needed work or reasoning to the answer booklet.

PSSA MATHEMATICS GRADE 8

Question 1 in this sampler is to be solved <u>without</u> the use of a calculator.

MULTIPLE-CHOICE ITEMS

1. Which number is the **closest approximation** of $\sqrt{39}$?

   A.   6.2
   B.   6.5
   C.   7.5
   D.   7.7

Item Information	
Alignment	A-N.1.1.3
Answer Key	A
Depth of Knowledge	1
p-value A	50% (correct answer)
p-value B	33%
p-value C	10%
p-value D	7%
Option Annotations	A. correct
	B. selects a number half way between 6 and 7
	C. estimates $\sqrt{39}$ as $\sqrt{36} + \sqrt{3}$, and calculates $\frac{5}{2}$ instead of $\sqrt{3}$
	D. estimates $\sqrt{39}$ as $\sqrt{36} + \sqrt{3}$

PSSA MATHEMATICS GRADE 8

A calculator is permitted for use in solving questions 2–17 in this sampler.

2. Which number is irrational?

   A. $3\sqrt{9}$
   B. $9\sqrt{3}$
   C. $4\sqrt{9}$
   D. $9\sqrt{4}$

Item Information	
Alignment	A-N.1.1.1
Answer Key	B
Depth of Knowledge	1
p-value A	9%
p-value B	77% (correct answer)
p-value C	8%
p-value D	6%
Option Annotations	A. does not recognize value of radical as rational
	B. correct
	C. does not recognize value of radical as rational
	D. does not recognize value of radical as rational

3. Four numbers are shown below.

$$\pi \quad \sqrt{\pi} \quad \sqrt{3} \quad \sqrt{8}$$

What is the order of the four numbers from **least** to **greatest**?

A. $\pi \quad \sqrt{\pi} \quad \sqrt{3} \quad \sqrt{8}$

B. $\sqrt{3} \quad \sqrt{\pi} \quad \pi \quad \sqrt{8}$

C. $\sqrt{\pi} \quad \sqrt{3} \quad \pi \quad \sqrt{8}$

D. $\sqrt{3} \quad \sqrt{\pi} \quad \sqrt{8} \quad \pi$

Item Information	
Alignment	A-N.1.1.4
Answer Key	D
Depth of Knowledge	1
p-value A	8%
p-value B	11%
p-value C	8%
p-value D	73% (correct answer)
Option Annotations	A. uses the order given B. bases their choices on the numbers, regardless of the square roots involved C. does square roots by halving the number D. correct

4. Four points are graphed on the number line below.
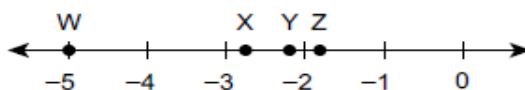
Which point is located **closest** to the value of $-\sqrt{5}$?

A. point W

B. point X

C. point Y

D. point Z

Item Information	
Alignment	A-N.1.1.5
Answer Key	C
Depth of Knowledge	1
p-value A	10%
p-value B	6%
p-value C	64% (correct answer)
p-value D	20%
Option Annotations	A. does not take the square root of 5 B. uses $-\sqrt{4}$ as ⁻2, then since 5 is 1 more than 4 subtracts almost 1 from ⁻2 C. correct D. estimates $-\sqrt{5}$ as less than ⁻2, but chooses point on the incorrect side of ⁻2

APPENDIX D

The Pennsylvania System of School Assessment (PSSA)

English Language Arts (ELA) Item and Scoring Sampler 2018-2019 (Grade 7)

TABLE OF CONTENTS

INFORMATION ABOUT ENGLISH LANGUAGE ARTS

INTRODUCTION

General Introduction

The Pennsylvania Department of Education (PDE) provides districts and schools with tools to assist in delivering focused instructional programs aligned with the Pennsylvania Core Standards (PCS). These tools include Academic Standards, Assessment Anchor documents, assessment handbooks, and content-based item and scoring samplers. This Item and Scoring Sampler is a useful tool for Pennsylvania educators in preparing local instructional programs by providing samples of test item types and scored student responses. The Item Sampler is not designed to be used as a pretest, a curriculum, or other benchmark for operational testing.

This Item and Scoring Sampler is available in Braille format. For more information regarding Braille, call (717) 901-2238.

Pennsylvania Core Standards (PCS)

This sampler contains examples of test questions designed to assess the Pennsylvania Assessment Anchors and Eligible Content aligned to the Pennsylvania Core Standards. The Mathematics, Reading, and Writing PSSA transitioned to PCS-based operational Mathematics and English Language Arts assessments starting with the spring 2015 PSSA administration.

The 2013 PCS-aligned Assessment Anchor and Eligible Content documents are posted on this portal:

> ➤ *www.education.pa.gov* [Roll over 'DATA AND REPORTING' in the dark blue bar across the top of the page. Select 'ASSESSMENT AND ACCOUNTABILITY'. Click on the link that reads 'Pennsylvania System of School Assessment (PSSA)'. Then click on 'Assessment Anchors/Eligible Content.']

Change in Test Design 2017–2018

Beginning with tests taken in the 2017–2018 school year, the English Language Arts PCS-based PSSA will no longer include a mode-specific writing prompt. This Item and Scoring Sampler contains items representative of the tests administered during the 2017–2018 school year.

What Is Included

This sampler contains stimulus reading passages with test questions, standalone questions, and text-dependent analysis prompts that have been written to align to the Assessment Anchors that are based on the Pennsylvania Core Standards. The passages represent some of the genres approved by PDE to appear on an operational, PCS-based PSSA. The test questions provide an idea of the types of items that may appear on an operational, PCS-based PSSA. Each sample test question has been through a rigorous review process to ensure alignment with the Assessment Anchors.

Purpose and Uses

The items in this sampler may be used[1] as examples for creating assessment items at the classroom level. Classroom teachers may find it beneficial to have students respond to the text-dependent analysis prompt test questions in this sampler. Educators can then use the sampler as a guide to score the responses either independently or together with colleagues within a school or district.

---

[1] The permission to copy and/or use these materials does not extend to commercial purposes.

INFORMATION ABOUT ENGLISH LANGUAGE ARTS

Item Format and Scoring Guidelines

The 2017–2018 PCS-based PSSA has multiple types of test questions. For grade 4, the types of test questions are Multiple-Choice (MC) questions, Evidence-Based Selected-Response (EBSR) questions, and Text-Dependent Analysis (TDA) prompts.

Multiple Choice: Each of this type of test question has four answer choices. Some MC test questions are based on a stimulus reading passage, while other MC test questions are independent of a passage. Each correct response to an MC test question is worth one point.

Evidence-Based Selected Response: Each two-part EBSR question is designed to elicit an evidence-based response from a student who has read either a literature or an informational text passage. In Part One, which is similar to a multiple-choice question, the student analyzes a passage and chooses the best answer from four answer choices. In Part Two, the student utilizes evidence from the passage to select one or more answers based on his or her response to Part One. Part Two is different from a multiple-choice question in that there may be more than four answer options and more than one correct answer. Each EBSR test question is worth either two or three points, and students can receive points for providing a correct response to Part One or for providing one or more correct responses in Part Two.

Text-Dependent Analysis Prompt: The TDA prompt is a text-dependent analysis prompt based on a passage or passage set that each student has read during the test event. There are three response pages in the paper-and-pencil format and up to 5,000 characters in the online format. Both literature and informational texts are addressed through this item type. Students must use explicit and implicit evidence to make inferences leading to a conclusion or generalization in response to the task stated in the prompt. Students construct a well-written analytical essay to communicate inferences and connection to the evidence using grade-appropriate writing skills. The TDA response is scored using a holistic scoring guideline on a 1–4-point scale.

Non-Score Considerations: For TDA items, responses can be designated as non-scorable (NS). While every effort is made to score each student response, a response may receive a NS designation if it falls into one of five categories:

Blank – Blank, entirely erased, entirely crossed out, or consists entirely of whitespace

Refusal – Refusal to respond to the task

Non-scorable – In a language other than English, incoherent, illegible, insufficient, unrelated to the passage, or consisting solely or almost solely of text copied from the passage

Off Topic – Makes no reference to the item or passage but is not an intentional refusal

Copied – Consists of text copied from the item and/or test directions

INFORMATION ABOUT ENGLISH LANGUAGE ARTS

Testing Time and Mode of Testing Delivery for the PCS-Based PSSA

The PSSA is delivered in traditional paper-and-pencil format as well as in an online format. The estimated time to respond to a test question is the same for both methods of test delivery. The following table shows the estimated response time for each item type.

During an official test administration, students are given as much additional time as is necessary to complete the test questions.

English Language Arts Item Type	MC	EBSR	TDA
Estimated Response Time (minutes)	1.5	3 to 5	45

English Language Arts Grade 7

This English Language Arts Sampler is composed of 2 passages, 6 passage-based multiple-choice questions, 2 evidence-based selected-response questions, a text-dependent analysis prompt, and 4 standalone multiple-choice questions.

There are 2 passages in this booklet. The first passage is followed by a set of passage-based multiple-choice questions and two evidence-based selected-response questions. The second passage is followed by a text-dependent analysis prompt. This booklet also contains 4 standalone multiple-choice questions.

Each question is accompanied by a chart that contains the Assessment Anchor and Eligible Content coding, answer key(s), depth of knowledge, and testing data. Each question is followed by a brief analysis or rationale. The text-dependent analysis prompt is displayed with the item-specific scoring guidelines and examples of student responses with scores and annotations at each scoring level.

The PCS-based PSSA may be administered in paper-and-pencil format or online. As a result, this sampler includes samples of text-dependent analysis prompt responses in both formats. A sample online response is noted by the symbol ⌨ .

PSSA ENGLISH LANGUAGE ARTS GRADE 7

ENGLISH LANGUAGE ARTS TEST DIRECTIONS FOR READING PASSAGES AND QUESTIONS

Directions:

On the following pages are the Reading passages and questions.

Directions for Multiple-Choice Questions:

Some questions will ask you to select an answer from among four choices.

For the multiple-choice questions:

- First, read the passage carefully.
- Read each question and choose the best answer.
- Only one of the answers provided is correct.
- You may look back at the passage to help you answer the question.
- Record your choice in the answer booklet.

Directions for Evidence-Based Selected-Response Questions:

Some questions will have two parts and will ask you to select one or more answers in each part.

For the evidence-based selected-response questions:

- Read Part One of the question and choose the best answer.
- You may look back at the passage to help you answer Part One of the question.
- Record your answer to Part One in the answer booklet.
- Only one of the answers provided in Part One is correct.
- Then, read Part Two of the question and choose the evidence to support your answer in Part One. If Part Two tells you to select two answers, be sure to select two answers.
- You may look back at the passage to help you answer Part Two of the question.
- Record your answer or answers to Part Two in the answer booklet.

Directions for Text-Dependent Analysis (TDA) Prompts:

The English Language Arts TDA prompt will ask you to analyze the passage and use evidence from the passage to write an essay.

For the TDA Essay:

- Be sure to read the passage and the TDA prompt carefully.

- Review the Writer's Checklist to help you plan and organize your response.

- You may look back at the passage to help you write your essay.

- Write your essay in the appropriate space in the answer booklet. If you use scratch paper to write a rough-draft essay, be sure to transfer your final essay to the answer booklet.

- Be sure to check that your essay contains evidence from the passage to support your response.

- Be sure to check your essay for errors in capitalization, spelling, sentence formation, punctuation, and word choice.

PASSAGE 1

> Read the following science fiction passage about a library in the future. Then answer questions 1–6.

Summer Reading

by Ken Liu

On this summer day, with the air still cool after a thundershower, with sunlight slanting through the cracks in the roof and walls of the Library, dappling the floor strewn with vines and leaves, CN-344315 made his daily rounds.

The robot docent muttered to himself as he dragged his squat, filing-cabinet-sized body through the rubble. He turned his cubical head from side to side, expressionlessly surveying his domain. He had last seen a visitor to the Library over five thousand years ago, but he wasn't about to change his routine now.

After mankind had scattered to the stars like dandelion seeds, Earth was maintained as a museum overseen by robot curators. At first, new generations born in the far-flung colonies made pilgrimages to visit the cradle of civilization, to marvel at the Great Pyramids (really holographic re-creations), the Chrysler Building (plastinated against any further erosion), the Forbidden City (complete with the Starbucks logo, a late addition), the Space Elevator of Singapore (still featuring the quaint sign: "Please use the restroom before boarding"), and other cultural attractions.

But over a hundred millennia, the flow of tourists slowed to a trickle, then a drip, and finally, stopped.

CN-344315 passed rows and rows of empty racks that age and rust had turned into delicate filigree, as fragile and brittle as glass. Climbing vines draped over them, creating bowers whose shade provided homes for mushrooms, ferns, wildflowers, and the occasional hare. The robot seemed to see in them ghosts of the mighty servers that once preserved yottabytes of the human race's accumulated knowledge.

"You cannot take them!" CN-344315 had shouted at the Council of Curators. "The data on them—"

"—can no longer be read," the Head Curator had answered. "You have used up so much of our resources trying to keep them going, but these machines weren't designed to last. Whatever information humans found useful, they copied it onto their ships and took it away. Data only lives when it is constantly copied. What is left here is just digital detritus, bit rot, worthless."

"What is thought useless in one era may be treasured in another!"

But the servers, having rusted into useless hunks of metal, had been recycled. And CN-344315 had grieved for all the data that had no copies in the universe: digitized words, images, sounds that dissipated forever into the void.

The old robot continued to trundle down the well-worn path between the empty racks, the noise of grinding gears and antiquated treads like wheezing breath.

On the tenth floor of the Library was a tiny room about ten meters square.

CN-344315's joy was to enter this room at the end of a day. He would survey his collection, nestled on the shelves like rows of sleeping babies. He would extend a probe from his chassis through a slot in the airtight glass panes covering the shelves, so that the chemical detectors on the probe could process the fragrance of ancient paper and ink. The resulting electric patterns in his brain were pleasurable. Then, he would relax his motors and actuators, his pincers and wheels, and be as still as a piece of furniture.

When the Library was built, people had already stopped using books. The few hundred books that were left in the world were kept in this small room as a kind of shrine of relics. *Not unlike the Earth itself now is kept as a memento for all of humanity,* CN-344315 reflected.

Gears grinding with weariness, he pulled open the door to the room and ground to a halt at the sight within.

"Hello," the small child said. She wore a yellow dress, like a ray of sunlight in the gloom of the ruins of the Library. She stared at CN-344315 with large, dark eyes, as limpid as the first rain of fall. Her hands were placed against the glass covering the shelves, as though CN-344315 had found her peering into an aquarium.

She was about seven, CN-344315 guessed, dredging up ancient routines for interacting with visitors that hadn't been accessed for five thousand years.

"Hello," CN-344315 said. He had to reach up with his manipulators to dislodge his voice box, rusty from disuse. "Welcome . . . to the Library."

"What are these?"

"Books," CN-344315 said. He thought about how to explain them. "Very old, ancient data, preserved at ultra-low density."

Even a decent-sized book only held a few thousand kilobits of data. CN-344315 had calculated that to store even a tiny fraction of the data once held on the servers in the Library would have required a stack of books that reached to the Moon.

The girl examined the spines of the books. Her eyes suddenly lit up. "Can I see that one?" Unlike the other spines, which consisted of small letters against solid, dull backgrounds, the one she pointed at was bright yellow, just like her dress.

CN-344315 thought about the grease on her fingers, about the moisture in her warm breath, about rough, unsteady little hands against paper that had lasted a thousand centuries. The robot shuddered.

Because CN-344315 had been unable to save the servers, he poured all his energy into the preservation of the books.

And they were hard to preserve. The dead wooden fibers that made up the pages were subject to decay and tempted insects. The ink faded when exposed to direct sunlight and moisture. The glue and thread in the binding became brittle and fell apart with the passage of time. CN-344315 had to devise special cases, sealants, control of every aspect of the environment inside the room: temperature, light, humidity, vibrations.

The girl looked at the robot expectantly. CN-344315 wanted to say, "No."

Though the books were so much trouble to keep alive, to maintain against decay, this only made him care more for them. In this, CN-344315 was simply learning the lesson that every parent knew: it is the effort given to protect and nourish the helpless that binds you to them with love, tighter and tighter. Each time that he had to rush to reinforce the small room against an oncoming storm, each time he had to labor to eliminate a fungal or entomological threat, each time he sat, patiently, and examined each page of a hundred books for signs of damage—he came to love them more.

But even with all his ceaseless struggles, the laws of entropy held sway, and every century, books were lost to rain, animals, plain age. He grieved the passing of each one as deeply as his circuits allowed.

"Please," the girl said. "There's nothing to do here. None of the machines work." It was true, CN-344315 knew. The servers that had taken up most of the space in the Library were, of course, gone. The shelves of discs and cubes that had once fit the viewing kiosks downstairs no longer worked either. They were so fragile that even the smallest bit of damage, a slight warping caused by a change in temperature or a minuscule scratch, rendered the data on them inaccessible. The storage devices were designed to be thrown away. As the Council had said, data only lives when it is constantly copied. And humans did not seem to care to preserve the medium that data lived on.

But the books, even when the pages were torn or faded, dog-eared or written-over, could still be read.

Wanted to be read?

"All right," CN-344315 said, surprising even himself. He creaked over to the shelf, unlocked the sealed glass doors, and gingerly took out the book.

CN-344315 placed the volume gently on the small desk in the center of the room. The girl climbed onto the chair next to it. Together, the robot and the young child examined the book.

The hard cover showed a vivid drawing of a smiling tortoise with pink leg warmers and a matching pink hair bow. She was getting ready to start a road race against a cat (wearing headphones and a look of determination) and a dog (snarling to show his sharp teeth).

"Oh," she said. She placed her fingers against the letters on the cover, her voice trying to hide her disappointment. "I don't know how to read this."

"It's written in Archaic English," CN-344315 said, "one of the ancestors of the language we all speak now. Let me translate and read it to you: *The Adventures of Sophia, the Fastest Tortoise in Suburbia.*"

For ten minutes, they were not sitting in a decaying library on an ancient, forgotten planet. For ten minutes, they were in a place, at a time, where talking tortoises and caterpillars who tossed salads made sense. For ten minutes, they were not an old robot and a young girl, but readers, communing with an author across an ocean of one hundred thousand years.

An entire world rose, grew, and blossomed around them as they read.

The robot turned the last page. "The end."

They were silent for a while.

"I liked that," the girl said. "It wasn't like a sim, but it was better than a sim. I couldn't touch anything, but I could feel everything in my head. If I close my eyes, I can still see Sophia. I think she's having more adventures. We'll be great friends."

The old robot smiled. He didn't have the right words for the electrical patterns in his brain at this moment.

"Read it again!"

CN-344315 turned the book back to the first page.

"Erin!" a man's voice called. The robot and the girl looked up.

"Mom! Dad!" Erin leapt off the chair and ran over to the door, where a man and a woman were standing.

"We've been looking all over for you," the woman said. "We told you not to wander off by yourself. Good thing our tracking beacon still works in this primitive dump."

"I think 'dump' is a bit strong—" the man began.

"This is the *last* time you pick where we go for vacation! We could have had all the 'culture' we wanted through a sim back home. Now let's get back to our ship and go somewhere civilized."

CN-344315 stayed out of their way. He knew that for some visitors, the past was simply the past, as alien and as irrelevant as a planet on the other side of the galaxy.

Erin lingered at the door of the small room. "I had fun here," she said to CN-344315.

"Me too," CN-344315 said.

The girl looked longingly at the other books on the shelves around the room, as her parents turned to leave.

"Wait," CN-344315 said. He picked up *The Adventures of Sophia, the Fastest Tortoise in Suburbia* and handed it to Erin.

"Thank you." She clutched it to her chest tightly and beamed.

CN-344315 knew that the book would not last. The child's hands were rough. She might leave it out in the rain, might spill juice on it, might tear its ancient pages out of carelessness. She might tire of the book and lose it like a cheap toy.

Yet CN-344315 had no regrets as he handed the book to Erin. The Council was right about one thing: books are only alive when they're read. For books are seeds, and they grow in minds.

"Goodbye," the old robot said, and watched as the little girl walked away with her book.

He remained where he was as the ruined Library fell into silence, and the summer birds began to chitter again.

PSSA ENGLISH LANGUAGE ARTS GRADE 7

Multiple-Choice Questions

1. Which description from the passage **best** emphasizes the idea that Earth has been nearly forgotten?

   A. "At first, new generations born in the far-flung colonies made pilgrimages to visit the cradle of civilization, . . ."

   B. "But over a hundred millennia, the flow of tourists slowed to a trickle, then a drip, and finally, stopped."

   C. "On the tenth floor of the Library was a tiny room about ten meters square."

   D. "The shelves of discs and cubes that had once fit the viewing kiosks downstairs no longer worked either."

Item Information	
Alignment	A-C.2.1.3
Answer Key	B
Depth of Knowledge	2
p-value A	15%
p-value B	75% (correct answer)
p-value C	4%
p-value D	6%
Option Annotations	The student is asked to determine which description from the passage best emphasizes the idea that Earth has been nearly forgotten. Option B is the correct answer because the idea that the "flow of tourists slowed to a trickle, then a drip, and finally stopped" implies that people no longer visit Earth. Option A is not correct since it focuses on the idea that people once had great interest in visiting Earth. Option C is not correct since it merely describes the physical appearance of part of the library. Option D is not correct since it describes the condition of equipment in the library.

PSSA ENGLISH LANGUAGE ARTS GRADE 7

2. Read the sentence from the passage.

    "In this, CN-344315 was simply learning the lesson that every parent knew: it is the effort given to protect and nourish the helpless that binds you to them with love, tighter and tighter."

    Which word **best** replaces the word "binds" without changing the meaning of the sentence?

    A. connects

    B. strengthens

    C. fuses

    D. seals

Item Information	
Alignment	A-V.4.1.2
Answer Key	A
Depth of Knowledge	2
p-value A	70% (correct answer)
p-value B	12%
p-value C	10%
p-value D	8%
Option Annotations	The student is asked to determine the word that best replaces the word "binds" without changing the meaning of the sentence. Option A is the correct answer because the word "connects" means the same as "binds" based on the context of the sentence. Option B is not correct since "strengthens" is not a direct meaning of "binds." Options C and D are not correct since their meanings do not align with "binds" as it is used in the sentence.

APPENDIX E

CHARTER PUBLIC SCHOOLS (CPS) BACKGROUND AND DATA

Sample BCPS ANNUAL CHARTER EVALUATION (ACE) EXCERPT

Annual Charter Evaluation 2019-20
BCPS-1

SCHOOL OVERVIEW

General Information

Address	
Phone	
Website	
Network	N/A
History	
Current Term	2017-18 to 2021-22
Admission	Citywide
Mission	*"The Mission of _____ Charter School is to empower children to become life-long learners in areas of science, technology and the humanities by exposing them to innovative ways of teaching and learning while preparing them for the challenge of the 21st century in a safe, structured and nurturing environment."*

Leadership, Grades Served, and Enrollment History

School Year	School Leader	Grades Served	Total Enrollment (as of October 1)	Authorized Enrollment
2015-16		K-8	1042	1200
2016-17		K-8	1063	1200
2017-18		K-8	1074	1200
2018-19		K-8	1026	1200
2019-20		K-8	1040	1200

Pennsylvania School Performance Profile Scores

School Year	This School	Charter School Average	District School Average
2015-16	50.9	56.7	52.5
2016-17	58.5	57.6	53.0
2017-18	49.7	57.8	54.8
2018-19	56.9	58.6	54.1

Similar Schools Groups

Similar Schools Groups (SSGs) are comprised of District and charter schools that are the same school type (ES, MS, K8, HS) and serve similar populations of students based on the percentages of students who are economically disadvantaged (+/-10%), students with disabilities (+/-5%), and English learners (+/-7.5%).
Schools must fall within all three ranges to be included in a given school's SSG. If a school's SSG has fewer than five schools, the ranges expand to include five schools. The CSO updates SSGs annually.

Similar Schools:

Annual Charter Evaluation 2019-20
BCPS-1

Student Demographics

Race and Ethnicity

Legend: African American or Black, Asian, Hispanic or Latino, Multiracial or Other, White

	2015-16	2016-17	2017-18	2018-19	2019-20	Charter Sector 2019-20	District Schools 2019-20
African American or Black	97%	97%	97%	97%	97%	60%	47%
Asian	0%	0%	0%	0%	0%	3%	9%
Hispanic or Latino	0%	1%	1%	1%	1%	18%	23%
Multiracial or Other	2%	2%	2%	2%	2%	5%	6%
White	0%	0%	0%	0%	0%	13%	15%

Economically Disadvantaged Students

	This School	Charter Sector	District Schools
2016-17	63%	62%	74%
2017-18	65%	64%	73%
2018-19	64%	67%	70%

Note: Economic disadvantage data was first collected in 2016-17 via PEARS Site Eligibility Reports.

Students with Disabilities

	This School	Charter Sector	District Schools
2015-16	11%	18%	14%
2016-17	12%	19%	14%
2017-18	14%	20%	14%
2018-19	16%	21%	15%
2019-20	16%	19%	15%

English Learners

	This School	Charter Sector	District Schools
2015-16	0%	5%	10%
2016-17	0%	4%	10%
2017-18	0%	5%	11%
2018-19	0%	5%	12%
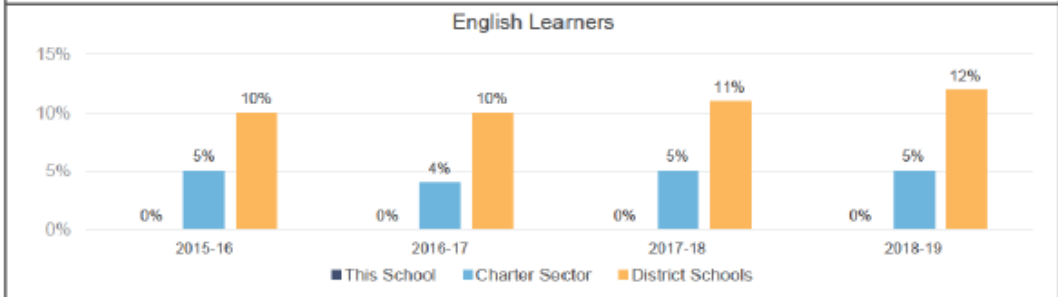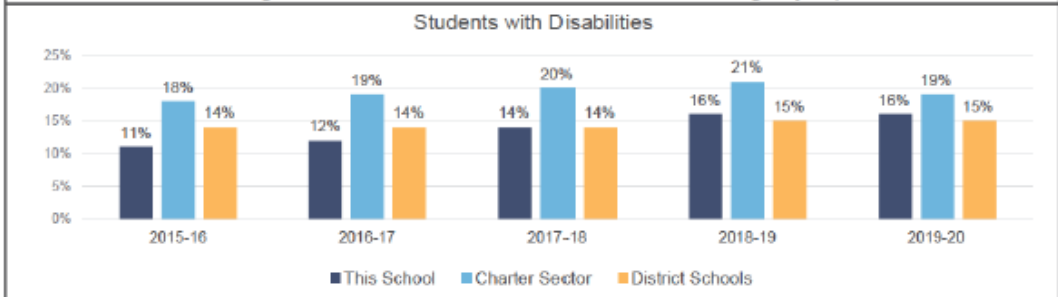
Note: Reports include four years of data because EL status is verified in the fall of the subsequent school year.

Black-Operated Charter Schools (BCPS) Background Information[1]

BCPS #	Year Opened	Network Affiliation	Citywide Admissions	Special Curriculum
BCPS 1	1998	None	Yes	Yes
BCPS 4	1999	Yes	Yes	None
BCPS 5	1999	None	Yes	Yes
BCPS 7	2001	None	Yes	Yes
BCPS 8	2001	None	Yes	None
BCPS 9	2005	Yes	No	None
BCPS 10	2003	None	Yes	None
BCPS 11	2003	None	Yes	Yes
BCPS 12	2004	None	Yes	None
BCPS 13	2004	None	Yes	Yes
BCPS 14	2005	None	Yes	None
BCPS 16	2006	Yes	Yes	None
BCPS 17	2007	None	Yes	Yes
BCPS 18	2007	None	Yes	Yes
BCPS 21	2009	None	Yes	Yes
BCPS 22	2009	Yes	Yes	None
BCPS 24	2009	None	Yes	None
BCPS 26	2011	Yes	No	None
BCPS 27	2012	Yes	No	None
BCPS 28	2012	Yes	No	None
BCPS 29	2012	Yes	No	None
BCPS 30	2013	Yes	No	No
BCPS 31	2016	None	No	Yes

Note:

1. Information compiled from websites and 2019-2020 Annual Charter Evaluation (ACE)

BCPS Student SES Data[1]

BCPS #	2016-2017	2017-2018	2018-2019
BCPS 1	63	65	64
BCPS 4	57	69	69
BCPS 5	64	68	65
BCPS 7	47	48	48
BCPS 8	68	68	66
BCPS 9	89	93	91
BCPS 10	51	58	59
BCPS 11	58	61	61
BCPS 12	56	53	61
BCPS 13	77	n/a[2]	n/a[2]
BCPS 14	62	51	58
BCPS 16	65	63	63
BCPS 17	69	69	66
BCPS 18	52	52	52
BCPS 21	80	80	77
BCPS 22	57	68	68
BCPS 24	67	67	
BCPS 26	82	82	81
BCPS 27	55	72	72
BCPS 28	89	89	86
BCPS 29	69	79	83
BCPS 30	78	83	83
BCPS 31	80	80	81
Average	75.5	80.83	81

Notes:

1. Information compiled from websites and 2019-2020 Annual Charter Evaluation (ACE)

2. No data are available for BCPS 13 for these years.

BCPS Student Race Data[1]

BCPS #	2016-2017	2017-2018	2018-2019
BCPS 1	97	97	97
BCPS 4	93	94	95
BCPS 5	94	93	93
BCPS 7	82	86	89
BCPS 8	90	87	87
BCPS 9	92	92	93
BCPS 10	94	94	95
BCPS 11	27	25	23
BCPS 12	77	79	86
BCPS 13	85	87	n/a[2]
BCPS 14	60	60	60
BCPS 16	96	95	95
BCPS 17	95	95	94
BCPS 18	96	95	94
BCPS 21	91	89	92
BCPS 22	95	94	95
BCPS 24	91	95	n/a[2]
BCPS 26	88	87	87
BCPS 27	40	38	36
BCPS 28	32	30	30
BCPS 29	90	91	91
BCPS 30	93	93	92
BCPS 31	93	94	95
Average	72.67	72.17	71.83

Notes:

1. Information compiled from websites and 2019-2020 Annual Charter Evaluation (ACE)

2. No data were available for BCPS 13 and BCPS 24 for these years.

Non-Black Operated Charter Schools (NCPS) Background Information[1]

NCPS #	Year Opened	Network Affiliation	Citywide Admissions	Special Curriculum
NCPS 1	1997	None	Yes	None
NCPS 2	1999	None	Yes	Yes
NCPS 3	1999	None	Yes	None
NCPS 4	1999	Yes	Yes	None
NCPS 5	1999	None	Yes	None
NCPS 6	2000	Yes	Yes	Yes
NCPS 7	2000	None	Yes	Yes
NCPS 8	2000	None	Yes	None
NCPS 9	2001	Yes	Yes	None
NCPS 10	2001	None	Yes	None
NCPS 11	2001	None	Yes	None
NCPS 12	2002	Yes	Yes	Yes
NCPS 13	2002	None	Yes	None
NCPS 14	2005	Yes	Yes	None
NCPS 15	2007	Yes	Yes	None
NCPS 16	2007	None	Yes	Yes
NCPS 17	2010	Yes	Yes	Yes
NCPS 18	2010	Yes	Yes	None
NCPS 19	2000	None	Yes	Yes
NCPS 20	2013	Yes	Yes	None
NCPS 21	2005	None	Yes	Yes
NCPS 22	1998	Yes	Yes	Yes
NCPS 23	2009	Yes	Yes	None
NCPS 24	1998	None	Yes	Yes
NCPS 25	2000	None	Yes	None

Note:

1. Information compiled from websites and 2019-2020 Annual Charter Evaluation (ACE)

NCPS Student SES Data[1]

NCPS #	2016-2017	2017-2018	2018-2019
NCPS 1	68	74	74
NCPS 2	26	26	26
NCPS 3	43	42	42
NCPS 4	64	69	77
NCPS 5	24	34	33
NCPS 6	40	44	64
NCPS 7	29	30	56
NCPS 8	80	82	81
NCPS 9	68	70	70
NCPS 10	37	44	53
NCPS 11	79	73	80
NCPS 12	70	69	70
NCPS 13	17	12	9
NCPS 14	69	71	71
NCPS 15	n/a[2]	n/a[2]	n/a[2]
NCPS 16	34	40	78
NCPS 17	86	81	85
NCPS 18	65	79	79
NCPS19	75	76	80
NCPS 20	79	81	80
NCPS 21	63	63	63
NCPS 22	79	79	79
NCPS 23	57	56	56
NCPS 24	52	52	56
NCPS 25	75	76	80
Average	57.46	59.29	64.25

Notes:

1. Information compiled from websites and 2019-2020 Annual Charter Evaluation (ACE)

2. No data are available for BCPS 13 for these years.

NCPS Student Race Data[1]

NCPS #	2016-2017	2017-2018	2018-2019
NCPS-1	15	15	14
NCPS-2	8	8	10
NCPS-3	18	16	17
NCPS-4	91	90	91
NCPS-5	8	9	11
NCPS-6	29	29	27
NCPS-7	16	16	17
NCPS-8	15	15	16
NCPS-9	82	76	76
NCPS-10	40	39	41
NCPS-11	95	95	95
NCPS-12	45	44	44
NCPS-13	17	18	18
NCPS-14	42	39	37
NCPS-15	95	95	95
NCPS-16	34	33	33
NCPS-17	14	13	14
NCPS-18	93	92	92
NCPS-19	4	6	5
NCPS-20	92	93	94
NCPS-21	15	15	13
NCPS-22	5	4	4
NCPS-23	33	33	35
NCPS-24	88	86	86
NCPS-25	4	6	5
Average	39.92	39.4	39.6

Note:

1. Information compiled from websites and 2019-2020 Annual Charter Evaluation (ACE)