

2017

# An ANOVA Analysis of Education Inequities Using Participation and Representation in Education Systems

Bruce Jerome Carter  
*Walden University*

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# Walden University

College of Social and Behavioral Sciences

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Walden University  
2017

Abstract

An ANOVA Analysis of Education Inequities Using Participation and Representation in  
Education Systems

by

Bruce J. Carter

MA, Webster University, 2000

BBA, Savannah State University, 1997

Dissertation Submitted in Partial Fulfillment  
of the Requirements for the Degree of  
Doctor of Philosophy  
Public Policy Administration

Walden University

November 2017

## Abstract

A problem recognized in the United States is that a K-12 public education in urban communities is more likely to support existing patterns of inequality than to serve as a pathway to opportunity. The specific focus of this research was on the poor academic performance in U.S K-12 urban communities. Using Benet's polarities of democracy theory as the foundation, the purpose of this correlational study was to determine which independent variables, enrollment rates, high school graduation rates, property tax funding rates for schools, teacher quality, and youth literacy rates are statistically associated with quality education outcomes by using the polarities of democracy participation and representation tenets as proxy variables. Secondary data spanning a 5-year aggregate period, 2010-2015, was compared for both Massachusetts and the United States, using Germany as the benchmark. Data were acquired from the Programme for International Student Assessment from the Organisation for Economic Cooperation and Development. The total sample included 150 cases randomly selected from 240 schools in Massachusetts and 150 schools in Germany. Data were analyzed using ANOVA. The results of this study indicate a statistically significant ( $p < .001$ ) pairwise association between each of the 5 independent variables and the dependent variable. The 5 independent variables had a positive statistically significant effect on education quality. The implication for social change from this study includes insight and recommendations to the U.S Department of Education into best practices for reducing educational inequality and improving educational quality as measured by achievement in the United States.

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## Dedication

That which is written. To my deceased parents who have always taught me while raising me on the farm that through perseverance all things are achievable and to give it all to the Lord who will make it all possible. To my sibling who served 22 years in the Navy and always shared with me that only the strong will survive and the weak will perish, that life isn't always fair, it is what you make of it. To my military elite family from whom I learned that in the end, we win. Because of my upbringing, the Lord is the captain of my ship, he will order my steps, lead me, and guide me in all that I do. Through it all, I learned this is a marathon and not a sprint. God Speed!

## Acknowledgement

Foremost to my beautiful wife Sheri, I want to thank you for having faith in me, encouraging me to go beyond the boundaries, to learn to live, and to follow my endeavors. Granted, I did not complete my dissertation within the timeline I original established, but if it was not for your patience, strategic guidance, and encouragement throughout the process, I would not have finished the task.

I would like to acknowledge my chair and committee for their support and constructive criticism throughout the various arduous stages of my dissertation, as well as for the guidance they provided without which I would have never been able to complete this research. Also, I would like to take this opportunity to recognize my friends and family for the support they provided and their belief in me in accomplishing this milestone.

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## Chapter 1: Introduction to the Study

### **Introduction**

Along with industrialization and economic development, education plays an increasingly important role in the success of individuals in a society, community, or country. The process by which this success is achieved is sometimes called the status attainment process. However, research in many countries has shown that an increased allocation of resources to education has done little to mitigate existing patterns of K-12 public education inequality. This quantitative research was needed educational performance in urban areas of the United States, particularly for ages 15-18, are more likely to reinforce existing patterns of inequality than to serve as a pathway to opportunity. A 2017 report by the Programme for the International Assessment of Adult Competencies (PIAAC) compared 2008-2015 data by testing millennials in reading, math, and science. The authors reported that K-12 primary education in the United States ranks last out of 34 countries in academic performance in mathematics, reading, and science (Organisation for Economic Cooperation and Development [OECD], 2015; U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics [NCES], 2015).

Using polarities of democracy as the theoretical framework of participation and representation as proxy variables, I examined which independent variables were statistically associated while comparing education performance to the larger population cities in the State of Massachusetts against the overall education system in the United States, utilizing German education rates as the benchmark. Pathways to opportunities can be defined by a country's having an impartial public education system for all ethnic and

gender students, such as in enrollment rate, high school graduation rate, property tax funding rates for school, teacher quality, and youth literacy rate, which can assist in narrowing the academic urban achievement gap in underprivileged urban communities (Association for Supervision and Curriculum Development [ASCD], 2017). The ASCD (2017) defined academic achievement as the performance in education outcome when an institution, teacher, and student have obtained educational goals. The independent variables of enrollment rate, high school graduation rate, property tax funding rates for school, teacher quality, and youth literacy rate in Massachusetts were compared to those in Germany. Massachusetts has similar educational policies to those found in Germany, the number of school districts per student are comparable, and they share a similar democratic structure.

According to a 2013 OECD report, Germany implemented equality-driven policies that create advantages in the attainment and application of education for skill jobs. The OECD initiated a national assessment in 2000 and conducted an international assessment every three years. The 2011, 2012, and 2015 OECD reports stated that Germany was unmatched in its model education system, as the nation provided free public fundamental education to all citizens. There are several significant outcome characteristics of the German model that may contribute to K-12 academic achievement. The success of the German educational system can be partially attributed to a strong national reform for rapid federal and state *Länder* policy improvements (OECD, 2013). The restructured German-model educational system is rapidly growing in Germany and other surrounding Eastern and Western European Countries (OECD, 2013).

In contrast, the United States' education system is experiencing a decline of academic achievement and performance among graduating students (OECD, 2011). The United States has implemented numerous laws and policies to address the educational urban achievement gap between groups of different socioeconomic status (SES), but reform is still needed. Massachusetts has ranked first in academic achievement in the United States since 2008 (OECD, 2012). The Education Week Research Center (2014), a nonpartisan think tank, measured indicators such as state and local policies, high school graduation rate, enrollment rate, and youth literacy rate linked to Massachusetts educational achievement (OECD, 2012). The outcome of the measurement provided insight into why Massachusetts met high academic achievement standards. It was because, at least in part, the state's education policies emphasized attending to the independent variables.

The German education system, which appears to have successfully addressed educational inequality, may serve as a model in the reconstruction or enhancement of the U.S. education policies. To add to the body of education research, I analyzed policies, enrollment rates, high school graduation rates, property tax funding rates for school, teacher quality, and youth literacy rates as the independent variables, which served as proxy variables for participation and representation. This study may inform best practices regarding reducing educational inequality and improving educational quality as measured by the independent variables. The results may positively affect existing patterns of inequality in urban areas and serve as a pathway to opportunity. This research may also enhance understanding of participation and representation in relation to the polarities of democracy, thereby supplementing the current body of literature.

## Background

In this section, I briefly outline education functions in a society and explain the importance of education knowledge through nonpartisan organizations and spending cap per country. Education in any country is one of the most essential service functions that can be provided by the government to its people because it helps the country and its citizens to compete on a global scale and in diverse markets (OECD, 2013). Cordes and Miller (2001) proposed that efforts should be made in the United States to improve education quality. The OECD (2013) asserted that once students were literate, they could have brighter futures (OECD, 2013). In 2017 in the United States, a successful future can only be attained through a solid educational background and development of a comprehensive twenty-first-century skill. The roots of the urban achievement gap between the *haves* and *have-nots* may possibly lie in access to healthcare, property tax funding rates for schools, and teacher quality. Ceci and Papierno (2005) define *haves* as those who have more wealth, income that allow them to go to any university of choice which in terms will have a quality education and higher income. They define *have nots* as those who have little wealth, income, and tend to be at a disadvantage in having a quality education that widened the academic achievement gap.

The urban achievement gap between the *haves* and *have-nots* is constantly growing, a development that threatens the foundations of society (OECD, 2013). The Programme for International Student Assessment (PISA) researchers drew a probability sample of American and German citizens to identify literacy rates for a population between the ages 16 and 65 (OECD, 2013). The average student in the United States scored 492 out of 2,000 in reading literacy, math, and science per category, which was

lower than the OECD average of 497 (OECD, 2013). By contrast, German students scored, on average, 515 in reading literacy, math, and science (OECD, 2013). In this study, I examined the nature of the relationship among the independent variables of enrollment rate, high school graduation rate, property tax funding rates for school, teacher quality, and youth literacy rate, which served as proxy variables for participation and representation. By doing this, I determined what combination of variables were more important to focus on in urban education policies.

Massachusetts and Germany were the target sample size of secondary data. Germany was used as the benchmark because both are governmental entities with similar forms of governance, which includes the individual subdivisions of the government, because the United States assisted in creating the Federal Republic of Germany after WWII (Merryman, 1998). Studies pertaining to educational inequality and the systems of educational achievement are illustrated below.

The Lincoln Institute (2014), a nonpartisan think tank, reported on the distribution of public tax dollars for education in the United States and Germany. German policies allow for more equitable distribution of tax dollars, which benefits the lower class (OECD, 2013). In this study, I hypothesized that in low-income public school districts in the United States, where lower property values result in less tax revenue, there is less money available for education. A significant resource problem is funding public education through property taxes. United States federal contributions account for only about 10% of revenues, on average, for public school systems (Lincoln Institute, 2014). These funds add to both local and state level resources, thereby enabling the state government to administer federal education appropriations (Lincoln Institute, 2014). The

amount of education funding and spending among states is necessary to reduce inequalities in education (Lincoln Institute, 2014). For instance, in the United States, states are responsible for administering funds for public education (Lincoln Institute, 2014). Hence, an equal distribution of financial resources to urban communities' school districts across the country may improve equality of education nationwide.

The average annual funding per student in K-12 in the United States is about \$1,348.00. The average difference in per pupil spending for wealthy states is \$1,200.00 per student, while poor states spend \$13,375.00 annually per pupil, which is 25% less than the average of \$10,700.00 (ASCD, 2014; Williams, 2015). The ASCD (2014) defined wealth in terms of the result of the generation of income as it pertains to the involvement of assets from both human and physical capital (ASCD, 2014). The ASCD (2014) defined poverty as income-poverty, more commonly referred to as consumption-poverty; and the lack of possessing wealth or having a low quality of assets, including clothing, personal transport, shelter, and human capital capabilities. The differences in education funding cause some learning institutions to have better facilities than others (ASCD, 2014). The allocation of sufficient funds provides the basic resources and the right academic environment for students to succeed. A school without sufficient funds is less able to adequately and effectively teach its students. Research in educational inequality is needed to ensure that the United States urban primary education serves as a pathway to opportunity.

### **Problem Statement**

The problem addressed in this quantitative study is that K-12 public education in urban communities in the United States, specifically among 15-18 year olds, is more

likely to reinforce existing patterns of inequality than to serve as a pathway to opportunity. In this study, I considered the relationships among five independent variables related to educational quality in the state of Massachusetts, which ranks as the best state in the United States in education, while using Germany as the benchmark for comparison (ASCD, 2014; Education Week Research Center, 2014). All five independent variables, enrollment rate, high school graduation rate, property tax funding rates for school, teacher quality, and youth literacy rate were determined during the result to be important to focus on in education policies in urban areas (OECD, 2013).

The German education policy model diminishes stratification in the educational system. The OECD (2013) survey report illustrated that German students performed better than the U.S. students on tests in math, literacy, technology, and problem-solving, indicating superior education for its citizens. Education inequality needs to be addressed because it will impede the United States' ability to compete in the global labor marketplace, which could weaken our democracy (Kozol, 1991). I hypothesized that each independent variable was correlated with reduced educational inequality outcomes. Thus, this study may provide policy-makers and educators with data that will enable them to advocate for stronger educational systems. The independent variables served as proxy variables for participation and representation of two of the pillars of polarities of democracy (Benet, 2013). Potentially this could assist in bridging the urban achievement gap in research.

The five independent variables were determined to be statistically associated for Germany and the State of Massachusetts. A significant correlation was identified, which suggests that there is a relationship between the independent variables that could assist

the United States in developing education policies that improve education and make it a pathway for opportunities in other U.S. urban communities (Sherman & Poirier, 2007). Reduction of educational inequality could improve overall educational quality and maintain the nation's economic competitiveness in a global market.

### **Purpose of the Study**

The purpose of this quantitative empirical study was to ascertain whether there was a statistically significant association of the five independent variables by using the polarities of democracy participation and representation tenets as proxy variables. The theoretical framework served as a means to compare the Massachusetts education system with the United States, utilizing Germany as the benchmark. The finding from the analysis determined that there is a statistically significant association among independent variables, and all five variables were important to focus on in education policies for urban communities of the United States. Many other factors play an integral role in identifying the root causes of educational inequality (Sherman & Poirier, 2007). These will be discussed in Chapter 2.

### **Research Question and Hypotheses**

The central research question was:

RQ: Comparing two equivalent urban groups ( $n = 150$  cases) of full time high school students from Massachusetts and from Germany, which variables (enrollment rate, high school graduation rate, property tax funding rates for school, teacher quality, and youth literacy rate) are statistically significant as associated with quality education pathways of opportunities in U.S. urban communities?

$H_0$ : Comparing two equivalent urban groups ( $n = 150$  cases) of full time high school students from Massachusetts and one from Germany, there is no statistically significant association with quality education as a pathway of opportunities in U.S. urban communities.

$H_a$ : Comparing two equivalent urban groups ( $n = 150$  cases) of full time high school students from Massachusetts and from Germany, there is a statistically significant association with quality education as a pathway of opportunities in U.S. urban communities.

The central research question for this quantitative study was developed to determine what combination of independent variables may be more important to focus education policies on in urban areas of the United States. The PISA secondary data sample population consisted of 240 schools from Massachusetts and 150 randomly selected schools from Germany. Thus, I used a total sample size of 150 cases randomly generated from the PIAAC student survey. The PISA used the probability proportional to size (PPS) sampling method for their data collection (OECD, 2017). The PISA researchers used the unit of measurement of five main variables that were implemented to categorize the sampling frame (OECD, 2017). For the United States, the PISA researchers looked at three states, and Massachusetts ranked first out of the three states, as well as overall in the country, in having the best education system. The PISA analysis coding consists of (a) five groupings of school grades, location of populace, race, and gender (> 95% female). Forty-two 15-year-old students from each school were sampled randomly (OECD, 2017). However, if there were fewer than the targeted number of

students available to meet age eligibility criteria, all were subsequently selected (OECD, 2017).

A school sampling size of 150 was the minimum size set internationally to counterbalance possible nonresponses (OECD, 2017). Nonetheless, the 2015 United States PISA exceeded the sample size with 240 schools (OECD, 2017). Data was collected from two sources, public (2012-2013) and private schools (2011-2012), using Common Core of Data and Private School Universe Survey, respectively (OECD, 2017). Schools were selected in the sampling size if at least one grade (7th-12th) was a component of the school. Moreover, schools participating in the study submitted a list of eligible 15-year-old students (OECD, 2017). From this list, the sample size was compiled using IBM's Statistical Program for the Social Sciences (SPSS) software version 21 developed by an international contractor.

The intent of the central research question was to generate testable hypotheses using appropriate descriptive and inferential statistical methods. This research question outlines the correlative nature of the five independent variables: ( $X_1$ ) enrollment rate, ( $X_2$ ) high school graduation rate, ( $X_3$ ) property tax funding rate for schools, ( $X_4$ ) teacher quality, and ( $X_5$ ) youth literacy rate. The central research question also focuses on the PISA secondary data by comparing academic achievement in the Massachusetts education system to the United States overall and to the German model.

The PISA analysis described high school graduation as an estimated percentage of students who graduate from an education level (OECD, 2017). The unit of measurement that was utilized was coded for gender, age, and race. PISA divided the number of students into specific gender and age groups for enrolled education levels; the size of the

group enrollment rates were expressed in net enrollment rates (OECD, 2017). According to the PISA data results, the youth literacy rate was calculated by taking the mean score of students to ensure they can formulate evaluative statements, read, and write to a specific global economic standard (OECD, 2017). The PISA population size was 240 Massachusetts schools and 150 for schools from Germany. The PISA database used PPS sampling. I used ANOVA to define and tests for the difference in the five independent variables. The unit of measurement was  $n = 150$  cases taken randomly, which were surveyed through PIAAC. G\*Power was used for gender, 0 = male, 1 = female, \*  $p < .05$ .

### **Theoretical Framework**

In the following section, polarities of democracy participation and representation tenets serve as proxy variables. Parents are responsible for providing cultural, social, human, and physical resources that impact their children's quality of education and ultimate employability (Orji, 2011). To broaden the continuum and scope of the research, I incorporated a concise analysis of the key thinkers in the theoretical framework, including Benet's (2013) polarities of democracy theory. However, in Chapter 2 I compared in-depth the differences between Benet's (2013), and Johnson's (1998) polarities of management concepts. The key elements of polarities of democracy are pivotal in education attainment; hence, this theory could assist in researching educational inequality outcomes related to the predictor variables.

The theoretical framework for this research was informed by Benet's (2013) polarities of democracy. The polarities of democracy feature ten elements, which exist as five tenants of polarities: freedom and authority, justice and due-process, diversity and equality, human rights and communal obligations, and participation and representation.

According to Benet (2013), the purpose of any democracy is to positively construct a productive and sustainable society that will not oppress or deny its citizens a quality education.

In comparison, Johnson's (1998) polarities of management illustrated a positive aspect of a society ensuring its citizens of having a quality education and a society that will remain economically and globally competitive. A quality education also guarantees that the independent variables of enrollment rate, high school graduation rate, property tax funding rates for schools, teacher quality, and youth literacy rate will remain linked to national goals; the five independent variables may assist in creating a pathway of opportunities in urban areas (Colby, & Witt, 2000). A society without quality education will fail to remain economically competitive globally.

In Chapter 1, I discussed why Germany could be an exemplar for education in the United States. I examined the United States and Germany regarding their histories of education inequality through their legislation and policies. The presumption of polarities of democracy as used in this study were that there are structural forces that lead to the existence of conditions of oppression. I examined and used the lens of polarities of democracy theory regarding the relationships between the five independent variables.

### **Nature of the Study**

The nature of this study was quantitative as I explored the differences in educational outcomes and any possible correlations of enrollment rate, high school graduation rate, property tax funding rates for school, teacher quality, and youth literacy rate between Massachusetts and Germany. I utilized secondary data from OECD-PISA,

and PIACC archival databases to evaluate the five predictor variables in the state of Massachusetts.

I used ANOVA and descriptive statistics to test the hypotheses for this study. Considering that the hypotheses were associated with the independent variables group, I used the two-tailed  $t$  test to determine if there is a statistically significant relationship of the United States' five independent variables. A box plot is typically used to identify outlier data points. Descriptive statistics were used to illustrate the distribution and standard deviation to examine for statistically significant association between the five independent variables. In Chapter 3, I discuss the PISA, Teaching and Learning International Survey (TALIS), and Trends in International Mathematics and Science Study (TIMSS) measurement instruments.

Secondary data sets I used in this study came mainly from the PISA, OECD, and PIACC nongovernmental organizations database. Additionally, other data was accessed from previously published resources such as journals, magazines, and books. In general, to determine the validity of the historical national dataset, records databases were validated by OECD. The target sample of this study was identified by secondary data pulled from OECD PISA database ( $N = 240$  for Massachusetts schools and  $N = 150$  for schools from Germany), where historical records utilizing the PPS sampling methodology were relevant to this study. As discussed in depth in Chapter 3, the specific data source was archival, and the two sample sizes were for Massachusetts and Germany K-12 primary public school districts, which, according to the PISA study, could skew the weightings (OECD, 2017). I used SPSS version 23 to organize, store, and analyze the raw data using ANOVA to test the direction and strength of the correlation, with the intent of

decreasing the differences between the experimental outcome in some random dataset and the reaction predicted by the linear estimation of the information (Noreen, 1988). There has been a large body of research completed utilizing these two sample sizes. These datasets are the standard when studying education globally.

### **Definitions**

*Bond:* The German word for the federal government (OECD, 2011).

*Education inequality:* The existing urban achievement gap between individuals who have acquired specific skills and those perceived to have not. The variable is measured using the Gini coefficient, which measures inequality in income (U.S. Department of Education [DOE], 2016).

*Education reform:* For the purposes of this study, it is a means to enhance all student's education regardless of age, race, economic status, and sex (DOE, 2016). Typically, education reform refers to the process of decentralizing leadership so that governance in public educational institutions becomes flatter and less hierarchical.

*Enrollment differences:* Differences in the number of children enrolled in K-12 in Massachusetts schools.

*Equality driven policies:* Urgent action to tackle growing inequality and promote quality employment (Rue, 2016)

*International Adult Literacy Survey (IALS):* This was a worldwide evaluation carried out from 2009-2012 that was designed to measure a range of economic and social skills of individuals across and within nations (NCES, 2014a). As societies become more data-oriented, adults will need a broad set of work skills to participate effectively in the political process in the community and labor market. It is imperative that citizens be

literate, numerate, capable of problem solving, and familiar with communications and data technologies (NCES, 2014b).

*Land*: The German word for municipal and local county (OECD, 2013).

*Länder*: The German word for state government (OECD, 2013).

*Literacy*: The IALS defined literacy as an all-encompassing collection of aptitudes, which are assembled by three domains (NCES, 2014a) as follows:

1. *Document literacy*: The ability to read and use transportation schedules, maps, job applications, tables, and graphs (NCES, 2014a).
2. *Prose literacy*: The ability to utilize text data from fiction and nonfiction sources, such as texts, news stories, and poems (NCES, 2014a).
3. *Quantitative literacy*: The ability to use arithmetic operations, such as balancing a checkbook, computing a tip, or determining the amount of interest on a loan from a bank (NCES, 2014b).

*Organization for Economic Cooperation and Development (OECD)*: This organization is a consortium in which government officials come together to share solutions and experiences to assist in solving common issues (OECD, 2012). The OECD works with governments to understand social, environmental, and economic change. They measure productivity and worldwide flows of investment and trade. In addition, they compare and analyze information to determine future trends (OECD, 2012).

*The Program for the International Assessment of Adult Competencies (PIAAC)*: This is a household research study established under the sponsorship of OECD. In the United States, the research was conducted between 2010 and 2012, and consisted of a nationwide sample of 5,000 Americans adults between the ages of 16 and 65 (OECD,

2013). Parallel samples of adults were surveyed in 24 different participating countries (OECD, 2013). The aim of PIAAC was to compare and assess the broad range and essential skills of adults worldwide.

### **Assumptions**

There are several assumptions associated with this study. Assumptions can be defined as effects outside of a researcher's power and, if they vanish, the research will be unsuitable (Simon, & Goes 2013). For instance, education quality will continue to be a pivotal factor in societies. The secondary database sample population represents the population I researched. Anecdotal test performance accuracy in subjects such as the predictor and outcome variables represent the quality of education provided by a country's educational system. Testing performance will continue to play an essential role in academic achievement. Policy makers will continue to make positive changes in education policies to urban communities to achieve a pathway to opportunities.

### **Scope and Delimitations**

This study explored the nature of the relationship between the independent variables. Scope and delimitations can be defined as effects that are in a researcher's control and/or characteristics which can marginalize the scope boundaries in one's research (Simon, & Goes 2013). The delimitations include objectives such as the geographic population, the professional organizations involved, the variables' interest, theoretical perspectives being used, and research questions (Simon, & Goes 2013). I analyzed various contributions of these polarities at various levels in the history of the education sector. I evaluated how various democratic policies have contributed to ensuring education equality at various levels in the United States. I assessed the current

level of education inequality, where it will give the recommendations on how best to reduce it over time. The research demographics focused on education equality in the state of Massachusetts, and using Germany as an overall exemplar model, in relation to the five independent variables of enrollment rate, high school graduation rate, property tax funding rates for school, teacher quality, and youth literacy rate. The research was limited to five-year period. I utilized organizational data from the bureau of statistics and government education program managers in both countries such as the OECD, PISA, PIAAC, TALIS, and TIMSS. Furthermore, I used cross-reference essential findings, namely the education-tracking method, with archival dataset records using the OECD, PISA, and PIACC database. The OECD, PISA, PIAAC, TALIS, and TIMSS data are accessible in the public domain which are available in electronic format.

### **Limitations**

The study was based on quantitative statistics regarding the level of education achieved by K-12 students, and the independent variables relationship and serve as proxy variables for participation and representation. Limitations are defined as weakness of the research that are out of the researcher's control (Simon, & Goes 2013). Some of the factors, however, may not be accurately quantifiable and time could play as a factor for the research (Simon, & Goes 2013). Such factors for this research include determining the knowledge of an individual at any education level or the effect of academic education performance of an individual. The education systems in other countries vary from that of the United States. It may, therefore, not be correct to compare education inequality of the United States with that of other countries. Additionally, I developed my own interpretation based on my experience of having lived in both the United States and

Germany (for 10 years) to account for the accuracy regarding the educational inequalities. I cross-referenced essential findings including the education tracking method with secondary data such as the OECD.

The most salient constraint/limitation of the study was that some of the data in the OECD, PISA, and PIACC databases were very large files encompassing data from over 36 countries. The process was lengthy as I sorted through some of the findings. Moreover, a shortage of secondary data from the OECD, PISA, and PIACC database source imposed minor limitations. I used the OECD, PISA, and PIACC historical databases record sets from both countries to analyze and assist in generating this research reports. It is possible that the OECD, who collected the data, made some data collection errors. Those errors are beyond my control. However, checking the validity and reliability potentially could be used to cross-check the data. The other limitation was the correlation nature of the data that limits the validity of descriptive, correlational of the independent variables in the study.

### **Significance**

The significance of the study is that it may inform efforts United States government officials to ensure equal educational opportunities across social strata and better educational quality overall. Scholarly research has demonstrated that education inequality in the United States is in a state of crisis (Farkas, 2006). Comparing the American and German models with respect to enrollment rate, high school graduation rate, property tax funding rates for school, teacher quality, and youth literacy rate may point the way to stimulate a change in government's approach to how we educate and assess American high school student's academic performance in urban areas.

President Lyndon Johnson asserted that learning should not be impeded by poverty, and that learning is pivotal to provide an escape from poverty (Ginsberg, & Solow, 1976). In this quantitative research, I addressed data that may be necessary to guide policy makers in developing guidelines that promote educational equality in the United States (Farkas, 2006). Moreover, the outcome from this research will contribute the current body of literature, in which more trans-national and cross-cultural analysis are needed.

The implication for social change from this study may provide insight into best practices regarding reducing educational inequality and improving educational quality, as measured by achievement. The results may influence intergenerational mobility of polarities affecting adult skills attainment, and ultimately influence the earnings distributions within the global market. This research may also enhance understanding of the polarities of democracy theory, thereby contributing to the current body of literature. Additionally, this study may provide information to guide policy changes for the United States Labor Department, Department of Education, and Department of Health and Human Services. It may also provide a starting point from which the Brooking Institute, Lincoln Institute for Policy and Land, Institute for the Study of Labor, Education without Borders, and Center for American Progress might conduct future research.

### **Summary**

This retrospective quantitative research study was designed to promote an understanding Massachusetts' educational top performance and to use Germany as a model to assist to enhance United States overall education system. In Chapter 1, I outlined the relevant background research, rationale of the study, and introduced the

theoretical framework, as well as identifying assumptions that underpin the research and the scope and potential limitations of the study. Additionally, I hope to inform public policy efforts for social change to reduce educational inequalities in the United States along with promoting awareness to stimulate a change in society's perspective on how we educate and assess Massachusetts' children's academic performance. In Chapter 2, I present a review of the pertinent literature on educational outcome and how teachers, and students' education is related to the different social strata acquire different levels of academic performance. Furthermore, the literature review illustrates the different techniques that have been used to examine the research problems and their findings, and using polarities of democracy theory and potentially influence the overall United States education system. In Chapter 2, I illustrate the use of Germany as the example for the model in the literature review and then use the data that the PISA researcher conducted on Massachusetts, as the population for the research, followed by Chapter 3, I focus on the quantitative research design, sampling methodology, research instrument, and data analysis plans. In Chapter 4, I provided the results of the ANOVA analysis and concluded with the interpretations and recommendations in Chapter 5.

## Chapter 2: Literature Review

### **Introduction**

The problem in the United States is that K-12 public education does not appear to be helping the country to be economically competitive on a global scale. The purpose of this quantitative empirical study was to ascertain whether there was a statistically associated by using the polarities of democracy participation and representation tenets as proxy variables.

The objective of this chapter is to review the literature related to Benet's (2013) polarities of democracy theory and to establish the potential contribution of this study to the existing body of research on positive educational outcome policies in urban school systems. Also, this chapter provides a comprehensive review of democracy and its polarities before reviewing the progress of the education sector in the United States. While educational inequality outcomes have raised many concerns for planners and policy makers, little attention has been paid to those educational inequality outcomes (Araujo, Ferreira, & Schady, 2004). However, over the last two decades, scholarly researchers have recognized the significance of putting more emphasis on educational inequalities (Araujo et al., 2004). Thus, a recent and rapidly growing body of literature on educational inequality has emerged (Castello, 2010; Castello & Domenech, 2002; Checchi, 2004; Foldvari & Van Leeuwen, 2011; Lim & Tang, 2008). A comparison of international surveys has been beneficial for political leaders worldwide who seek to outline a holistic framework for national assessment.

This study focused on the academic urban achievement gap between haves and have-nots to measure the success of the nation's education. I will discuss in-depth under historical overview the United States' and Germany's education outcomes.

The OECD assessments have become popular with researchers and policy makers from 1996-2016, primarily because of global markets are often precipitated by conflict of resolution (OECD, 2011). Consequently, the standard for making an assessment for public policy in educational outcome is not about making gains on national educational policies, but rather on making gains or progress in comparison to other successful education systems globally (OECD, 2011). However, most empirical research on factors related to educational outcomes uses a one-dimensional economic perspective that may not be sufficient to capture the full scope of this multidimensional phenomenon.

This review of the existing body of research on polarities of democracy contributes to the understanding of the relationship of enrollment rate, high school graduation rate, property tax funding rates for schools, teacher quality, and youth literacy rate to educational inequality in urban areas of the United States. It consists of several sections that frame this research: the polarity origin of educational policies in Germany and the United States; the polarities of information on educational inequality in the United States; the theoretical framework of the study; and a comparative overview regarding the polarities of the independent variables mentioned above.

No study of this nature has previously illustrated if there is a relationship between property tax funding rates for schools, teacher quality, high school graduation rate, enrollment rate, and youth literacy rate and educational inequality in urban areas in Massachusetts while using Germany as a model. The political environment of education

has changed in the past two decades, signifying a need for public education reform (Education Week, 2014).

### **Relevance of the Problem**

According to Durkheim (1984), Dewey (2012), and Smith (1776), education quality and democracy were among the few forces that could bring about a semblance of equality in society. However, there are varying opinions on how each of them results in a change in society. Education is a field in which there are high levels of unfairness, with access being limited by several factors including but not limited to poverty, culture, and religion (Eide & Showalter, 2011). Democracy is a commonly misunderstood term with different people interpreting it in their own ways. This chapter is a summary of the literature providing an overview of what various scholars have said about the polarities of democracy model and its impact on education disparity and democratic organization in urban areas of the United States.

### **Literature Search Strategy**

In searching for peer-reviewed scholarly studies on educational inequality in the United States and using Germany as an exemplar, I reviewed EPI, ICSPR, PISA, Lincoln Institute, EURO stat, and data from 360 electronic databases in education, psychology, and economics. I searched several electronic databases to compile data on the research question. The three main search strategies were garnered from SAGE Journal, an independent publishing corporation, OECD, an exclusive environment of 34 democracies with global economics market, and the DOE, which creates public policies and coordinates and administers federal support for education (DOE, 2016; OECD, 2015). The United States educational system is designed to serve America's learners and

promote learner preparation and achievement for global competitiveness, along with nurturing educational brilliance and guaranteeing fair and equal access (DOE, 2016).

Technical literature consists of a variety of manuals that provide insight into realistic matters. The manuals include the OECD Library, which houses an expansive list of publications; DOE literature; the Library of Congress database; the Lincoln Institute database; the Chronicle of Higher Education literature; UNESCO literature; Google Scholar database; Institute for the Study of Labor (German literature); and JSTAR/JTOR Social Science Research Network.

The search criteria I used included key cross-referenced terms and phrases such as *Germany, United States, differences in enrollment rate, high school graduation rate, property tax funding rates for schools, teacher quality, and youth literacy rate*, which will serve as proxy variables for participation and representation. Literature published over the time period of five-years, including peer-reviewed journals, as well as books by seminal authors, were included. Research was considered between the 1940s and 2013 because healthcare and educational policies in both Germany and United States were altered significantly during this time due to the crises of World War II. I did not include any research in the review on the validity of accessibility to healthcare, property tax funding rate for schools, and teacher quality variables relating to educational outcome that had not been submitted for peer review. Lastly, I used the literature retrieval transitions to a review of research on control measures such as polarities of democracy relevant to the theoretical framework.

The section of the literature review is divided into three subsections examining enrollment rate, high school graduation rate, property tax funding rates for schools,

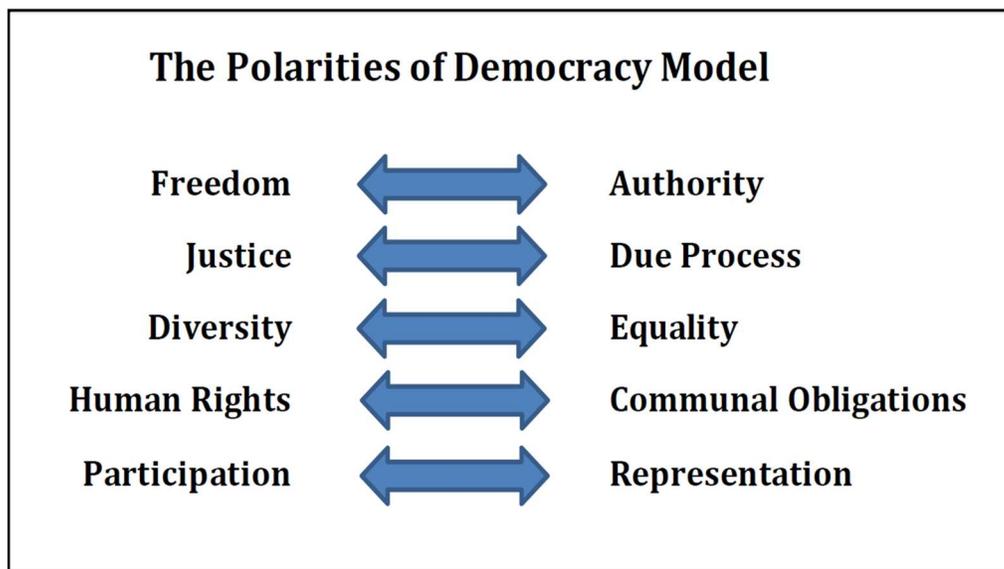
teacher quality, and youth literacy rate, the independent variables for the study. The first part begins by presenting the state of the research on factors relating to educational inequality in the United States. The second part examines the research on educational outcome and addresses the differences between Germany and the United States. The chapter closes by drawing from polarities of democracy and the existing body of research a set of claims about the interrelationships between variables relating to educational inequality and public policies in the United States and Germany.

### **Theoretical Foundation**

#### **Polarities of Democracy**

There have been several theories put forward to explain the interrelationship between education and democracy and their impact on building cohesive, sustainable, and socially fair communities (Eide & Showalter, 2011). Two such models are Johnson's (1996) polarities of management and Benet's (2013) polarities of democracy. These theorists attempted to explain the interrelationship between factors such as poverty, culture, and religion, and how they combined to influence the way societies are organized. Benet (2013) developed the polarities of democracy theoretical model to assist in creating affluent, sustainable, and just communities. The author was inspired to develop the theory by the increase in the challenges that were threatening to societies. Additionally, this theory was an attempt to unify efforts that had been put forward to bring about democracy in the world (Benet, 2013). Benet proposed that there are ten aspects of democracy organized into five points of authority, which are referred to as pairs of polarity. These pairs are freedom and authority, justice and following due process, diversity and equality, human rights and community roles, and participation and

representation for all in decision-making organizations (Benet, 2013). Figure 1 depicts these relationships. In this research I focused on participation and representation.



*Figure 1.* The polarities of democracy model to include the 10 elements (Benet, 2013).

**Participation and representation.** Every individual has his or her own rights which should be promoted. However, these rights are limited by their effect on other individuals, hence the need for participation and representation to control the extent to which the rights are enjoyed (Benet, 2013). Sometimes, participation may interfere with representation, hence becoming retrogressive in achieving a government agenda.

Societies must obtain back what they have lost in any circumstance, especially through the actions of other individuals and/or the government (Benet, 2013). The process of achieving representation must meet the requirements set to protect any interested party. Such circumstances may entail adhering to participation of acquiring evidence for an inequality even though it may be impossible to achieve equality (Benet,

2013). Hence, people have different ideologies and expectations in the society such that the efforts towards achieving their total satisfaction may be futile, especially in the efforts to ensure equality in the society. Consequently, efforts that meet the expectations of each group in the society may be promoted by balancing diverse expectations of the people. Such an example recognizes the fact that people have different levels of income and consequently cannot be taxed at the same rate even though they all benefit from the social utilities equally.

The two tenets elements have a positive and negative aspects; while each element has an opposite effect on the other (Benet, 2013). Therefore, it is in the best interest of the affected parties to work towards strengthening the positive aspects they consider beneficial to them in achieving democracy. This may involve sufficiently suppressing some aspects while providing the opportunities for others to thrive (Benet, 2013). Nonetheless, at times, one element of the pair may need to be compared to the other to dwell concomitantly and harmoniously. The two sides entirely supplement each other. This upholds the aspects of both elements that promote socio-economic development.

Benet (2013) further proposed that these are the attributes that make democratic societies prosper. In addition, the author asserted that there is a strong link between education and democracy, as the two concepts combine to bring about positive changes in a society. Likewise, United States education scholars have advocated for the strengthening of education for the public, and propose that a massive investment should be made in public education because this is the best way to strengthen democracy in a society (Couto & Eken, 2002). The United States scholars identified bad governance and powerful capitalist organizations as threats to thriving democracies in the world and

suggested that these should be combated as a way of strengthening democracy (Benet, 2013). The forces that pose a threat to democracy are like those that pose a threat to education. For example, a properly educated citizenry will demand a change to the way things are done, which in some cases will mean the loss of power for the ruling regime (Benet, 2013). Selfishness and dictatorial tendencies are therefore threats to both education and democracy.

Democracy is a term that has been coined repeatedly in almost every part of the world, yet very little is known about its meaning and why it should be sustained (Benet, 2013). As such, the United States has developed neo-liberal policies that only benefit a few people in the society while leaving the majority stuck in abject poverty (Chicosky, 2015). Moreover, most of the developed nations' government administrations in the modern political environment are intolerant to pure democracy.

Bergan, Gallagher, and Harkavy (2016) postulated that the most important function of education is to transform students into responsible citizens, a factor he says is essential for a properly functioning democracy. Without the citizens being properly educated, it is almost impossible to inculcate the culture of democracy (Benet, 2013). Bergan et al. asserted that societies in which education is well-grounded develop strong democratic institutions, while those that have less educated citizens have difficulty engendering a democratic culture. In addition, Couto and Eken (2002) argued that higher educational institutions need to spend more time in designing academic material specifically meant for the strengthening of democratic institutions of a country. That is, higher education must take the lead in building a strong democracy for any country.

The other benefits of education such as a healthy population, increased incomes, and an informed society, can only be realized if the democracy of that society is sound, meaning the two cannot be divorced. To properly achieve this, democracy should be instilled in the students by handling education matters democratically, including the measuring and assessment of learning outcomes. Bergan et al. (2016) proposed that school is the best environment in which children can be taught the culture of democracy. The authors also suggested that schools should be run on democratic systems; consequently, the children will grow up knowing that every institution should be run on democratic grounds. When such children eventually join the society, they become champions of democracy and positive change. Bergan et al. argued that it is almost impossible to separate education from democracy because if children are taught without understanding the difference between education and democracy at school, they would master dictatorship as the ideal way of doing things which are the factors that kill democracy.

Currently, democracy has been a trending topic in the world, especially because of the democratization efforts which have been happening across countries in the Middle East. There have been unprecedented uprisings among the Arab and Northern African countries, which has led to a debate as to whether democracy is the right prescription for every country (Benet, 2013). For a long time, it had been perceived that what the Arab countries needed was democracy; the proponents of this school of thought insisted that the social inequalities being experienced in the region were a result of absence of democracy. Scholars have tried to link democracy to such concepts as capitalism,

socialism or postmodernism (Benet, 2013). However, other researchers have disagreed on the definition of democracy (Brumberg & Heddeman, 2013; Reilly 2014).

Johnson (1998) explained that the polarities of management theory is built on the belief that in management, there are problems that are created by traditional frameworks that should be handled from a more liberal framework, which plays a role in socio-economic development. Johnson whose concepts were on a micro application level also used as the conceptual framework that Benet developed polarities of democracy theory, which was viewed on a macro application level as both consulted with each other (Meiksins, 1995).

The polarity of management was developed for presenting unique solutions to management issues that hitherto presented difficult moments to the managers. According to Johnson (1998), each management problem has both positive and negative effects, and it is the role of the manager to leverage the positive effects to help the company overcome management issues (Dubrow, 2014). Dubrow (2014) proposed that there are clichés or truisms about the political inequalities in democratic countries. One lecture contended that many modern nations have instilled the ideals of democracy in their national laws and constitutions among other legislation produced by their respective parliaments. Many of these nations consider democracy to be the only system that can unlock the vast potential of humanity with many people dying for the ideals of democracy.

It is important to note that political equality is a crucial element of democracy, yet many democracies have political inequalities for different groups (Benet, 2013). There is always some marginalization and existence of marginalized groups. Dubrow (2014)

described political inequality to be the unequal influence over decisions and choices made by political institutions as well as the unequal outcomes of such decisions. Polarities of Management addresses the existing and future of the notion of political inequality from cross-national and multidisciplinary perspectives. His research has nine theoretical, empirical and methodological chapters which also comprise of an edited collection of original works from various social scientists (Dubrow, 2014). Dubrow's research is primarily political in nature and captures the realities of democracies that have adopted a majoritarian approach to governance. Indeed, it is true that in many democracies, those who win, also known as the *haves* always seek their way and ignore the needs, wishes and interests of the have-nots.

Johnson (1998) indicated that the polarities of management theory has developed principles that assist the managers in making decisions that increase the positive effects of the challenges faced by the organization. For example, Johnson (1998) proposed if a company wants to establish a presence overseas, it should choose between two or more entry strategies with different effects on the revenue of the organization. Hence, by using the polarities of management model, the manager shall have the capacity to make the right decision and increase the capacity of the firm to benefit from the international venture (Johnson, 1998). For instance, a firm may choose to pursue the strategic alliance that reduces the risk of trading in a foreign market by creating partnership with a company, which is already trading in the foreign market. The reduced amount of risk is critical in ensuring safety of operations in the global market. The bottom line is that Johnson (1998) developed the polarity of management theory to assist managers in

making decisions which have more positive effects that are more beneficial to the organization than making decisions resulting in more negative effects.

Johnson's (1998) polarities of management theory and political inequality in an age of democracy by Dubrow (2014) highlight current issues and propose ways in which such issues can be resolved using new principles of thinking and by understanding the current scenario. While Dubrow focused on political issues and public administration concepts, Johnson examined decision making through a model that applies to both business and political managers. Both theories borrow heavily from other writers and scholars making them worthy of reference in capturing modern day learning concepts for a society (Meiksins, 1995).

A society, like an organism, consists of various organs that conduct functions and operations to ensure the stability and survival of the society or organism. Society can be viewed as an organization on its surface while it is a living organism at its core (Eide & Showalter, 2011). Durkheim (1984) proposed socio economics development culture, politics, and economics as three core activities of an organization's DNA. An organization focus point is concentrated by an external power, whereas an organism can be a self-directed integral component (Eide & Showalter, 2011). Cultures consist of billions of families whose wants are met by manufacture in factories supported by an institute of circulation through services and trade (Eide & Showalter, 2011). The educational and cultural needs are also satisfied by several micro units of organizations, such as schools and performing arts. However, there are billions of organized activities that establish the society. These are traditional activities outside the space of centrally organized direction. This means that society is an existing organism like the human body.

When threatened, a nation rises like one man, which is known to man in a revolution (Eide & Showalter, 2011). To maximize the effect of the democratization process, all these interrelated concepts should be well-managed. Polarities of democracy describes the structure of the society as an interconnection of major frameworks that help in creating stability and ensuring survival (Benet, 2013). However, the polarities of democracy theory present contemporary society as a compact structure with various frameworks that are structured to function in unison for the entire full development of the society in all the critical aspects of life.

Each community has a unique structure and specific functions. In his polarities of democracy theory, Benet (2013) explained that environments are equally significant in the society and each is structured in such a way that its functions aim to strengthen and help in the overall survival, development, and growth of the entire society. Hence, using participation and representation will also account for independent variables bias, such as democracy of education equality. However, the environment tends to be interconnected, and all have a common goal of creating efficient functioning and integration of the entire societal structure.

Education as an institution is a vital part of the whole structure and functioning of the society (Benet, 2013). Education has a structure and policies that govern its functioning. The functioning of the educational institution mainly aims at empowering individuals to provide the community with an intellectual workforce. Education as a social institution has a relationship with all other institutions and communities. The workforce provided by education institutions enables active economic development, intellectual governing of the society, understanding of religious virtues and behaviors,

and effective family development and integration. The polarities of democracy, therefore, explains the various social institutions together with their unique polarity and features and how they integrate to work together for overall society development, growth, survival and stability (Benet, 2013; Johnson, 1998). Because of education functioning, other institutions are empowered to conduct their functions resulting in an elite, economically stable, and integrated society (Benet, 2013; Johnson, 1998).

For a long time, democracy has been touted as the ultimate solution to most of the problems facing mankind, and scholars have said it is the best system of governing the world. Those who vouch for democracy as the ultimate system of running the affairs of the world are full of praise for the system (Mandelbaum, 2007). Fukuyama, & Pierre, (1992) asserted that democracy is the form of administration for which humanity itself should strive, and that when it is applied well, it has the potential of transforming previously docile and dormant societies into vibrant economic powers. Apple (2015) proposed a system in which both democracy and socialism are incorporated. Postmodernists, on the other hand, believed that theirs is the most advanced and abstract form of democracy, such as education and economics (Quinnan, 1997). The argument that democracy is good for a society is not a new development, but it has been proposed by scholars from as early as the twentieth century.

According to Durkheim (1984), democracy is the ideal form of government, as it not only benefits the society but individuals raised and educated in free societies grow into better people than those brought up in dictatorial set ups (Barnes, 1966). Durkheim argued that while human beings are naturally egoistic, the collective good of the entire society is the force that eventually creates order and maintains a level of equality in the

society (Barnes, 1966). Barnes (1966) views of individuals are usually varied and mainly selfish, and the only way a society can move forward is through establishing what he refers to as *collective consciousness*. Consequently, he proposes the need to have the majority view have its way in the same way current democratic institutions are supposed to work. Without establishing this collective consciousness, Durkheim asserted that the society cannot work in harmony, and what is referred to as a society is simply a collection of individuals, each with varied opinions and suggestions on how things should be done (Barnes, 1966). Therefore, the only way to bring some order is to establish what is good for the majority.

Another scholar who argues very strongly against the powerful, authoritarian regimes that were in control at that time was German sociologist Karl Emil Maximilian. Maximilian asserted that properly organized parliamentary democracy is the only way in which society can move forward (Waters, & Waters, 2015). The author championed the right of every individual to be allowed some freedom if such freedoms do not harm others. Maximilian was among the first people to demand *individual rights* (Waters, & Waters, 2015). In addition, Weber singled out the *interests of the society*, such as health care and education, which are also interests of the individual as much as they are interests of the community (Waters, & Waters, 2015). These forces play a significant role in making the society a better place just as they make individuals better human beings (Waters, & Waters, 2015). Every society should therefore struggle to strengthen these interests if it hopes to achieve development.

Karwowski (2001) listed education, security, community health, and social security as the greatest interests of a community. If a community intends to advance in

human welfare, the author argued, it must adequately address these issues and, notably, the community must make them widely accessible to much of its citizens, especially the poor. Junker, Gassert, Mausbach, and Morris (2004) drew parallels between some of the most developed countries of the world and their investment in education and democracy. The authors argued that after the Second World War, the United States decided to help develop the democratic aspect of some countries, and those that cooperated, such as Germany, have realized massive development (Junker et al., 2004). To help develop Germany, the United States invested in education, which was done through establishment of an exchange program between the two countries. This resulted in many German students being educated in the United States, and in a short period, Germany had a strong labor force that was cultivated with the education and democratic values of the United States (Junker et al., 2004).

Polarities of democracy is a result of the seminal thinking of many scholars and political activists who felt that there was a need to change the way society was being governed and run (Benet, 2013). There was a need to pursue positive change and, consequently, some people took it upon themselves to push such change, and their thinking led to the coining of this theory (Benet, 2013). The approach taken by these proponents was of a confrontational nature; the forces that they perceived to be opposed to the changes they sought put up a lot of resistance to change the initiative (Benet, 2013). Benet (2013) polarities of democracy sought to put in an organized manner such efforts and argued that the aim of any theory is to help increase human emancipation and to lead to an increase in the freedoms a human being enjoys. (Dewey, 2012) argued that the public has various problems and that these must be confronted by the public, though

this must be led by individuals. Dewey (2012) distinguished between the state and the public, stating that the state is represented by such people as leaders and elected lawmakers while the public refers to common citizens (Dewey, 2012). Dewey (2012) argued that a public only comes into being when certain common needs force the people to come together for their common good (Dewey, 2012). A society is thus born when people realize that they can only deal with their problems as groups and not as separate entities. However, there are government extreme conservative forces that will always try to limit the public access to the liberties that they seek, and Dewey identified powerful corporate entities as some of the forces that will always stand in the way of a public that seeks better operating environments (Dewey, 2012). To strengthen democracy, there will be a need to increase public communication through interaction, and, in so doing, a common ground between the different players in a cause will be found.

In general, Freire (2012) concurred with Dewey, stating that many of the common people around the world are oppressed, and it is upon them to fight this oppression. Freire (2012) suggested that one of the strategies to achieve freedom from this oppression is education for the masses. Freire taught poor Brazilian adults to learn how to read and write, an asset he asserted as very powerful regarding the fight for basic freedoms (Freire, 2012). Freire (2012) distinguished between the oppressor and the oppressed while highlighting the plight of the oppressed. The oppressor takes various forms, including employers, rulers, the rich, and the colonizers, and they are always fighting to ensure that the oppressed do not overcome oppression in any way (Freire, 2012). Freire concluded that freedom will never be given as a gift, but must be something for which one fights (Freire, 2012). One of his most outstanding arguments was that the

students should be taken as active partners in the education initiative, unlike in the previous learning environments in which students were taken to be naive individuals without any contribution to the learning process. An education process that treats the learners with respect would result in individuals who value the society in return, unlike one in which they are treated with contempt (Freire, 2012). Lastly, education scholars have advocated for increased respect for both students and their teachers, arguing that they had greatly been dehumanized before.

Many studies have applied both statistical and theoretical approaches to assess the effects of inequality in education. In fact, some researchers have specifically analyzed the effects of education on an individual's earning potential in relation to the national distribution of wealth and earnings (Araujo et al., 2004). Although research into educational inequality has raised concerns for planners and policymakers, few transnational comparisons have been carried out relating to educational outcomes (Araujo et al., 2004). In addition, in many studies, the empirical perspective was concrete. I will explain comprehensive review of democracy and its polarities before reviewing the progress in the education sector in the United States.

### **Independent Variables for Polarities of Democracy**

The primary goal of K-12 public education in a democratic society is to turn students into responsible citizens. The DOE (2016) argued that education is the key that opens every door of success for every child (Cavanagh, 2012). Education does not limit chances of success but can only widen the sphere to ensure every citizen has the opportunity required for self-development as well as the development of the nation (Cavanagh, 2012). For instance, education trains doctors and medical staff to develop

skills needed to treat people and to eliminate diseases in the society. If doctors and medical staff experts were not there, perhaps diseases would have the opportunity to destroy humanity. Conversely, if diseases can run their course and destroy the weak, the disease would also wipe itself out.

In addition to doctors, scholars believe studying in the science, technology, engineer, and math (STEM) are enabling learners to play a pivotal role in the enhancement of technology, as well as in constructing a strong and efficient structure in which people can live (Cavanagh, 2012). In fact, STEM education is the reason why the world has been turned into a global village (Cavanagh, 2012). For example, a manager no longer needs to travel all the way to China to meet suppliers when they can exchange documents over the internet. Education develops the world, but the world has developed education to a point where it is no longer serving its primary purpose in the United States due to influence by neoliberal and conservative policies. The founding fathers of the United States believed that the purpose of primary education was to bring citizens to the understanding of what it means to be a human being and a productive member of society (Sloan, 2012). Also, they believed that a productive citizen would serve the social needs of society, contribute to the economy, create an effective work force, and develop the intellect (Sloan, 2012).

If one posed the question of the purpose of education to U.S. university administrators, educators, parents, students, policymakers, community members, and entrepreneurs, the answers would vary (Sloan, 2012). The primary purpose of education has focused on preparing students to live in democracy, integrating immigrants into society, preparing workers for the industrialized twentieth century, and teaching religious

doctrine. Education institutions in the twenty-first century are preparing learners for the future in a society that is rapidly being alternated to develop skilled adults to be lifelong learners, to develop emotionally healthy adults who can engage in meaningful relationships, and to compete in a global economy society (Sloan, 2012).

Today in the United States neoliberal and conservative policies have given corporate bodies a wonderful opportunity to turn education into a place where they process employees to be obedient to the corporate bodies' policies and to have limited rights to change the scenario (Sloan, 2012). Lastly, education in urban communities seem to be failing in its purpose to produce citizens who are productive and responsible in a democratic society (Sloan, 2012). Meiksins (1995) proposed that education cannot produce responsible citizens in a democratic society if the education system does not train students in the knowledge, understanding, and commitment needed values that are necessary to sustain a democratic society. If the society expects students to know, understand, and commit themselves to values that promote democracy, then the education system should be realigned to include policies or strategies which enhance commitment to democracy.

Furthermore, in most cases, teachers merely follow the directions that are provided in the circulars supplied to every school by the government. The government is responsible for regulating the improvement of education because of the policies that are used by the management to instruct teachers on how to conduct themselves. Chicosky (2015) argued that neoliberal policies have interfered with the primary goal of education through the creation of policies and strategies such as the charter schools that are treated differently from other schools. Neoliberal policies have created a scenario in which

schools are managed using different policies, thereby producing students who have conflicting understanding about democracy and values needed to sustain democracy. For education to be restored to its primary purpose, the government should embrace transformative strategies that are inclined towards improving the level of democracy. Hence, the purpose of polarities of democracy is to ensure the primary role of public education in urban communities, which is to turn students into responsible citizens in a democratic society. The polarity of democracy has ten elements which keeps democracy in check and ensures people live in an affluent way where resources are distributed equally and human rights are fully protected (Meiksins, 2015). The two tenants of polarities of democracy I focused on in this research are designed in such a way that they work towards increasing the effectiveness of democracy in the society. The following analysis provides an explanation of the proxy variables and how the polarities of democracy can be used effectively positively to minimize inequality in education in the United States.

### **Proxy Variables**

The five independent variables served as proxy variables for participation and representation. These two proxy were immeasurable for this research. However, for the two proxy variables to have validity they must be close in correlation with the five independent variables. The correlation must be positive or negative, but does not have to be linear (Gelman, 2008).

In the United States, freedom is guaranteed by the constitution through the Bill of Rights, which allows citizens to access public resources, express themselves, assemble, and demonstrate peacefully without interfering with the rights of another individual

(Meiksins, 1995). In Germany, the education system is controlled by the federal government, which also passes guidelines to the state governments on how to run schools under their jurisdiction. The Germany federal government distributes resources to the state governments depending on the population of each state (Meiksins, 1995). There are some disparities between Germany and the United States regarding the independent variables (Meiksins, 1995). It is the right of United States citizens to participate in activities that are targeted towards improving the quality of their education (Meiksins, 1995). It is the right of the citizens who are eligible to participate in general elections to elect leaders who will represent their interests in Congress (Meiksins, 1995). In the government of the United States, participation and representation are based on the principals of free market, federal government role, and self-worth policies (Meiksins, 1995). The polarities of participation and representation require the government to develop policies that ensure representation rights are protected always from any kind of violation (Meiksins, 1995). The government has the responsibility of serving the interests of its people and protecting their rights. Participation and representation play a pivotal role in citizen's having an equality education (Meiksins, 1995).

According to Meiksins, (1995) asserted that in Germany, taxation representation is equally distributed from the federal to the lander. Unlike in the United Sates, taxation representation is not equally distributed in relation to funding education. However, the government ensures every parent respects the participation and representation rights of their children by taking them to school. While in school, the government ensures children are taught by highly qualified teachers and are not treated to insufficient content especially if one is an immigrant or gender (Meiksins, 1995). The United States

government also ensures every child goes to school by setting up education facilities in the urban and rural communities to make them easily accessible to children from those communities. However, the government should work on minimizing the cost of higher education to give children from affluent communities a better chance of completing their education.

Property taxes funding rate for schools are normally levied on properties by governing authorities, and in some cases, the tax is levied on buildings, land, and mobile properties such as machines and cars (Larrive & Lee, 2015). Polarity in property tax funding rate for schools is presented based on a logical aspect of whom should be taxed. For instance, if a property is left unattended for a period, the law requires that one pays tax for the same land, which brings many questions about the justice system (Larrive & Lee, 2015). What makes it quite absurd is the fact that there are no returns being generated from the property, but the law insists that it should be taxed (Larrive & Lee, 2015).

Property tax funding rates for schools vary in Germany and the United States. The property tax index for Germany is higher by 11% than that of the United States (Larrive & Lee, 2015). This data clearly shows how polarities are managed differently in these countries, which explains the difference in statistics. The property tax funding rate for school's revenue of the United States is higher as a percentage compared to that of Germany. It would make sense if it was amended so that the authorities provide the required assistance to the owners in a financial capacity so that the returns derived from such an investment can be taxed. The aim of taxes is to improve the welfare of citizens, whereas property tax does not improve the livelihood tax payers for education. (Larrive

& Lee, 2015). The polarity, in this case, arises because there is no way to solve a problem on why a given property, such as idle land, is taxed by authorities but does not enhance the quality of teachers.

Participation and representation instruction that is provided in a classroom setting is a very important to developing a student into a responsible citizen. Therefore, for this instruction to be meaningful in a student's learning process, teachers should adjust and come up with new ways in teaching that address the needs of students. In addition, there should be a better way of understanding of why teachers use particular teaching methods. Academic performance such as high school graduate rate, enrollment rate, and youth literacy rate the curricular text is one of the critical polarities of participation and representation that emanates from the teaching process. Democratic systems have put in place a curriculum that provides guidelines to what the teacher is supposed to teach.

Participation and representation also ensures that every school has sufficient resources to support learning, including teacher quality meeting standards such as academic performance and teacher tenure, which was noted in the lawsuit *Vergara v. State of California* (Dubrow, 2014). Every child deserves the right to free education. In the funding of properties, the United States government ensures that every school receives equal funding to assist in the purchase and establishment of facilities needed to facilitate education (Dubrow, 2014).

Finally, the performance of students is not left entirely in the hands of the government. This is because it requires a common effort from the parents, students, and teachers (Parker, 2003). This is the reason why many K-12 public schools will not agree to be liable for a student who is underachieving (Parker, 2003). Lastly, the quality of

education in these two countries can be modeled in such a way that students in their early childhood are encouraged and given curriculum that will make them value the importance of education (Parker, 2003). This is by following the instructions provided in a classroom setting. The polarities bring about tension in the form of responsibility, professional culture, and a more proactive focus in the learning process.

### **Educational Inequalities in the United States**

Public policy issues surrounding educational inequality have been in the political forefront only a few decades since the beginning of the American educational system (Zirkel & Cantor, 2004). The United States GI Bill of 1944 represents an early piece of federal legislation aimed at remediating educational inequalities, which has had a lasting impact for American citizen (Adamczyk, n,d). The GI Bill was a great source of opportunity for veterans as it provided funding to go to college or to obtain training to enter the workforce. The GI Bill also contributed to economic and social justice by making higher education affordable to less wealthy citizens (Adamczyk, n,d)). However, it has still been problematic as most GIs who have benefitted from the bill were men, rather than women or underrepresented minorities. In fact, as Merryman (1998) pointed out, although female Air Force service pilots flew and trained gunnery recruits in WWII, but were not recognized as military personnel, and, therefore, were not eligible for veterans' benefits. African American veterans also struggled to secure their right to educational benefits. Herbold (1994) wrote, "Staffed almost entirely by whites empowered to deny or grant the claims of black GIs, the Veterans Administration (VA) became a formidable foe to many blacks in search of an education" (p. 106). In addition, this policy, meant to open American schools to more citizens, did not grant the schools

themselves autonomy. With the VA acting as a gatekeeper to education, the schools' only authority within this policy was to admit and educate the GIs who came through their doors. This type of injustice changed the way civil rights were viewed.

In the 1952 presidential elections, education was a key issue in Eisenhower's platform; this was a bold move given that, in 1950, the members of the National Association for the Advancement of Colored People (NAACP), Topeka, Kansas, chapter, challenged the *separate but equal* doctrine governing public education (Munger & Fenno, 1962, p. 193). Some authors have suggested that Eisenhower's presidency marked the beginning of an era in which the politics of the civil rights movement could no longer be avoided by the federal government (Munger & Fenno, 1962). The NAACP challenge soon found its way into the United States Supreme Court docket with the *Brown v. The Board of Education of Topeka* (1954) (Zirkel & Cantor, 2004). This case resulted in a four-year battle that ended with the unanimous Supreme Court decision to desegregate all schools (Zirkel & Cantor, 2004). The decision met with rejection and an escalation of violence at some schools, the recently elected President Eisenhower (with the help of the National Guard) forcefully executed the Court's decision (Zirkel & Cantor, 2004). This highlights the potential for conflict between the macro- and micro-levels of education policy. While federal policy mandated desegregation, district policy mandated segregation. This landmark U.S. Supreme Court ruling would set off a socially tense environment of political resistance that would need to address both civil rights and the future of education (Zirkel & Cantor, 2004). Zirkel & Cantor, (2004) agreed with President Johnson that, in response to this climate, citizens, regardless of race, should be allowed their constitutional rights and took considerable steps at the federal level to

secure those rights, including educational rights, for all Americans. Thus, the unprecedented efforts of President Eisenhower set the foundation for President Johnson to continue to put equal education at center stage, despite the racial undertones of the issue (Zirkel & Cantor, 2004).

### **Historical Overview of United States Policies to Combat Educational Inequality**

**Civil Rights Act of 1964.** Rosenberg (2004) suggested that President Johnson work with Congress to pass the *Civil Rights Act of 1964*, thus making the unequal application of the law based on race illegal. The act ensured that education was to be free of racial discrimination, and it further emphasized the need for desegregation.

Monumental for its time, the Civil Rights Act faced many criticisms before and after its passage (Rosenberg, 2004). President Johnson had an approval rating of 80% in March 1964—the year the Civil Rights Act was passed (Rosenberg, 2004). President Kennedy's popularity, before and after his death, was among the highest for any president and garnered enough support to enable Johnson to advance this controversial, yet significant, legislation.

Another key policy affecting education was the Elementary and Secondary Education Act (ESEA) of 1965. According to Thomas and Brady (2005), the mission of the ESEA was to provide equitable educational opportunities to the disadvantaged. The legislation provided economic resources to enhance the learning of disadvantaged students. The ESEA remains the principal financial source of federal support for educationally-vulnerable schoolchildren (Thomas & Brady, 2005). However, since its creation, the ESEA has been revisited nearly every five years. In 2001, it was revised to its present form, the No Child Left Behind Act and came back to present form as ESEA

(NCLB, 2001; Thomas & Brady, 2005). This was the first piece of major educational legislation to highlight not only the need to address inequalities in education, but also the role of special interest groups, such as the National Education Association, and how those groups play a part in the development and implementation of education policy (Thomas & Brady, 2005). With the Civil Rights Act being enacted (1957 and 1964), the politics surrounding race had been mitigated briefly after the passage of these pieces of legislation (Rosenberg, 2004). Nevertheless, with the simple extension of ESEA failing to pass in 1969, and subsequently passing in 1970, political tensions increased as President Nixon sought to tackle the school busing issue (Berenyi, 2008). The administration took a monumental step forward but continued to be confronted with issues of segregation amongst race and ability.

**1972-1975 legislative acts.** The Nixon presidency spent considerable energy promoting the Equal Educational Opportunities Act (1974), which prohibited the segregation of students based on race, color, and national origin (Berenyi, 2008). The act sought to restrict the busing of children to achieve racial balance and proposed not to deny the assignment of a child to a neighborhood school (Berenyi, 2008). Eventually, the act passed in 1974 but not before other key issues related to education (Berenyi, 2008). While the legislative language seemingly sought to promote equality and racial balance, the act did not deal with issues of disparity between different communities and allowed significant segregation to continue.

The passage of Public Law 94-142 and the Education of All Handicapped Children Act (1975) authorized institutions to receive federal funding to develop and implement policies to provide children with disabilities free and appropriate public

education. The Nixon presidency also pursued Title IX legislation in 1972 and the Rehabilitation Act of 1973 (Berenyi, 2008). Even though the 1964 Civil Rights Act ended discrimination based on color, this legislation took those ideas a step further by requiring all school-based programs that received federal funding not to differentiate between students based on national origin, color, or race (Rosenberg, 2004).

Significant changes took place in 1975 regarding the U.S. education policies for children with disabilities (Berenyi, 2008). All of them were aimed at providing equity of educational access and outcomes for these children. These changes included major improvements in the mainstreaming and inclusion of students with disabilities (Berenyi, 2008). While the policy was geared toward fostering access, the 1970s-ideology seemed for students with disabilities to want the nation's education system to take a different philosophical approach (Berenyi, 2008). Education would now take a change in its approach to educating United States children.

Of note, one state that did change its approach towards restructuring its education system was Massachusetts who currently is ranked first in education. Berenyi, (2008) pointed out that, during the 1970s, there was a shift away from the philosophical foundation that viewed learning as a means for enriching the total life experience to a view that placed far more emphasis upon education as a *value-added experience* (Berenyi, 2008). The *value* of education is often associated with enhanced socioeconomic mobility, social-cultural attainment, and with the opportunity to obtain a myriad of careers (Berenyi, 2008). By emphasizing this type of philosophy, constituents, educational administrators, and politicians have added pressure to deliver the promises associated with value, as well as a transparent accountability (Berenyi, 2008). Moreover,

as the national economy suffered and greater cries of tax relief ensued, it was inevitable that the Reagan presidency would need to make drastic changes to attempt to provide some amount of relief for constituents.

**1981 Title I Act.** According to Tillman and Scheurich (2013), the beginning of the Reagan Presidency, in 1980, was a crucial moment in the policy of education in the United States. The actions of the administration launched changes which involved the federal government playing less of a vital role in providing both educational services and public policy legislation, particularly as it pertained to education (Tillman, & Scheurich, 2013). Moreover, these changes were noted in 1981 when Title I was deregulated by the Education Consolidation and Improvement Act. State and local governments were now called upon to fund education (Tillman, & Scheurich, 2013). By 1983, out of concern for a perceived failing educational system in the United States, the National Commission on Excellence in Education was motivated to devise and publish the landmark *A Nation at Risk* report (Tillman, & Scheurich, 2013). There was a dire necessity to not only restructure and revise the training of teachers in the United States but also the standards for higher education (Tillman, & Scheurich, 2013). Subsequently, these new standards had a profound effect as well as positive implications for the future educational performance of the nation (Tillman, & Scheurich, 2013). Educational standards continued in 1988 and 1989 with President George H. W. Bush placing high on his priority list this point on contingency (Tillman, & Scheurich, 2013). In 1989, the President and state governors held an educational summit. The objective of the summit was to create national goals for education and raise student academic achievement (Tillman, & Scheurich, 2013). Furthermore, this shifted the paradigm toward

prioritizing education and creating goals that would shape the Clinton Presidency (Fritzberg, 2001). Education became critical on Clinton's political agenda and marked the continued need for inclusive legislation and policymaking.

**The 2000 Goals Initiative.** Clinton was well-known for his education policy called Goals 2000 initiative (Fritzberg, 2001). The aim for 2000 was the Educate America Act of 1994 (Fritzberg, 2001). The legislation provided resources to states and communities to ensure that all students reached their full potential. Symbolic of the standardization movement, this act moved the country towards a standardized view of education in which the federal government played a more pronounced role (Fritzberg, 2001). Thus, a federal effort towards improving student learning through a long-term and broad-based effort promoted both coherent and coordinated improvements in the system of education throughout the nation at the state and local levels *Educate America Act, 1994* (Fritzberg, 2001). This act encouraged states to develop standards that articulated what each child in the state can do. In addition, it also supported state- and district-wide implementation of school improvement plans that incorporate those standards. The act called upon states to accomplish these tasks through competitive statewide grants *Educate America Act, 1994* (Fritzberg, 2001). The Republican Party was opposed to the Act, Title III and considered it as an intrusion.

### **The Structure of Public Education-Residential Segregation**

The United States educational system does not provide opportunities directly to individuals, but instead first through districts, then schools, and finally through classrooms and/or to groups of students. The economic segregation of the communities in which students live and attend school can have the effect of channeling students into

social class outcomes (Colclough & Beck, 1986). The American public school system is primarily established along residential lines, which means students generally attend their neighborhood schools; however, race and class usually segregate neighborhoods (Colclough & Beck, 1986). Colclough and Beck (1986) described three major demographic trends that have had a considerable impact upon education: an absolute decline in central city population; the poor, black and less-educated remaining in central cities; and the higher income, highly educated whites moving to the suburbs. This trend has remained constant in recent years, and the movement of more minorities to the suburbs has not changed these patterns nor their consequences for education inequalities (Colclough & Beck, 1986).

Some results of these trends for schools include economic differences and the stigmatizing of some schools. Residential segregation along race and class lines creates a differentiated school system with schools reflecting the homogeneity of the areas in which they are located. United with organizational selection and differentiation within schools (ability and curriculum tracking), small initial differences in achievement become accentuated over time (Colclough & Beck, 1986). This produces a cumulative schooling experience that results in a greater dependency between social origins and academic performance with each additional year in the system (Colclough & Beck, 1986). Studies on the effects of race and class structure provide data consistent with a pattern of mechanisms operating independently from the education system (Colclough & Beck, 1986). Thus, further data suggest that the race and class segregation of school communities is another mechanism causing class inequalities that continue from generation to generation (Colclough & Beck, 1986). This study will thus fill the gap in

knowledge by comparing Germany to the United States specifically the State of Massachusetts.

### **Overview of Germany Exemplar Policies to Combat Educational Inequality**

Germany has a policy of segregating children in different schools and colleges using an early tracking system from the elementary level. Secondary school education is based on a three-tier school system (Topping, 2011). Even though there are some comprehensive schools, known as *Gesamtschule*, most children stream into either the *Gymnasium*, which provides a route to the university; the *Realschule*, where learners undertake mid-level vocational studies; or the *Hauptschule*, for a basic secondary education. Selection to these schools occurs at the end of primary education (Topping, 2011). Unfortunately, disabled children or children from poor backgrounds or immigrant families may find it difficult to adjust for the five or six years taken at the elementary stage to register better marks (Topping, 2011). Thus, they often end up in lower secondary schools even though they may excel in stronger programs. Many students fail, not because they have low abilities but because of extraneous outcomes. Children from wealthy families tend to adjust to primary school and register better results. Thus, they can enroll in the best schools in the country, while those from poor urban families' grapple with enrollment in low standard schools (Topping, 2011).

The system described above mainly preserves the status quo, in which the affluent in society have the best resource opportunities in education, while the poor, or otherwise marginalized, must contend with limited educational opportunities and low standards of education (Topping, 2011). There are indications that the middle class in Germany prefers that things remain this way to favor their children (Topping, 2011). Because of

this, inequality is rampant in the country. Children from affluent backgrounds are four times more likely to attend *Gymnasium* than children with similar grades from a working-class background (Topping, 2011). Furthermore, according to Kultusministerkonferenz (KMK), the federal educational body, children from immigrant families attend the *Hauptschule* for a basic secondary education at a rate double that of German-born children, even if they belong to the same socioeconomic class. The system thus discriminates against children from poor backgrounds, the disabled, and those from immigrant families (Topping, 2011). The three-tier system and early student selection promote a social inequality that affects future opportunities pursued by the learner. The country could reduce inequality, however, by applying a tracking system at a later stage in the learning process (Topping, 2011). For instance, children could be assessed at the end of secondary education, when it is possible to make better-informed decisions about children's abilities. In this way, the system becomes more accommodative of the learning needs of all children (Topping, 2011).

The prevailing situation in Germany is quite different from that of the United States. K-12 school funding schema challenges the United States. In many states, the funding process is discriminatory. A report by the Schott Foundation for Public Education, entitled *A Rotting Apple: Education Redlining in New York City* (2015), revealed that schools in poorer communities receive fewer resources and employ less experienced teachers than those located in affluent communities (Topping, 2011). Schools in the most economically advantaged neighborhoods are funded very well, and have the highest proportion of experienced teachers (Topping, 2011). The practice promotes educational inequality. Such trends predispose children to certain educational

outcomes that later influence their lives. The funding gap deprives some students in less funded schools from the platform they need to enhance their abilities, knowledge, and skills. In the end, this leads to disparity in the achievements of students from the two school types (Cordes & Miller, 2005). Therefore, society denies less privileged children the opportunity to improve their socioeconomic status.

This study focused on K-12 primary education age groups 15-18. However, it is worth noting that a university education is even farther out of bounds for students from less affluent backgrounds. In recent years, the tuition fees for the country's highest quality universities have increased dramatically, in part because of reduced state funding (Cordes & Miller, 2005). Universities have also prioritized admitting international students with the capacity to pay higher tuition than in-state students, which has widened the gap between marginalized students and educational attainment (Cordes & Miller, 2005). In this scenario, inequality only comes about because one is not able to pay tuition fees. Tuition fees have been on the rise in recent years. This raises the bar for poor students who find it difficult to pay tuition (Cordes & Miller, 2005). Further research can be conducted after post-doctoral degree regarding inequality in American's university tuition fees.

### **Corollary Economic Perspectives**

The OECD, (2015) published analysis indicated that monetary returns on education are evident both in the United States and Germany. In the United States, there is a causal relationship between income and the independent variables of property tax funding rate, teacher quality, high school graduation rate, enrollment rate, and youth literacy rate, particularly in the state of Massachusetts. Education is a determinant of

income levels. In both countries, employment discrimination is closely linked to education and skills (OECD, 2015). From the perspective of the labor market, highly educated people may have better jobs and better incomes than less educated individuals. Such jobs may also provide health insurance and offer safer work conditions. Individuals with a stronger financial position have better and equal funding for all schools, and higher academic performance outcome (OECD, 2015). Such individuals also tend to be employed in the technology-based, service sectors, where there are fewer employment opportunities for those with less education (OECD, 2015). However, there are increasing opportunities for educated individuals to provide quality services for increased wages (OECD, 2015).

The National Center for Education Statistics conducted a study in 2014a, regarding young adults ages ranging from 25-34 who worked full time (NCES, 2014a). The study showed a proportion of young adults who worked full time all the year around typically higher for those with higher levels of educational achievement (NCES, 2014a). The authors found that 72% of adults with a degree worked full time, for all of 2013, compared to 62% of the adults who completed high school, including those who had high school diploma or the equivalent (NCES, 2014a).

Although income cannot completely account for property tax funding rate, teacher quality, high school graduation rate, enrollment rate, and youth literacy rate, it does play a significant role in influencing one's ability to achieve a quality education (Cordes & Miller, 2005). The existing difference between educational groups helps to reinforce the point that the under-educated lack the financial ability to access quality education (Cordes & Miller, 2005).

### **Risk Aversion Perspective**

Scholarly researchers have indicated that education could affect health, finance and academics through risk aversion. The empirical relationship between risk aversion and education points to the fact that people with high levels of education take more risks, which means that they also may engage in risky behaviors that adversely impact their academics performance (Rivlin & McClellan, 2014). This is true in both Germany and the United States. The well-educated are willing to take the risk of investing in their education, which enhances their academic performance (Rivlin & McClellan, 2014). In relation to this, as stated previous in this chapter several studies indicate that people who pursue higher education live longer than those with less education. According to the OECD (2015) study, at 50 years of age, men in a high education group can live 5.6 years longer than men in a low education group. This illustrates that the burden of education inequality is greater for those in the less affluent working class bracket (Rivlin & McClellan, 2014). For every additional year of education, there is an increased probability of about 10% of individuals seeking specialist consultation (Rivlin & McClellan, 2014).

Value for the future is a critical issue in the lives of American and German citizens. Most people have a desire to live a longer life. Practically, however, this is not always possible. Various factors contribute to how one perceives life including better income, health insurance, and other resource outcomes such as education, which may affect individuals' incentives to invest in their health and longevity (Rivlin & McClellan, 2014). Since education provides people with a better future by giving them access to better income, educated people may be happier and have a better economic enhances an

individual's future lifetime utility (Rivlin & McClellan, 2014). From the OECD (2015) study, based on this premise, better-educated individuals are at a higher likelihood of investing in the protection of their futures. This is diametrically opposed to people earning lower incomes who, unfortunately, end up placing less value on longevity and engaging in uncertain behaviors (Rivlin & McClellan, 2014). Lastly, in such situations, as people earn higher incomes, they potentially become willing seek quality education.

### **Prestige and Power of Democracy**

Barbalet (2015) proposed that education gives a person a wide array of serviceable resources that include prestige and power, which become vital in driving individuals to embrace school funding and academic achievement initiatives. German sociologist Max Weber created the Three Class Systems with class and party as separate principle types (Barbalet, 2015). Weber established a multidimensional method to social stratification, which reflects the interplay among prestige, power, and wealth (Barbalet, 2015).

Prestige and power are critical life elements in Germany and the United States (Barbalet, 2015). With power, an individual has enhanced, equal school funding distribution and higher academic performance. Prestige prompts a person to want to achieve higher, and to enable other beneficial social conditions considered advantageous to well-educated individuals (Barbalet, 2015).

Usually, those in lower education groups lack the prestige and power that come with higher career accomplishments (Barbalet, 2015). Prestige and power also enhance social networks. According to Barbelet (2015) social support systems, people who are more educated develop larger social networks that enable them to develop better

platforms for physical, financial, and emotional support. This has a causal impact on their health, quality of a paying job, and being able to compete globally.

According to Waters, & Waters (2015) in order to possess power, it must come from the individual's aptitude to manage numerous social capital. Equal distribution is the concept that propels and controls the ideal of exchanging assets from the sphere of wealth to the sphere of resources, which provides the capitalist purpose and the ability to distribute directly and/or indirectly in order to have a return on educational quality (Waters, & Waters, 2015). Friends and families can provide advice that enables one to invest in health promotion, public school funding, and academic performance initiatives. Through information sharing, it is much easier for individuals to understand the importance of remaining educated. Potelly, this could work well in promoting longevity. Lastly, in both the United States and Germany, education remains an integral component of socioeconomic status. Therefore, the quality of a person's education has a significant influence on his or her overall academic performance (Kozol, 2012). It shapes opportunity by providing knowledge and skills that allow individuals to gain ready access not only to good jobs, but also to information and resources for good health.

### **Restated Key Variables and Concepts**

This chapter presented a comprehensive review of the current literature that outlines studies connected to the chosen secondary methodology and interest method that are compatible with the scope of this study. The education systems of Germany and the United States are framed by the values of their societies and their ideas about education. Thus, these values provide a symbolic measure of the social culture boundaries that

surround students and their differences in access to opportunities and resources within the curriculum of the school system (Powell, 2009).

As research evolves and policies are implemented, educational inequalities continue to emerge in the classification system. Powell (2009) proposed these systems affect the growing shifts in the values of education and the state of the society Germany and the United States utilize different models in how they identify, categorize, and subsequently provide educational support. The state of Germany's welfare is primarily contingent upon family, social insurance, redistribution, and integration (Powell, 2009). Schooling in Germany serves many purposes including enhancing one's life while simultaneously sustaining differences in status to build homogenous groups. A student's school placement is heavily dependent on their previous academic achievement and thereby lends support for the student to develop their *natural* talent or aptitude regardless of the level of education (Lenhardt, 2005). German education incorporates the categorization of students into groups based on the type of secondary school they attend. They are not designated and separated to receive additional educational support. Conversely, many United States schools implement *gifted, talented or exceptional classes* (Lenhardt, 2005, p. 27). Moreover, German students are characterized less by their individual persona and more on the type of school that they attend, which is strongly influenced by the evaluations and recommendations of teachers (Lenhardt, 2005, p. 27).

Several educational scholars, such as Fuchs, Krueger, & Sommer, (2010) provide insight into the educational systems of the United States and Germany. After World War II, Germany employed a democratic order that resembles the liberal and individualistic ethos of America; although America itself has adopted minimal to no change over the

past two centuries (Karp, Banducci, & Bowler, 2003). The United States prides itself more on the system of *competitive individualism* in which successes or failures are based on one's own meritorious performance (Karp et al., 2003, p. 272). This idealization of individuals having opportunities has led to one of the world's best funded-school systems (Karp et al., 2003). The United States makes a concerted effort to provide both primary and secondary education, and even tertiary education for some groups such as the military, including its veterans. Karp et al. (2003) asserted compared to Germany, the United States has more of a financial investment in education as the federal government has played an integral role in the mandate for increased numbers of both special and compensatory educational programs, such as Head Start, Start Making a Reader Today (SMART), and Special Education Program (SEP).

The foundation for government spending on education was laid in the period between 1850 and 1920, in which the schooling laws that govern and guide America's public schools were enacted (Karp et al., 2003). It is one of the most inclusive educational entities in the world as it welcomes students from varying walks of life regardless of class, origin, heritage, or religious affiliation (Karp et al., 2003). Nonetheless, this system is not without flaws. Unfortunately, all children are not afforded complete access to a high quality public education, which, in turn, results in a difficult reality for many adults. Historically, education policy-makers, such as Presidents Johnson and Clinton, have strived to reflect integrative values of equal opportunity to attain independence as it pertains to education (Karp et al., 2003). The federal government was subsequently employed to diffuse the conflict and struggle that prevented public school integration solely based on race (Karp et al., 2003). However, this crucial action was not

taken during the timeframe in which this country experienced racial segregation in the South.

The educational goal of the American school system is to maintain the democratic values which Thomas Jefferson felt an educated citizenry needed to maintain the constitutional form of democracy that governs the United States (Coleman, 1968). This was affirmed in the 1954 landmark case of *Brown v. Board of Education*. Nonetheless, issues of integration and diversity continue to be debated as practices focus on either striving to reach student's individual goals or ensuring that collective standards are achieved (Coleman, 1968). This is particularly important in a country in which immigration brings a unique set of cultural, religious, and even linguistic factors to the challenge of providing a public-school system that is comprehensive and maintains the strong belief of equality of educational opportunity (Coleman, 1968). Job opportunities, tuition cost, and exceptionally large investments rest on striving to level the playing field for students. Nonetheless, it is difficult to grapple with the fact that unequal education opportunities are not merely tolerated; they are even celebrated as students receive rankings for their academic achievements or athletic agility (Coleman, 1968). It is important to note however, that those to the left or right of a bell curve deserve additional support. These support services are based on the resources that serve that community.

The United States has experienced a shift in access to healthcare and education equality, especially in the state of Massachusetts. Currently, the focus is seeking to develop personality (Coleman, 1968). Students are now encouraged to explore their potential with the intention that the Massachusetts education system will make it incumbent to not only acknowledge but also compensate to ensure that the best

performance is given. This perspective contradicts the former logic to track students which, taken to the extreme, might lead to all children being individually tutored (Carlson, 1993). The federally mandated Individualized Education Program (IEP), under which every school must develop an IEP for each of its special education students, could be considered by federal law to be making an idealistic solution that outlines legal terms for the IEP (Carlson, 1993).

According to Carlson (1993) Germany and the United States share meritocratic values that are characteristic of Western culture and the premise for capitalism. These values include success amongst individuals and their ability to perform, with social justice as a paramount value. The balance of these values not only has relevance but also is dynamic and fluid and is reflected in the countries' education systems (Carlson, 1993). The education obtained in America is designed to provide equal opportunity to stimulate competition, while German education capitalizes on the historic perspective of attaining status that is appropriate and that can develop vocational training and occupational growth (Carlson, 1993).

Educational inequality results in stigmatization in both countries, and the debate over educational inequality therefore increases in importance. Other factors may be influential in understanding educational inequality. A clear view of the structural conditions of students in the United States and Germany necessitates an analysis of differences and similarities amongst the two sample countries (Powell & Soga, 2010). Hence, this section also presents and analyzes the empirical research in the existing literature around the predictor variables for property tax funding rate for schools, teacher quality, high school graduation rate, enrollment rate, and youth literacy rate.

### **Property Tax Funding Rates for Schools**

Taxes are incurred in many aspects including purchased commodities and the income that individuals earn. For instance, value added taxes are common on retail products while pay as you earn is deducted from the salaries and wages of employees *Re-Education; an Analysis of the Institutional System of the United States*, 1918 (Lincoln Institute, 2014). Corporate tax is deducted from companies while property taxes are charged on property ownership. At an individual level, tax has an impact of reducing the disposable income of the people thereby reducing their expenditures by adjusting their budgets.

The findings of the Lincoln Institute (2014) study indicated that redistributive effect of taxes has a positive impact on the quality of education in the United States (Lincoln Institute, 2014). The Lincoln Institute (2014) study established that most school programs are funded by property taxes in the United States. However, property owners in district schools or community schools do not have many funds as compared to their counterparts in wealthy learning institutions. This means that district schools are poorly funded because in some instances, the district school property owners do not have enough funds to finance school programs as compared to wealthy institutions. Therefore, property taxes contribute to existing differences in the quality of education across regions both in the United States.

### **Teacher Quality**

Student performance varies in the United States. Achievement is regarded as the measure of the quality of education in the United States and is said to be influenced by the level of training and professionalism of the teachers (OECD, 2015). Germany and the

United States have grading systems used to determine student performance at each level of primary education. In Germany, and in the state of Massachusetts, performance and student achievements in high school graduation rate, enrollment rate, family income, and youth literacy rate considered because of the necessity of the subjects' skills in the current global workforce. On the contrary, students' progress in primary education is graded as either fail or pass in the United States primary education structure (Education Week, 2016). Lastly, the structure of K-12 primary education policy is similar in Germany and Massachusetts; the aspects of student achievement, the five independent variables have many related functionalities that result in a strong relationship with education as a social institution. However, it is different between Germany and the United States.

The PISA, under the auspice of the OECD, (2015) ranked Massachusetts education as the best in the United States because of the research analysis they conducted and used independent variables such as enrollment rate, high school graduation rate, property tax funding rates for schools, teacher quality and youth literacy rate as the methodology of measurement. The population of students most likely to enroll in K-12 schools, which is categorized to be between 15 and 18 years of age, was 106.2 million in the United States. In addition, the United States increased the number of K-12 enrollment by 6%, whereas Germany's K-12 population enrollment declined (OECD, 2015). On the other hand, the subpopulation of five to nineteen-year-olds comprised 20% of students in America (OCDE, 2015). This is a higher percentage compared to that subpopulation in Germany. In 2004, the population increase of students in this age group, who are in primary and secondary school, increased by 6% in the United States while that of

Germany of the same year declined by less than 1% since (OCDE, 2015). The United States has a net percentage gain in this subpopulation of 12%, which is higher than that of Germany of 3% among students in postsecondary education (OCDE, 2015). In K-12 primary education in Germany, 100% of three- and four-year-old children were enrolled as compared to 47% in the United States (DOE, 2016). In both the countries, the enrollment between five and fourteen years of age is significantly relative since at this age many students are attending schools. However, OECD, (2015) analysis illustrated that compulsory schooling in Germany ends at the age of 18, and at 17 in the United States, or when the student obtains a Graduate Equivalent Diploma.

### **High School Graduation Rate**

The PISA defined high school graduation as an estimated percentage of students graduate from an education level (OECD, 2015, & 2017). The unit of measurement that was utilized was coded for gender, age, and race. The higher education graduation rates are higher in Germany in comparison to the United States, but like Massachusetts. The OECD (2015, & 2017) analysis illustrated number of graduation levels of higher education below the doctoral level is higher for females than for males. It is pertinent to note that the OECD (2015) data is from upper secondary as well as higher education. When considering upper education levels, the United States has 76%, which is relatively low compared to Germany, which is between 95% and 97% graduation levels. In the United States, the ratio of male to female students in upper education had a difference of 6%, whereas that of Germany was a 1% difference, and, in both cases, were females more prevalent. In addition, for the graduation rate of higher education below doctoral level, the United States had 37% higher rate compared to Germany with 25% (OECD,

2015). Hence, the gap between male and females was higher in both countries and higher in females than in males when compared. In this case, the net graduation rate is calculated by dividing the number of graduates in each year, and dividing it by the population at that age (DOE, 2016).

The typical graduation age varies between the two countries because of a difference in the duration that it takes to complete the courses (OECD, 2013). For the graduation rates in upper secondary education, by sex, Germany has a higher rate compared to that of the United States. The big differences in graduation level are based on policies that govern the education systems in these countries in relation to specific instructions that help determine who has qualified in upper secondary school and graduated (DOE, 2016). The nature of the high school graduation experience is because of diversity and freedom that allows people to decide whether to further their education.

### **Enrollment Rate**

The PISA divides the number of students as a specific gender, and age group for enrolled education levels to include the size of the group enrollment rates that are expressed in net enrollment rates (OECD, 2017). OECD (2009) analysis reported that the higher education enrollment rates in the United States and Germany vary. By 2008, a greater percentage of 25 to 34-year-old females had successfully completed their higher education level as compared to that of males (OECD, 2009). The United States education system uses two indicators to measure the level of achievement from 25 to 34 and 25 to 64-year-old adults who have completed their education levels (OECD, 2013). Within the age bracket of 25 to 64, students were categorized into lower secondary, upper secondary

and higher education levels (OECD, 2013). In both the United States and Germany, a large percentage of adults have completed their upper secondary education as their highest level of education (OECD, 2013). Higher education attainment refers to those programs that are intended to provide a sufficient background to enable students to take on their first professional degree, bachelor's and master's, in the United States (DOE, 2016). In preparation for labor markets, students take programs that provide higher technical education, whereas students who take on a research thesis as well as dissertation papers attain doctoral degrees. Among the age groups of students who completed higher education, the United States had a higher percentage compared to students in Germany (OECD 2009). In the United States, the number of bachelor's degree programs awarded to females is higher than that awarded to male students, whereas in Germany the number of male students is higher than that of females (OECD, 2013). The percentage of first time degrees awarded to social sciences, business, and law was higher in the United States than in Germany (OECD, 2012). Although, Germany utilizes its vocational track to ensure all students are fully employed after obtaining their degrees or completing their apprenticeships.

### **Youth Literacy Rate**

The PISA defined youth literacy rate by taking the mean score of students to ensure they can formulate, read, and write to a specific global economic standard (OECD, 2017). The indicator the OECD (2017) used to measure arithmetic, writing, and reading comprehension youth is primary/secondary public schools; these comparisons are represented through primary and upper secondary education. Furthermore, using this

indicator, United States Census Bureau's Current Population Survey (2009) compared the starting salary to the Gross Domestic Product (GDP) of a given country in question.

### **Restated Research Question and Hypotheses Summary**

RQ: Comparing two equivalent urban groups ( $n = 150$  cases) of full time high school students from Massachusetts and from Germany, which variables (enrollment rate, high school graduation rate, property tax funding rates for school, teacher quality, and youth literacy rate) are statistically significant as associated with quality education pathways of opportunities in U.S. urban communities?

The answer to this research question lies in ideology. Philosophy pertains to any set of ideas that strengthen and support a social, political, economic, or cultural system (Kohut & Stokes, 2006). Each social stratification system has an ideology that rationalizes the existing social structures and motivates people to accept it. In the United States, the major ideology justifying education achievement is the American Dream, which holds that equality of opportunity exists in the country and that anyone who works hard enough will get ahead (Kohut & Stokes, 2006). On the other hand, anyone who does not succeed must have caused his or her own failure. A mindset, whether it's *fixed or growth* can first be seen during early childhood which is fixed. It helps to cultivate one's behavior, ability to cope with and handle success or failure and ultimately define an individual's aptitude for happiness. *Fixed mindsets* reflect the premise that character, intelligence, and even creativity, are static. They are essentially inherent with no meaningful way in which one may be able to change these attributes. Therefore, success is reached based on fixed standards that must be measured, if not exceeded, whereas

failure is avoided at all costs. On the contrary, *growth mindsets* permit one to develop. Challenges often become motivation, and failures are stepping stones (Kohut & Stokes, 2006). Belief in this ideology is stronger in the United States than anyplace else around the world (Haskins, Isaacs, Kohut & Stokes, 2006; & Sawhill, 2008).

Cavanagh (2012) suggested many United States political officials have a varied view of the school policies that regulate the educational system, which can have an impact on global market competitiveness. In fact, many scrutinize the marginal test results of United States students in comparison to its international counterparts (Cavanagh, 2012). Thus, many have invested in research to not only analyze but also to apply the educational curriculums and teaching methods of high performing countries to United States schools (Cavanagh, 2012). More importantly, as many leaders in the United States grapple with and voice mixed sentiments regarding the educational performance of American students, the weaknesses of the educational system in the United States cannot go unaddressed (Cavanagh, 2012). Hence, the concern lends credence to the possibility of future economic challenges the United States may need to face if the educational skills are not effectively managed (Cavanagh, 2012). Stigler, (1999) as a professor of psychology at the University of California, Los Angeles attested to the overarching concern of the polarities of the United States educational system in his statement that *education is a complex system*. As a professor who has researched the Japanese teaching model, Stigler, & Hiebert (1999) accounts that it takes more than just looking at one aspect of a country's educational model. One must be able to both understand how performance results are produced and then interpret the results (Stigler, & Hiebert, 1999).

United States Secretary of Education Arne Duncan in (2012) stated he believes that United States leaders must use critical thinking when analyzing another country's educational system as well as draw inference as to *what works well abroad* (Cavanagh, 2012). Cavanagh (2012) stated Secretary Duncan further concluded that what may be practical in one country may not serve as a model for the United States. Nonetheless, the author argued that if the model works, the United States should copy, adapt, beg, borrow and steal successful practices (Cavanagh, 2012). Also, Cavanagh (2012) evaluated typical mistakes that policymakers face when analyzing and interpreting the results of international countries. They concluded that often only one aspect of the country's educational system is focused upon and that the international countries' educational model was not applicable in the United States structure (Cavanagh, 2012). Cavanagh (2012) argued that one must look at policies over the full distribution of countries, if you want lessons. Furthermore, the author proposed that in having a single policy interpretation approach, many policymakers fail to account for the influence of cultural norms in both the effectiveness and implication of educational strategies that are often characteristic of countries that seek and achieve high educational performance (Cavanagh, 2012).

Given the critical approach from the scholarly analysis above, there is contradiction in previous research. Hence, a statistical effect is part of a more widespread concept of quantitative literacy (Golbeck, Ahlers-Schmidt, Paschall, & Dismuke, 2005). It entails the understanding of the model regarding random analysis, and illustrates how to execute straightforward results with percentages (Davids, Schapira, McAuliffe, & Nattinger, 2004). The information is critical for supportive risks connected with unusual

health-related factors, and, as a result, for making informed decisions about health (Cokely & Kelly, 2009; Nelson et al., 2008; Reyna & Brainerd, 2007). More than a few international and national studies have incorporated items that measure a wider perception of quantitative literacy: PISA (2003), the TIMSS, the National Assessment of Adult Literacy (NAAL), and the International Adult Literacy Survey (Gonzales et al., 2004; Kutner et al., 2006; Tuijnman, 2000). The majority of the research, however, is inadequate to student populations and do not deal exclusively with statistical differences. The K-12 grades in Germany, in contrast with the United States; it is possible that a statistical relationship is likely in Germany (Rindermann, 2007). However, the alternative hypothesis ( $H_1$ ) could also be true.

High concentrations of people who live in poverty have a different schooling experience than those who live in more less affluent communities. Kozol (1991) investigated inequalities and the educational experiences of children in six urban areas across America, and found many differences. The author found that, in Camden, New Jersey, schools spent \$3,000 on each student, compared to \$15,000 per student in the more affluent neighborhood of Great Neck, Long Island. Kozol concluded that urban schools are overcrowded and understaffed and have inadequate textbooks and educational materials, and that in many areas, industrial pollutants are found on school playgrounds. Due to funding differentials—particularly residential segregation—education systems were found to be unconstitutional across America (Kozol, 1991). Since 1971, a series of lawsuits have targeted states for not providing adequate levels of funding (Kozol, 1991). Since 1980, 45 of the 50 states voiced their complaints to the Supreme Court regarding unconstitutionality in education, particularly the inadequate funding (Kozol, 1991).

Although a more equitable distribution of education is important, critics have shown that states do so at the expense of other publicly funded projects, such as welfare, health, hospitals, and general services (Joumard, Mauro, & Debbie, 2012).

Property tax funding rates for schools play an integral role in the development of educational outcome. The redistributive impact of property taxes value alters less transverse nations than the nationwide variation in tax-to-GDP/revenues proportion would suggest (Joumard, et al, 2012). More specifically, the correlation between tax funding and educational quality is weaker in the United States regarding the property tax funding rates for schools. Indeed, the United States shows little progressivity for numerous reasons including: the tax mix favors social security and utilization taxes donations over more progressive personal income and wealth and inheritance taxes; the progressivity of tax schedules is limited (in Germany); or constitutional progressivity is destabilized by tax expenditures that promote high-income groups (Joumard et al., 2012). Redistribution of property tax funding has an impact on both Germany and the United States. Additionally, property taxes play a key role in lowering overall income inequality which will enhance academic urban achievement gap.

In the state of Massachusetts, research conducted by the OECD and PISA revealed that about 50% of individual United States. Family income and parental employment can be explained by their parents' incomes (Isaacs et al., 2008). For example, two-fifths of those born into the poorest 20% of families and two-fifths of those born into the richest 20% of families remain in the same bracket as their parents when they reach adulthood (Isaacs et al., 2008). This provides evidence to support the alternative hypothesis

*H<sub>a</sub>*: Comparing two equivalent urban groups ( $n = 150$  cases) of full time high school students from Massachusetts and from Germany, there is a statistically significant association with quality education as a pathway of opportunities in U.S. urban communities.

Variation in academic achievement, which is often considerable both over time and cross-nationally, should be attributed overwhelmingly to structural effects: that is, to shift in the distributions of the populations over the levels of status or the occupational groups in classes in relation to which achievement is defined.

In Germany and the United States, the most important factor mediating academic achievement is an individual's educational outcome and other relevant individual characteristics such as environment, IQ, and motivation. However, both countries have not yet become true meritocratic societies in a sense that an individual's social origins and destinations are statistically independent once education is controlled (Breen & Goldthrope, 2001; Marshall, Roberts, Swift, &, 1997). Moreover, the significance of education in mediating mobility does not steadily increase over time. On the one hand, the association between origins and academic achievement (controlling for the direct effects of educational expansion) weakens (if at all) slowly (Breen, 2004). However, recent studies have shown that the association between education and destinations is now showing a tendency to strengthen (Breen, 2004). For some, the American Dream is a reality—as one-third of Americans are upwardly mobile (Isaacs et al., 2008). For immigrants, the United States remains a land of opportunity. Knowledgeable immigrants on average earn more, and even poorly educated immigrants typically earn considerably more than they would have if they stayed in their home countries (Isaacs et al., 2008).

Another one-third, roughly 50 million Americans, is downwardly mobile, and the rest remain in the same social class as their parents (Isaacs et al., 2008). According to Isaacs et al (2008) a major reason that the American Dream ideology can survive is that there is, indeed, some upward social mobility. Given all the social forces that hinder mobility, how can one explain why some people do indeed rise above their parents' social class? Certainly, intelligence, hard work, and getting an education matter (Isaacs et al., 2008); however, many intelligent poor children have no chance of going to college, and some of the hardest-working people earn the lowest incomes.

Bettie (2003) spent nine months intensively observing and interviewing a predominantly working-class high school. The author found that teachers and schools treated students in ways that reinforced the students' class status. Middle-class students were tracked into advanced classes and celebrated for their academic achievements; while students from stable, working-class homes were encouraged to take vocational classes. In addition, minority students of all social classes suffered from discrimination and low teacher expectations (Bettie, 2003). Students from poorer homes were ignored, marginalized, and expected to fail. Nonetheless, some working-class students seemed destined for upward social mobility (Bettie, 2003). These upwardly mobile students were smart and hard-working, but they also benefited from resources not available to other working- and lower-class students. Some belonged to mostly middle-class athletic teams, or attended middle-class elementary schools through which they gained access to middle-class peer groups and received "middle-class treatment" from teachers (Bettie, 2003, p. 80). Some students had older siblings who had gone to college and could help them both financially and culturally. In addition, Bettie found that many middle and lower class

students benefited from attending a less resourceful high school in which college-track classes were offered. Although these students lacked the financial resources available to middle-class students, they still had the cultural resources that come with college-educated parents (Bettie, 2003). Finally, some students were the children of immigrants who had belonged to the middle class before emigrating.

In conclusion, there have been many theories that have been put forward to explain the interrelationship between education and democracy and their impact on building cohesive, sustainable, and socially fair communities. Bettie (2003) proposed democratic societies such as the United States need to listen more to the needs of the people regarding changing of education in urban communities. Provision is always on the demands that are usually put forward by the society. This creates a link between democracy and independent variables along with property tax funded rates for schools, teacher quality, high school graduation rate, enrollment rate, and youth literacy rate. Higher education must take the lead in building a strong democracy for any country (Bettie, 2003). The other benefits of education are increased income, and an informed society can only be realized if the democracy of that society is sound, meaning the two cannot be divorced (Bettie, 2003). Finally, Bettie (2008) believe to properly achieve this, democracy should be inculcated in the students by handling education matters democratically, including in the measuring and assessment of learning outcomes.

### **Summary**

This chapter has shown polarity patterns and trends in variables that may correlate with educational inequality in United States and Germany. With the use of professional, primary, and historical documents, the literature shows the importance of further

empirical research on the independent variables of enrollment rate, high school graduation rate, property tax funding rates for schools, teacher quality, and youth literacy rate. In relation to educational inequality. In relation to public policy, the literature review showed progress in educational development in both Germany and the United States. As mentioned in Chapter 2 scholars believe it is important disparities in education can compromise the achievement of objectives related to the equality of opportunity.

Although an increasing number of studies have explored the effects of educational inequality on student achievement and knowledge, policies affecting educational inequality both in Germany and the United States have not kept pace with recent changes. Scholars know even less about the effects of policy on the independent variables examined in this study. This review outlined what is known about educational inequality and the independent variables, identified literature gaps, and suggested the need for additional research. In developing this concept, I have built this review on historical scholarly studies on educational inequality in both countries. This review has considered how the independent variables, which in turn, affects achievement performance in the United States urban communities, with positive or negative outcomes.

The final section of this literature review discussed a variety of studies conducted on the subject under review, and demonstrated that research remains scattered. Several weaknesses of the research were identified in this review. Most of the studies looked at only test scores and academics to determine if a society is progressing or declining. In addition, in many studies, the empirical perspective was misconstrued with reporting of academic performance scores. Moreover, previous research did not investigate whether

the five independent variables correlate and serve as a proxy variable for participation and representation with educational inequality in the Massachusetts and Germany.

There remains a gap in the literature regarding what is known and has been examined pertaining to the previously discussed variables. I addressed the United States urban achievement gap and limitations identified and operationalize analytical concepts reviewed by using quantitative research design to examine the relationship of the independent variables of property tax funding rates for schools, teacher quality, high school graduation rate, enrollment rate, and youth literacy rate. I have bridged this gap through quantitative analysis. In Chapter 3, I present the details of the study's quantitative research design, including the justification for the setting, the design, historical dataset, instrument, and unit of analysis.

## Chapter 3: Research Methodology

### **Introduction**

In this chapter I present the five independent and two proxy variables of the polarities of democracy theoretical framework chosen for this study along with the research methods and supporting rationale. This chapter also provides descriptions the sources of data used in this research, data procurement methods, considerations for sampling used in the research, and methods of analysis. In addition, the variables used in this research and the rationale to support the use of those variables are presented, defined, and discussed.

As discussed in Chapter 2, researchers have theorized over the interrelationship between education and democracy and its impact toward building cohesive, sustainable, and socially fair communities (Eide & Showalter, 2011). Democracy is a term that has been used repeatedly in almost every part of the world, yet it is not a static term and is subject to social evolution, which calls into question its long-term viability. As such, it appears that the United States has developed neo-liberal policies that only benefit a few people in the society while the middle and lower class continue to face education inequalities at a higher rate (Chicosky, 2015).

The purpose of this quantitative empirical study was to ascertain whether there was a statistically significant difference in the relationship between the independent variables, which served as proxy variables for the polarities of democracy participation and representation tenets, and educational inequality in urban areas of the United States. Massachusetts education system outcomes and general United States outcomes were compared with those from the benchmark of Germany. Utilizing secondary data, I

investigated the independent variables of enrollment rate, high school graduation rate, property tax funding rates for schools, teacher quality, and youth literacy rate to determine if a relationship exists between the independent variables and education achievement in Massachusetts. A review of the literature indicated a need for research on these variables in relation to educational inequality policies in the United States. The literature review used Germany as the benchmark because of several factors such as that Germany federally funds half of the public K-12 education to all citizens. The German federal government ensures they have qualified teachers along with paying them a competitive salary (OECD, 2015). In addition, the German education system is progressive and successful. It is comparable to the United States in terms of the structure of the democracy and governance (OECD, 2015).

The relationships between the independent variables of enrollment rate, high school graduation rate, property tax funding rates for schools, teacher quality, and youth literacy rate and educational inequality in urban areas of the United States were explored to determine that there was an association among the five independent variables and that all five variables were important in creating pathways to opportunities. This chapter illustrates the elements of the research design and the steps that were taken to collect the information. Considering that I used historical archival data, confidentiality has already been considered. Validating how the data was analyzed is critical to the credibility of the research findings.

### **Research Design and Rationale**

In this quantitative study, I analyzed whether the five independent variables were statistically associated with educational inequality in urban areas of the United States. By

doing this, I could determine what combination of variables were more important to focus education policies on in urban areas. However, there was no statistically significant difference among the five independent variables.

Participation and representation were used as proxy variables for this research. The polarities of democracy assessment were advantageous in analyzing education environment illustrating a positive social development using the independent variables. Operational definitions of each variable and respective classification as independent variables are presented below. Secondary data were used in this research. Secondary sources of data, such as records of various statistical bureaus, were practical for this research in helping to understand any variation of information collected regarding independent variables. Additionally, there are no time and/or resource constraints with the use of such data for this research. The following are the operational definitions of the independent variables:

**Independent variable 1—enrollment rate:** PISA divided the number of students into specific gender and age groups for enrolled education levels; the size of the group enrollment rates were expressed in net enrollment rates (OECD, 2017).

**Independent variable 2—property tax funding rate for schools:** This represented the value of tax that school property owners pay in support of school programs.

**Independent variable 3—high school graduation rate:** PISA defined high school graduation as an estimated percentage of students who graduate from school. The unit of measurement that was utilized was coded for gender, age, and race (OECD, 2017).

**Independent variable 4—teacher quality:** Teacher quality influences learners' academic achievement.

**Independent variable 5—youth literacy rate:** PISA defined this rate by taking the mean score of students to ensure they can formulate evaluative statements, read, and write to a specific global economic standard (OECD, 2017).

**Property tax funding rates for schools.** Property taxes are revenues collected by government agencies based upon the value of property. The revenue is used for the fulfillment of the needs of the local communities, including building and maintaining public schools. The International Tax Competitiveness Index (ITCI) ranks the German tax system 17th out of 34 nations and 13th in property tax (Pomerleau, 2015). The ITCI ranked the United States tax system 32nd out of 34 nations overall and 29th in property tax out of 34 nations (Pomerleau, (2015). Property taxes are predetermined amounts mandated by government entities based on property value and mill levy for the region (Pomerleau, 2015). The weight of the property tax variable is scored in comparison to the property tax rate for schools of other nations in similar economic scenarios, which is a standard practice (Lincoln Institute, 2014). This factor is important because inequalities in educational opportunities have been found to have a direct relationship to the scale of the property tax revenue collected by local government entities in Massachusetts (Pomerleau, 2015). Comparatively, Germany funds education through the national government so that all schools receive similar funding. The international tax ranking of the United States will not change unless there are changes in the policies relating to allocation of funding for K-12 public schools.

**Teacher quality and academic achievement.** Lincoln Institute (2014) research has demonstrated that teacher quality and academic achievement (enrollment rate, high school graduation rate, and youth literacy rate) are related to SES in Massachusetts. For this research, SES was defined by classes divided into upper, middle, and lower classes. Research has demonstrated that if children from families classified as lower class do not achieve a higher level of education than their parents they can become stuck in that SES level for another generation (Lincoln Institute, 2014). Thus, children from homes of higher SES attend better learning institutions compared to children from families of lower SES (Lincoln Institute, 2014). Additionally, students attending better learning institutions also have higher quality teachers compared to students from poorer families (Lincoln Institute, 2014). The argument will be made that the German academic system has an advantage in that they direct students on a vocational or on an academic track. Students in the vocational track gain valuable skills that enable them to find well-paying jobs and are more competitive in global employment markets.

### **Research Design**

I used a nonexperimental design framed by ANOVA to evaluate the relationship between the independent variables previously discussed: enrollment rate, high school graduation rate, property tax funding for schools, teacher quality, and youth literacy rate in Massachusetts. I used ANOVA to explore the degree to which the five independent variables had a statistically significant association with educational inequality in urban areas of the United States, and to determine what combination of variables were more important. This analytical approach was previously used to explore the relationships of these same variables in schools in Germany and in the United States (Shavit, Arum,

Gamoran, & Menachem, 2007). McFatter's (2017) research demonstrated that the ANOVA model allows for a thorough comparative analysis of the independent variables. Furthermore, the rationale for this study was based on conclusions drawn from Shavit et al.'s (2007) research suggesting that there is a need for more comparative educational research.

Results from this research could support an argument for specific policy changes that could reduce educational inequality in the United States. Several studies have been conducted exploring the relationship between educational inequality and the outcomes of life and work skills among adults in the United States (OECD, 2013). However, the findings of this research do not reflect current trends presented in the literature. As such, many of the questions surrounding the large gap in the availability of resources needed for academic success and achievement in life remain unanswered (OECD, 2013). I have explored the degree to which the polarities of democracy theory apply to the United States educational system. One potential outcome of this research by using ANOVA was a new perspective on how these variables influence educational inequality in the United States.

### **Methodology and Data Collection**

The OECD started its first national testing and surveys in 2000 and they conduct this assessment every three years (OECD, 2013). I used secondary data from 2010 through 2015 to explore the relationship between the independent variables of enrollment rate, high graduation rate, property tax funding rates for schools, teacher quality, and youth literacy rate on the ability of people to access educational opportunities in Massachusetts and in Germany.

The PISA secondary data sample populations from both Massachusetts and Germany were 150 cases data taken from (representing 240 schools from Massachusetts, and 150 random selected schools from Germany) which PISA used and selected utilizing the PPS sampling. The PISA analysis coding consists of five groupings of school grades, location of populace, race, and gender (> 95% female). The sample consisting of 42 students from each school, aged 15 years, were sampled randomly (OECD, 2017). Gender was coded as 0 = male, 1 = female, 3 = immigrants, 4 = black, and 5 = white. However, if there were less than the targeted number of students available to meet age eligibility criteria, all were subsequently selected (OECD, 2017).

A school sampling size of 150 is the minimum size set internationally to counterbalance possible non-responses (OECD, 2017). Nonetheless, the 2015 United States PISA exceeded the sample size with 240 schools (OECD, 2017). Data was collected from two sources, public (2012-2013) and private schools (2011-2012), using Common Core of Data and Private School Universe Survey, respectively (OECD, 2017). Schools were selected in the sampling size if at least one grade (seventh -twelfth) was a factor of the school. Moreover, schools participating in the study submitted a list of eligible 15-year-old students (OECD, 2017). From this list, the sample size was compiled by PISA using SPSS software version 21 developed by an international contractor.

I aggregated data files with the five independent variables and utilized PISA secondary for the independent variables population size. I used G\*Power analysis utilizing the given secondary data to detect sample size and any *Type I* or *Type II* effect of the sample size I was working with regarding the null hypothesis and the degree of freedom (Gelman, 2008). Correlational research works to measures the degree to which

two variables are related (Gelman, 2008). This method of data collection will make it possible for researchers to form predictions regarding the behavior of corresponding variables in similar settings (Gelman, 2008). Specifically, the method focused on a theoretical framework using a quantitative empirical research approach coupled with the PISA analysis and dataset. The purpose in choosing these analytical approaches was to examine the relationship between the independent and proxy variables utilizing the PISA public school district dataset through ANOVA. The PISA utilized the PPS sampling census data to gather the population for K-12 public school districts in Massachusetts. Student achievement data provided a proxy measure of educational inequality. Schools that provide a better quality of education produce students who achieve at higher levels.

### **Unit of Analysis**

In this study, the unit of analysis in the PISA data set was K-12 public primary schools in which the performance of students was measured by the independent variables. The OECD and PISA study data has indicated consistent improvements in student performance in literacy such as mathematics, sciences, and reading amongst German students (OECD, 2009; 2011). Conversely, the 2000 PISA report indicated rapid decline in performance in the United States (OECD, 2009; 2011). The data set I utilized was the census data analysis by PISA, and PIACC. Lastly, the polarities of democracy theoretical framework complemented the unit of analysis by illustrating that there is a need to overcome education inequalities to build healthy pathways opportunities in urban communities (Benet, 2013).

Property tax funding rates for schools have a considerable impact on the independent variables development of proficiency in enrollment rate, high school

graduation rate, and youth literacy rate, in both the Massachusetts and Germany. Quality in education enables learners to attain proficiency in the five independent variables. Quality in education results from efficient modern structures, teachers who are properly trained, and effective learning materials. Property tax funding rates could have a significant impact on the education inequality of focus in this study. Additionally, research has demonstrated that students need affluent opportunities to acquire the necessary skills taught in school (Lincoln Institute, 2014). Improving pathway to opportunities could allow students access to a quality education.

I hypothesized that each independent variable is correlated with reduced educational inequality outcomes. Furthermore, it is hypothesized that the five independent variables are linked to better educational quality in urban communities. Should evidence be gathered to support this hypothesis, the argument could be made that an education quality could affect urban students' ability to acquire affluent skills through academic achievement.

The OECD (2015) secondary recent research by has demonstrated a relationship between teacher quality, academic achievement, and an adult's ability to find gainful employment. This research has also suggested that adults who have had more qualified teachers have better skills than those who have not had any form of schooling (Lincoln Institute, 2014). These results suggest that if students have better educational opportunities they are more are contributed to affluent pathways to opportunities. Independent variables enrollment rate, high school graduation rate, property tax funding rates for schools, teacher quality, and youth literacy rate contribute to students' resilience, satisfaction with self-relationship, and well-being (DOE, 2016). Moreover, it is argued

that the independent variables influence the development of proficiency in enrollment rate, high school graduation rate, and youth literacy rate in the United States. Quality education enables learners to better attain the skills in reading, mathematics, science. Quality in education can lead to more holistic outcomes of modern structures, well-trained teachers, and effective learning materials.

### **Data Analysis Plan / Data Collection**

The PISA data used in the study has been collected and synthesized through previous research. The PISA data is considered open domain data, which is stated on their website under terms and conditions. I analyzed the data utilizing SPSS software version 23, which can carry out the regression analysis. Baker and Corcoran's (2012) concept was employed to assess levels of property taxes in individual communities. Given that secondary data was being used, most of the study consisted of analysis, synthesis, and critique of existing data on educational achievement in Massachusetts and Germany.

The materials and statistical data included data retrieved from the Bureau of Statistics in Germany, pre-established groups from the OECD, and the United States' representative population. The usage of sampling weights, complex multi-stage random sample designs, and multiple proficiency estimates were required to perform an analysis on the PIACC data (OECD, 2013). The secondary data collection involved the PISA data set of a census analysis on public school districts.

### **Measure of Analysis / Study Sample Size**

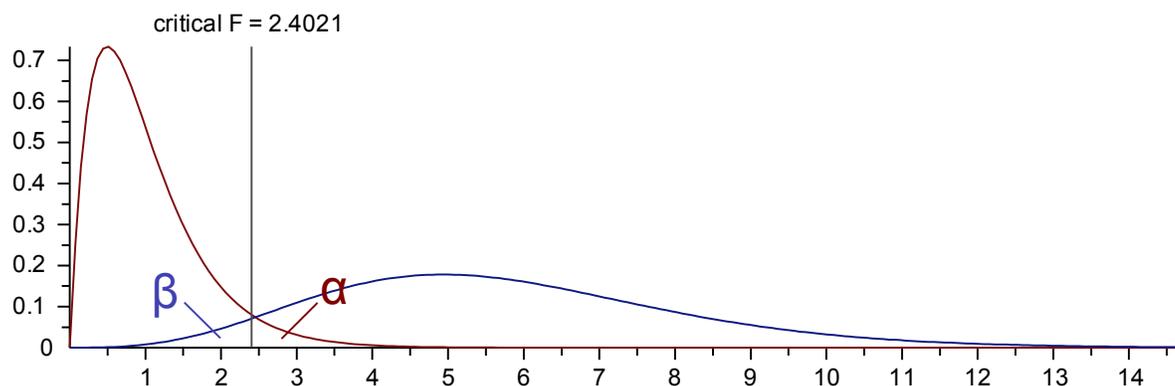
The polarities of democracy theory concept of seeing, mapping, accessing, learning, and leveraging archival data from the PISA was utilized in this research. The

data sets consist of performance was  $n = 150$  cases data taken randomly from 240 schools from Massachusetts, and 150 schools from Germany. Given that secondary data was utilized, no participants were recruited for this research project. The five independent variables data measures were presented in the data set for both the United States and Germany. I used ANOVA to determine if there is a statistically significant pairwise association among the five independent variables and to determine what combination of variables may be more important to focus education policies in urban communities of the United States' education system.

### **Sampling and Eligibility Criteria Procedures**

The sample population was  $n = 150$  cases randomly selected from PISA: 240 schools from Massachusetts, and 150 schools from Germany. The coefficient alpha for this research was set to .05. In this research, coefficient alpha measured the internal consistency regarding the reliability of measure for self-reporting measures (Gelman, 2008). For instance, if the alpha is set at 10% there could be a large possibility that the null hypothesis could be incorrectly rejected, while an alpha of 1% could have a smaller error in rejecting the null hypothesis (Gelman, 2008). Therefore, if one has a smaller area, there is more of probability one will not reject the null, when in general one probably should. This is known as a *Type II* error level of significance. Meaning, if one tries to avoid a *Type I* error, there is more likely a *Type II* error could happen. Research scientists have discovered an alpha coefficient level of .05 is normally a suitable balance of the two challenges (Gelman, 2008). Research in hypothesis testing has two errors: *Type I* and *Type II* errors. *Type I* errors support the alternate hypothesis if the null hypothesis is considered true. In addition, a *Type II* error does not support the alternate hypothesis if

the alternate is true. Data was analyzed using the relationship correlation statistics ANOVA. Lastly, G\*Power data is depicted in Figure 2, using the five independent variables that were uploaded with data from PISA SPSS analysis of the giving the desired power of .95, with an effect size of .25.



*Figure 2.* Required sample size. Using G\*Power 3.1: Erdfelder, Buchner, Lang (as cited in Heinrich Heine Universitat Dusseldorf, 2009). Statistical power analyses using G\*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41, 1149-1160.

### **Instrumentation and Operationalization of Constructs**

The independent variables used in this study were enrollment rate, high school graduation rate, property tax funding rates for schools, teacher quality, and youth literacy rate. The developer and year of publication for the information solicited from the OECD were as follows: PIAAC Adult Competencies (OECD, 2012).

This study is appropriate for the United States current educational system as there is a need to at the least maintain if not improve performance on measures of social mobility (OECD, 2015). Improvement in the public education system in Germany could serve as a model for the United States regarding policy changes to address the glaring funding gap driven by income inequalities. Contributions from this research could serve

as a catalyst to promote awareness of how we assess academic performance in the United States. In addition to supplementing the current body of literature, this research may provide another instance supporting the comparison of the United States to Germany regarding issues that predict educational achievement. This research could also serve as a model for policy change for many governmental institutions in the United States. Difficulties in learning increase over time and are influenced by students' individual familial and cultural backgrounds. The above instrumentation data has influenced the formation of the research questions and hypotheses.

### **Restated Research Questions and Hypothesis**

The research questions for this study were developed with the intent of examining the relationship between the independent variables. Data collected in K-12 public schools in both Massachusetts and Germany was used in this research. Germany, as mentioned in Chapter 1 was used as comparison data, has a higher international OECD ranking in academic performance in literacy. I compared the levels of the independent variables to determine if there is a statistically significant association among the five independent variables and to determine what combination of variables may be more important to focus education policies on in urban communities of the United States education system.

### **Research Questions**

The central research question for this study is:

RQ: Comparing two equivalent urban groups ( $n = 150$  cases) of full time high school students from Massachusetts and from Germany, which variables (enrollment rate, high school graduation rate, property tax funding rates for school, teacher quality, and youth literacy rate) are statistically significant as

associated with quality education pathways of opportunities in U.S. urban communities?

*H<sub>0</sub>*: Comparing two equivalent urban groups ( $n = 150$  cases) of full time high school students from Massachusetts and from Germany, there is no statistically significant association with quality education as a pathway of opportunities in U.S. urban communities.

*H<sub>a</sub>*: Comparing two equivalent urban groups ( $n = 150$  cases) of full time high school students from Massachusetts and from Germany, there is a statistically significant association with quality education as a pathway of opportunities in U.S. urban communities.

**The use of sampling weights.** According to Owen, & Zhou (2000) sampling weights are designed to correct the inadequacies of a sample that could lead to biases in the data. There are imperfections in data sets that consist of non-coverage of a specific aspect of a population, units with unequal probabilities, and the need for weighted sample distribution adjustments of essential variables of interest in a data set (Owen, & Zhou, 2000). In this research, the PISA sampling weights models are complex. The secondary data sampling is gathered with unequal selection probabilities that are connected to the variables values after the conditioning of all the design data (Owen, & Zhou, 2000; OECD, 2012). Disregarding the secondary data sample selection method in the presumption development may lead to misleading results.

**The complex multi-stage random sample design.** The multi-stage random sample design is a multifaceted survey sampling methodology that entails information gathering of population sample units via several stages or phases of

categorization/selection (Owen, & Zhou, 2000). The OECD and PISA developed a random sample design that involved a random sampling of the population through a random drawing of subjects (OECD, 2013). Speed and convenience is key for using the complex multi-stage random sample. Typically, larger data collection efforts will utilize a multi-stage sampling methodology as the method is less expensive (OECD, 2013). Lastly, using the polarities of democracy two pillars for this research were beneficially from the multi-stage sample.

### **Construct Validity and Reliability**

The validity of research depends on the accuracy of the research. The research methods used in this project are considered valid as they were used to research these questions (Farkas, 2006). The PISA results have a high measure of validity, and reliability. The survey was conducted by a reputable organization, the Organization for Economics and Cooperation Development, which is known for having conducted several related studies (Farkas, 2006). However, many aspects of the OECD study may contain biases related the purposes of this research. The PISA/PIAAC study is a nationwide survey, conducted within countries that are members and non-members of the OECD, targeted to gage the scholastic performance of young adults, 15 years of age or older, on measures of youth literacy. Schlosser (2009) contended that in assessing trends in education and academic achievement researchers should evaluate the fluctuations in income, inequality and poverty after the Second World War in the United States. Moreover, the survey design had to take into consideration that the data includes two countries. While the focus of this study was based on public schools in Massachusetts,

the OECD rankings and standards are based upon data collected in several developed countries.

The definition of poverty varies by region in the United States, and it can be difficult to establish an agreeable definition for the concept. Researchers have spoken of the difficulty to define poverty, due to conceptual complexity and the difficulty in quantitatively measuring the concept (McCall, 2013). The overall education inequality could be argued as being important predictors of educational quality due to the relationship of the five independent variables that serves as proxy variables for participation and representation. Also, the methods used for determining property tax rates in both countries are difficult given that Germany has different methods for establishing and valuing property ownership (Schlosser, 2009). Institutional Review Board (IRB) approval is needed for this research. However, the process will not be lengthy because the PISA/PIAAC data are open domain sources. Chapter 4 and 5 will allow readers to imagine how complex education inequality in the United States and what policies needed to be address to shape this holistic challenge.

### **Confidentiality Assurance**

Considering that PISA/PIAAC database is open domain, the confidentiality agreement was an issue. Furthermore, only the PISA/PIAAC organization codes were inserted into the main Excel spreadsheet. I utilized the PISA/PIAAC dataset and the assigned codes. The PISA, and PIAAC data are open domain. To ensure confidentiality, PISA, and PIAAC researchers and research supporters were the only ones who had the right to use both bases of information. Collected information from PISA database are stored in an external hard and computer drive, along with CD-ROMs. Data collected

during this research will be maintained confidentially. Data collected in this research potentially could be published in peer-reviewed, scholarly, and scientific journals or displayed at professional, and scientific meetings; nevertheless, no identifying data will be used in this research for commercial distribution.

### **Summary**

Quantitative research design was selected for this empirical research because the structure of the central research question (Hunter, & Leahey, 2008). Past research designs and methodologies have indicated the approach to education in Germany is more efficient and results in higher levels of educational attainment. The five independent variables were selected to explore the differences to determine if there is a statistically significant association among the five independent variables and to determine what combination of variables may be more important to focus education policies on in urban communities of the United States education system.

Gautier, Teulings., & Van Vuuren (2009) stated one purpose of researching public policy issues is to improve the well-being of people by considering potential social or political reform. Scholarly researchers have stressed the importance of including pathway to opportunities such as, skilled job-to-job transitions in an analysis of labor market flows (Gautier et al., 2009). The inability to secure a job to provide income sufficient to sustain one's self can create many deficits such as a lack of opportunity (Gautier et al., 2009). Scholarly researchers have debated whether lack of pathway to opportunities, income inequalities, lack of initiative, or failure to capitalize on available programs as main causes for education inequality (Gautier et al., 2009).

The procedures to data collection and analysis of the said information was explained in this chapter. When viewing this study in larger context, the assumption has been made that education has a direct relationship with earning potential. Research has demonstrated that in the United States, education has a direct relationship with earning potential (Powell, 2003). White (1982) concluded that there is no significant relationship between socioeconomic status and academic achievement. Chapter 4 of the study presented results of the ANOVA and conclusions drawn from the secondary sources of data. Conclusions from this research and recommendations for further research will be presented in Chapter 5.

## Chapter 4: Results

### Introduction

In Chapter 4, I present the results of this study consisting of a descriptive analysis, correlational analysis, statistical assumptions, and ANOVA analysis for the central research question. A quantitative empirical design was used to ascertain if a significant statistical association in the relationship between the independent variables as proxy variables of polarities of democracy participation and representation tenets; the theoretical frame work was used as a means for comparing the Massachusetts education system with the larger U.S. system and using Germany as the benchmark. The quantitative research consisted of an ANOVA model to measure the relationship of the five independent variables enrollment rate, high graduation rate, property tax funding rate for schools, teacher quality, and youth literacy rate with educational inequality in urban areas of the United States. The secondary research sources were used to achieve the key objectives and to support the empirical portion of the study. The choice of research design provided a combination of pertinent past research findings to determine if there is a statistically significant association among independent variables and educational inequality and to determine what combination of variables may be more important to focus education policies on in educational systems in urban communities of the United States. To accomplish the purpose, a central research question was developed as follows:

RQ: Comparing two equivalent urban groups ( $n = 150$  cases) of full time high school students from Massachusetts and from Germany, which variables (enrollment rate, high school graduation rate, property tax funding rates for school, teacher quality, and youth literacy rate) are statistically significant as

associated with quality education pathways of opportunities in U.S. urban communities?

*H<sub>0</sub>*: Comparing two equivalent urban groups ( $n = 150$  cases) of full time high school students from Massachusetts and from Germany, there is no statistically significant association with quality education as a pathway of opportunities in U.S. urban communities.

*H<sub>a</sub>*: Comparing two equivalent urban groups ( $n = 150$  cases) of full time high school students from Massachusetts and from Germany, there is a statistically significant association with quality education as a pathway of opportunities in U.S. urban communities.

To broadly answer this central question, I organized this chapter into six sections: introduction, secondary data collection, independent variables, main analysis, results of the central research question, and transition to Chapter 5. The introduction consists of an overview of the chapter organization. In the data collection section, I explain the procedures used in PISA secondary data collection. Because of the 2015 OECD results published in March 2017, the secondary data collection encompasses some minute corrections for adjustment in the five-year research time span, target population, and sampling data for Germany and the United States. Therefore, some of the data set analysis was updated to reflect the 2015 results.

Regarding the other four sections, I divided the results section into subsections: results in Massachusetts and results in Germany. The subsections feature a statistical assumption trailed by a Pearson's correlation of analysis. Once I illustrate the correlational analysis for the five independent variables, I presented the outcome of the

ANOVA analysis. However, each section has a dedicated roll to the central research question. Thus, with some of the data collection being updated with the 2015 results, I calculated descriptive statistics for all the statements of the research and tested the hypothesis through ANOVA. The analysis also included descriptive statistics. In the final section of this chapter, I summarize the results and preview Chapter 5.

### **Secondary Data Collection**

I received Walden University IRB approval (number 06-22-17-0352141) to conduct the research. I accessed the NCES-PISA/PIACC database and downloaded the SPSS Excel spreadsheets to sort and filter the needed information for my research. In addition, I created an Excel database spreadsheet with the central research question and the five independent variables to calculate and analyze the average and standard deviation numbers.

In general, this research made use of secondary data obtained from sources such as Massachusetts Department of Education, United Nations Educational, Scientific and Central Organization (UNESCO), OECD-NCES, PISA, and PIACC. The OECD, through the auspice of PISA and PIACC, collected their data using structured online questionnaires and interviews. The secondary questionnaires and interview techniques are significant for the study as they enhance my understanding of educational and professional skills inequalities between the United States and Germany, along with presenting analysis of the most educationally progressive countries.

The PISA secondary data sample populations from both Massachusetts and Germany were  $n = 150$  cases data taken from 240 schools in Massachusetts and 150 randomly selected schools from Germany, which they selected utilizing the PPS

sampling. The PISA analysis coding consists of five groupings of school grades, location of populace, race, and gender (> 95% female). The sample consisting of 42 students from each school, aged 15 years, were sampled randomly (OECD, 2017). Gender was coded as 0 = male, 1 = female, and race as 3 = immigrants, 4 = black, and 5 = white. However, if there were fewer than the targeted number of students available to meet age eligibility criteria, all were subsequently selected (OECD, 2017).

A school sampling size of 150 is the minimum size set internationally to counterbalance possible nonresponses (OECD, 2017). Nonetheless, the 2015 United States PISA exceeded the sample size with 240 schools (OECD, 2017). Data was collected from two sources, public (2012-2013) and private schools (2011-2012), using Common Core of Data and Private School Universe Survey, respectively (OECD, 2017). Schools were selected in the sampling size if at least one grade (7th-12th) was a component of the school. Moreover, schools participating in the study submitted a list of eligible 15-year-old students (OECD, 2017). From this list, the sample size was compiled by PISA using SPSS software version 21 developed by an international contractor.

I aggregated data files with the five independent variables and utilized PISA secondary for the independent variables population size. I used G\*Power analysis utilizing the given secondary data to detect sample size and any *Type I* or *Type II* effect of the sample size I was working with regarding the null hypothesis and the degree of freedom (Gelman, 2008). Correlational research works to measure the degree to which two variables are related (Gelman, 2008). This method of data collection makes it possible for researchers to form predictions regarding the behavior of corresponding variables in similar settings (Gelman, 2008). Specifically, the method focused on a

theoretical framework using a quantitative empirical research approach coupled with the PISA analysis and dataset. The purpose in choosing these analytical approaches was to examine the relationship between the independent and proxy variables utilizing the PISA public school district dataset through ANOVA. The PISA utilized the PPS sampling census data to gather the population for K-12 public school districts in Massachusetts. Student achievement data provided a proxy measure of educational inequality. Schools that provide a better quality of education produce students who achieve at higher levels.

### **Main Analysis**

The OECD (2015) PISA analysis report describes the overall performance of 15-year-olds across all 36 OECD participating countries. The 2015 report identified four countries that were top performers and had improved in education equity attainment: Canada, Estonia, Germany, and Hong Kong-China (OECD, 2015). The OECD (2015) analysis examined the policies of education systems against these four countries. I filtered only United States and Germany. The report provided an analysis and recommendation for countries that were below the OECD standard levels. Of note, for the 2015 report, the United States ranked average and was below OECD standards for overall academic achievement. One in five (20%) of 15-year-old students for the United States were low performers in academics, including urban communities (OECD, 2015). The International Standard Classification of Education assisted in framing statistical data on international education supported by the United Nations Educational, Scientific and Cultural Organization. They used the findings to gain an understanding of what is meant by primary, secondary, and tertiary levels of education, as well as how they matched against the United States level of education (OECD, 2015).

I created a descriptive summary table of enrollment rate, high school graduation rate, property tax funding for schools, and initial teacher quality (see Table 1). I ran youth literacy rate scores in a separate analysis because of the three measure of reading, math, and science. To check the strength of relationship between variables, I incorporated Pearson's  $r$  correlation (see Table 2). Pearson's  $r$  correlation measures the power of the linear relationship between two variables at a time (Gelman, 2008). Pearson's  $r$  will always consist of -1.00 and 1.00 (Gelman, 2008). In Table 3, ANOVA was used to compare the four independent variables for the sum of squares. Descriptive summary of the youth literacy rate scores was compared next for Massachusetts, the United States, and Germany (see Table 4), along with ANOVA youth literacy rate scores for the sum of squares (see Table 5). Data analysis was conducted to determine the effects of gender on the youth literacy rate scores using independent sample  $t$  test using the Levene's Test for Equality of Variance for two or more groups (see Table 6). In addition, I conducted a regression analysis for beta or standardized coefficient and unstandardized using academic performance as a simulated dependent variable. Lastly, standardized coefficient signifies how many standard deviations a dependent will change the variance to 1, as illustrated in Table 7 (Gelman, 2008).

### **Independent Variables**

An operational definition is given of each variable along with each classification

1. Enrollment rate is defined by dividing the number of students as a specific gender, and age group for enrolled education levels.
2. High school graduation rate is defined as an estimated percentage of students that graduate from an education level.

3. Property tax funding rate for schools is the value of tax that school property owner's pay in support of school programs.
4. Teacher quality consists of licensing, tenure, evaluation, and certification by each state and district.
5. Youth literacy rate is defined by taking the mean score of students to ensure they can formulate, read, and write.

Table 2

*Descriptive Summary of the Independent Variables*

Place		Enrollment rate	Graduation rates	Property tax funding rate	% of Full-time teachers	% of Full-time certified teachers
United States	Mean	99.2500	79.8000	5.8300	-.0420	-.2400
	Std. deviation	1.79368	3.66457	1.11409	.00000	.00000
Massachusetts	Mean	50.0000	85.5583	1.3000	93.1000	93.1000
	Std. deviation	1.28912	3.19302	.12285	.00000	.00000
Germany	Mean	97.5000	88.9117	4.6967	-.1500	-.0200
	Std. deviation	4.33799	3.23770	.33891	.00000	.00000
Total	Mean	82.2500	84.7567	3.9422	30.9693	30.9467
	Std. deviation	23.29940	5.02816	2.05950	44.55623	44.57256

There are notable differences in the property tax funding rate and teacher quality.

In the United States, the mean property tax funding rate is 5.83% ( $SD = 1.11$ ); this is slightly higher than the rates in Germany (4.70%,  $SD = 0.34$ ). In Massachusetts, the mean tax funding rate is 1.30% ( $SD = 0.12$ ). Thus, the property tax funding rate in

Massachusetts is considerably lower than the national average and in Germany. The next important consideration is the teacher quality. I measured this variable using the proportion of full-time teachers and their percentage in full-time certified teachers. Massachusetts with an average of 93.10% has the highest proportion of certified full-time teachers. Moreover, the data reveal that the United States and German average proportion of full-time teachers are both statistically significant.

The results of the correlation analysis presented in Table 2 show the existence of various relationships of interest in this study. First, there is a significant correlation between the United States, Massachusetts, and Germany, the graduation rates,  $r = 0.75$ ,  $p < 0.001$ . Secondly, there is a significant correlation between gender and graduation rates,  $r = -0.47$ ,  $p < 0.05$ . Enrollment was significantly positively correlated with property tax funding rate and significantly negatively correlated with both measures of teacher quality,  $p < 0.001$  for United States, Massachusetts, and Germany.

I conducted ANOVA analysis to determine if there were statistically significant association between the five independent variables. As illustrated in Table 3, the results reveal that there was a significant difference in the mean enrollment between Germany, the United States, and Massachusetts,  $F(2, 35) = 1186$ ,  $p < 0.001$ . There was a statistically significant difference in the mean graduation rates between Germany, United States and Massachusetts,  $F(2, 35) = 22.41$ ,  $p < 0.001$ . There was a significant association in the mean property tax funding rate between Germany, the United States and Massachusetts,  $F(2, 35) = 145.90$ ,  $p < 0.001$ . There were statistically significant association in the teacher quality measures between Germany, United States and Massachusetts,  $p < 0.001$  in both measures.

Table 2

*Pearson's r Correlation Analysis of the Independent Variables*

		DEU U.S.A MA	G	Enroll	HS Graduation rates	Property tax funding rate	% of full- time teachers	% of full- time certified teachers
DEU	Pearson's <i>r</i>	1	.000	-.070	.750**	-.728**	-.001	.002
U.S.A	Sig. (2-tailed)		1.000	.181	.000	.000	.995	.991
MA	N	150	150	150	150	150	150	150
Gender	Pearson's <i>r</i>	1	1	.019	-.467**	.000	.000	.000
	Sig. (2-tailed)	1.000		.912	.004	1.000	1.000	1.000
	N	150	150	150	150	150	150	150
Enrollment rates	Pearson's <i>r</i>	1	.019	1	-.170	.908**	-.993**	-.993**
	Sig. (2-tailed)	.857	.912		.321	.000	.000	.000
	N	150	150	150	150	150	150	150
Graduation rates	Pearson's <i>r</i>	1	-.467**	-.170	1	-.240	.114	.116
	Sig. (2-tailed)	.000	.004	.321		.158	.510	.501
	N	150	150	150	150	150	150	150
Property tax funding rate	Pearson's <i>r</i>	1	.000	.908**	-.240	1	-.920**	-.921**
	Sig. (2-tailed)	.181	1.000	.000	.158		.000	.000
	N	150	150	150	150	150	150	150
% of Fulltime Teachers	Pearson's <i>r</i>	1	.000	-.993**	.114	-.920**	1	1.000**
	Sig. (2-tailed)	.995	1.000	.000	.510	.000		.000
	N	150	150	150	150	150	150	150
% of Fulltime Certified Teachers	Pearson's <i>r</i>	1	.000	-.993**	.116	-.921**	1.000**	1
	Sig. (2-tailed)	.991	1.000	.000	.501	.000	.000	
	N	150	150	150	150	150	150	150

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 3

*ANOVA of Independent Variables*

	Sum of squares	df	Mean square	F	Sig.
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The results, presented in Table 4, reveal that the mean reading score in the United States ( $M = 497$ ,  $SD = 14.14$ ) was lower than in Massachusetts ( $M = 527$ ,  $SD = 12.72$ ) and Germany ( $M = 509.50$ ,  $SD = 14.85$ ). Thus, Massachusetts has the highest mean reading scores. Analysis of the math scores reveals that Germany ( $M = 506$ ,  $SD = 11.31$ ) had a higher mean score than either United States ( $M = 469.50$ ,  $SD = 6.36$ ) and Massachusetts ( $M = 498.50$ ,  $SD = 3.53$ ). The United States ( $M = 546.50$ ,  $SD = 65.76$ ) had a higher mean science score than either Germany ( $M = 509$ ,  $SD = 7.07$ ) or Massachusetts ( $M = 529$ ,  $SD = 7.07$ ).



Table 5

*ANOVA of Youth Literacy Rate Scores*

		Sum of squares	Df	Mean square	<i>F</i>	Sig.
Reading scores	Between groups	908.333	2	454.167	2.339	.244
	Within groups	582.500	3	194.167		
	Total	1490.833	5			
Math scores	Between groups	1486.333	2	743.167	12.318	.036
	Within groups	181.000	3	60.333		
	Total	1667.333	5			
Science scores	Between groups	1408.333	2	704.167	.477	.661
	Within groups	4424.500	3	1474.833		
	Total	5832.833	5			

ANOVA analysis of the youth literacy rate scores for Germany, the United States, and Massachusetts results are represented in Table 5. First, the results reveal that there a moderate strength significant differences in the reading scores between Germany, the United States, and Massachusetts,  $F(2, 3) = 2.34, p = 0.24$ . Moreover, there are no significant differences in the mean science scores between Germany, the United States, and Massachusetts,  $F(2, 3) = 0.47, p = 0.66$ . However, there is a significant mean difference in the math scores between Germany, the United States, and Massachusetts,  $F(2, 3) = 12.32, p < 0.05$ .

Table 6

*t test of Youth Literacy Rate Scores by Gender*

		Levene's Test for equality of variances		<i>t</i> test for Equality of Means						
		F	Sig.	t	Df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% Confidence interval of the difference	
									Lower	Upper
Reading scores	Equal variances assumed	.031	.869	1.596	4	.186	19.66667	12.31981	-14.53862	53.87195
	Equal variances not assumed			1.596	3.979	.186	19.66667	12.31981	-14.61103	53.94437
Math scores	Equal variances assumed	.011	.922	-.629	4	.564	-10.00000	15.90248	-54.15236	34.15236
	Equal variances not assumed			-.629	3.962	.564	-10.00000	15.90248	-54.31852	34.31852
Science scores	Equal variances assumed	3.936	.118	.848	4	.444	24.33333	28.70734	-55.37101	104.03767
	Equal variances not assumed			.848	2.526	.469	24.33333	28.70734	-77.52633	126.19300

I also conducted data analysis to determine the effects of gender on the youth literacy rate scores using independent sample *t* test. The findings reveal that are no significant gender differences in the mean math, reading and science scores,  $p > 0.05$  in all cases, as illustrated in Table 6.

The results of the analysis presented in Table 7 highlight the variables that influence the literacy (the mean score on the reading, math and science scores). It is notable that enrollment ( $B = -4.97, t = -1.92, p = 0.31$ ), graduation rates ( $B = -0.33, t = -0.11, p = 0.91$ ), property tax funding ( $B = -6.18, t = -0.81, p = 0.57$ ) and teacher quality ( $B = -2.77, t = -1.69, p = 0.34$ ) had a strong statistical significant effect on academic achievement for the United States.

**Table 7**

*Regression Analysis*

Model		Unstandardized coefficients		Standardized coefficients		Sig.
		B	Std. error	Beta	T	
1	(Constant)	1062.567	457.552		2.322	.259
	Enrollment	-4.970	2.589	-.978	-1.920	.306
	Graduation Rates	-.331	2.294	-.114	-.144	.909
	Property tax funding rate	-6.182	7.637	-1.487	-.809	.567
	Full-time and certified full-time teachers	-2.777	1.644	-10.524	-1.689	.340

a. Simulated dependent variable: Academic performance

## **Results for Central Research Question**

### **Statistical Assumptions**

Statistical testing assumptions regarding the relationships of the independent variables were statistically significant associated to contribute making quality education pathway of opportunities in urban communities. Disruptions for this statistical assumption may disrupt the final analysis of the research. Therefore, it will be pivotal to acknowledge the disruption in the assumptions and take appropriate steps as plausible.

### **Independent Variables**

As discussed in Chapter 3, the independent variables were measured on a continuous scale at either the interval or ratio level. I measured the first independent variable, enrollment rate, by dividing the number of students as a specific gender, and age group for enrolled education levels by there size of the population for that age on a continuous scale (OECD, 2015). High school graduation rate, is a percentage estimation of students that graduate from an education level, on a continuous scale (OECD, 2015). Property tax funding rate for schools in dollars for the GDP, and the value of tax that school property owner's pay in support of school programs were measured on a continuous scale (OECD, 2015). Teacher quality, consist of licensing, tenure, evaluation, and certification of each state and districts, on a continuous scale (OECD, 2015). Youth literacy rate is taking the mean score of students to ensure they can formulate, read, and write, on a continuous scale (OECD, 2015). The scale ranges from 1000 persons to 2000 persons using the OECD data for all five independent variables. This assumption was met for the five-independent variable.

### **Linear Relationship and Constant Variance**

I conducted scatter plot constant variance. I conducted a correlation illustration to analyze the relationship between the five independent variables utilizing the two-tailed test of significance. All five of the independent variables had a moderate statistically significant relationship strength.

### **No Significant Outlier**

I analyzed the presence of significant outliers using simple boxplots. I first analyzed estimated population and based on the boxplot, determined there are no significant outliers. I reran the analysis for a second time and the assumption no significant outliers met.

### **Residuals**

I examined the continuation of normal distribution through the means of a normal probability-probability plot known as the P-P plot of regression. The P-P plot remains closely to the diagonal line of verifying the existence of normal distribution. Equally, I confirmed the normal distribution by a histogram chart which affirmed the P-P Plot findings. As previously mentioned, I did not have any outliers. So, when I reviewed the case wire diagnostics, I did not notice any large negative residual numbers nor any cases outside of the standard deviations. Therefore, I did not notice any major concerns. In final analysis, the ANOVA for the statistical assumptions were plausible for this model and met the requirements of the statistical assumptions.

### **Correlation Coefficient**

I conducted a correlational analysis to find the relationship between the independent variables to assist determining the access into the ANOVA. The

correlational analysis results are illustrated in Table 2. The results are depicted in the following format: I used Pearson's  $r$  confidence intervals, and the p-value. I abbreviated the actual results in a text format and the numerical values are listed full in the tables. First, there is a significant correlation between (United States, Germany, and Massachusetts) for graduation rates,  $r = 0.75$ ,  $p < 0.001$ . Secondly, there is a significant correlation between gender and graduation rates,  $r = -0.47$ ,  $p < 0.05$ . Enrollment was significantly positively correlated with property tax funding rate and significantly negatively correlated with both measures of teacher quality,  $p < 0.001$  in all three cases. The correlation analysis also reveals the existence of significant negative correlations between property tax funding rate and the two measures of teacher quality,  $p < 0.001$  in both cases.

### **Summary and Transition to Chapter 5**

To broadly answer the central question, I organized this chapter into six sections and one subsection: introduction, secondary data collection, independent variables definition, main analysis, results of the central research questions, and results of chapter 4, and summary. The introduction consisted of an overview of Chapter 4 organization, whereas in the data collection section described the OECD secondary methodology. The secondary data collection where applicable, I altered the information to meet the statistical assumptions. Hence, this being secondary data, the OECD numbers were correlated and the estimated population per the independent variables demonstrated a statistically significant correlation between each variable. I ran the Pearson's  $r$  correlational analysis for the five independent variables with the secondary data to establish a statistically significant correlation of the independent variables.

The null hypothesis ( $H_0$ ), and alternative hypothesis ( $H_a$ ) are statements expressing variances and effects that potential can occur in the population assessment (Gelman, 2008). Hence, I rejected the null hypothesis of the central research question. I conducted the main analysis to determine a positive statistically significant relationship for enrollment rate, high school graduation rate, property tax funding rate for schools. There was a negative association with teacher quality with the previous mentioned independent variables. As a result, I accepted the alternate hypothesis that there is a statistically significant relationship between the independent variables to contribute making quality education a pathway of opportunities in the United States urban communities. For the main analysis, I determined a positive and statistically significant relationship between the estimated population and the five independent variables and accepted the alternate hypothesis.

The primary goal of the study was to analyze the independent variables influence United States education quality and determine what variables had a statistically significant relationship. The results of the analysis presented in Table 7 highlight how the independent variables influence academic achievement (the mean score on the reading, math and science scores). For the regression analysis, I used a simulated dependent variable, academic performance. The simulated dependent variable allowed me to include a constant in the regression model. Having a constant confirms the residuals have a mean and/ or average of zero (Gelman, 2008). Therefore, it is notable enrollment ( $B = -4.97, t = -1.92, p = 0.31$ ), graduation rates ( $B = -0.33, t = -0.11, p = 0.91$ ), property tax funding ( $B = -6.18, t = -0.81, p = 0.57$ ) and teacher quality ( $B = -2.77, t = -1.69, p = 0.34$ ) had a moderate strength effect on academic achievement for the United States and where

Massachusetts was doing admirably. Negative correlation is no different than a positive correlation regarding to the strength of the variables (Gelman, 2008). Correlation strength is either (-1 or 1), (Gelman, 2008). If the numbers are close to -1 or 1 the stronger the variable is to a correlation, (Gelman, 2008). It is possible an increase in enrollment affects the availability of the available resources for student use, which in turn negatively affects the quality of education especially in urban communities. The negative effects of fulltime and certified teachers' quality on youth literacy rate had a moderate strength correlation with the other four independent variables. However, OECD analysis illustrated there is need for improvement for both United States and German teacher quality. As a result, the negative correlation does depict an inverse slope which could be attributed to the existence of a significant correlation between the independent variables and serve to underline the complex nature of education and learning.

In Chapter 5, I will interpret the results of the ANOVA analysis; per the quantitative checklist, I will reevaluate the limitations of the study, and provide recommendations for future analysis. Along with discussing the potential social implications of the results of this study and connect the results to the existent literature. Finally, I will discuss the outcomes of this study in relation to polarities of democracy.

## Chapter 5: Discussion

### **Introduction**

As discussed in Chapter 1, the purpose of this proposed quantitative empirical study was to ascertain whether there was a statistically significant difference in the relationship between the independent variables using the polarities of democracy participation and representation tenets as proxy variables. The theoretical framework served as a lens through which to compare the Massachusetts education system with the United States and Germany as the benchmark. A fundamental concept of understanding enrollment rate, high school graduation rate, property tax funding rate for schools, teacher quality, and youth literacy rate is critical in providing educational opportunities in urban communities.

I conducted this quantitative study to address some of the academic achievement education inequities, which were challenges for this complex research. However, the data collection method presented only minor obstacles. I collected most of the secondary data from two databases within one week. Some of the DOE and OECD numbers for enrollment rate, high school graduation rate, and youth literacy rate did not always match. OECD has conducted their international analysis every three years starting in 2000. The in between years do not change until they resurvey and analyze the new raw data. Thus, youth literacy rate data was only populated starting in 2003 and every three years afterwards. Therefore, I used five years from 2010-2015. For the years of 2013 – 2014 the 2012 data was assessed the same for those years, per OECD methodology. Also, the gender comparisons were a challenge to find and to be consistent for Massachusetts and Germany. However, OECD and my findings for teacher quality need work for the United

States and Germany. The OECD (2015) findings suggest that both countries may want to review Canada's teacher quality practice and policies in that Canada had the highest teacher quality among all 36 countries. All five independent variables had a statistically significant association to educational opportunity.

### **Interpretation of the Findings**

The rationale for this study was extracted from Shavit et al.'s (2007) conclusion that there was a need for both previous and new research to be analyzed regarding unequal educational outcomes that currently exist in different countries. Studies have been conducted regarding educational inequality and adult life and work skills in the past few decades; however, the findings do not reflect trends of today's societies for K-12 public education in urban communities. Many of the questions surrounding the large academic achievement gap identified in the literature regarding the availability of resources are needed for society to progress remain unanswered. The results and interpretation of the analysis in this study may provide fresh answers to the central research question and a new understanding of the status of educational inequities as viewed through the five independent variables chosen to conduct this study. All five independent variables appear to be pivotal in determining what combination of variables are more important to focus education policies on in urban communities.

### **Enrollment Rate**

The United States overall has a higher enrollment rate (99.24%,  $SD = 1.79$ ) than Massachusetts (50%,  $SD = 1.29$ ) and Germany (97.5%,  $SD = 4.33$ ). The mean enrollment rate between Massachusetts and the United States are significantly different. However, the mean enrollment rate between the United States and Germany are not significantly

different. The enrollment rate in Massachusetts (50%) is considerably lower. Enrollment was significantly positively correlated with property tax funding rate and significantly negatively correlated with both measures of teacher quality,  $p < 0.001$  in all three cases. For this research, I had the alpha coefficient established to .05, which allowed a  $p < 0.05$ , 0.01 and 0.001 less than 1 in 20 chance in being incorrect (Gelman, 2008). Therefore, the findings suggest an increase in enrollment is associated with an increase in property tax funding rate. The results also reveal that there was a statistically significant difference in the mean enrollment among Germany, the United States, and Massachusetts,  $F(2, 35) = 1186$ ,  $p < 0.001$ . However, an increase in enrollment may be associated with erosion in the teacher quality. This is supported by the OECD analysis highlighting the value of a high full-time teacher to student ratio to the quality of teaching and learning.

### **High School Graduation Rate**

Germany (88.91%) had a higher graduation rate than the United States (79.80%,  $SD = 3.66$ ) and Massachusetts (85.56%,  $SD = 3.19$ ), as illustrated in Table 1. The graduation rates between Massachusetts and Germany are statistically significant associated; however, there is a significant difference in the graduation rates between Massachusetts and the United States with the United States overall having lower graduation rates. In this respect, it is possible that Massachusetts has implemented effective strategies to reduce student dropout, such as home schooling, thereby ensuring higher graduation rates. It is also possible that the United States education system has weaker safeguards against student attrition. The findings highlight the existence of a significant difference in the property tax funding rate with the rates in Massachusetts being significantly lower than both Germany and the United States.

### **Property Tax Funding for Schools**

In the United States, the mean property tax funding rate is 5.83% ( $SD = 1.11$ ), which is slightly higher than the rates in Germany (4.70%,  $SD = 0.34$ ). In Massachusetts, the mean tax funding rate is 1.30% ( $SD = 0.12$ ), as illustrated in Table 1. Property tax funding rate is a matter of policy. It is possible that the state of Massachusetts is more lenient and the state government contributes more to public education. Likewise, Germany public education is funded mostly from the federal government. Lastly, the alternative hypothesis for the central research question was accepted for this variable.

### **Teacher Quality**

Massachusetts has a significantly higher quality of teachers than either Germany or the United States. The proportion of full-time teachers is also significantly higher in Massachusetts than in the United States overall. This is probably a result of a recruitment policy informed by the value of certified teachers. The more a group of teachers is valued within an education system the higher the chance they will be recruited and developed within the system. This is also true for Germany, but both countries need improvement. The null hypothesis for the central research question was supported for this variable.

### **Youth Literacy Rate**

The youth literacy scores were only conducted for the years of 2015-2010. However, OECD conduct their analysis and surveys every three years. For the United States and Massachusetts, 2013-2014 data was same as 2012 because of the triennial analysis. Hence, analysis of youth literacy scores between the United States, Massachusetts, and Germany showed significant differences in math scores. Massachusetts scores were in the 90th percentile for the years observed, while for the

United States was lagging behind Massachusetts and the OECD standard. For 2015, the United States had improved overall in literacy testing. Germany in the OECD analysis had continued to perform admirably in youth literacy. Despite there being little improvement for 2015, OECD findings had them ranked highest of all the European countries. Massachusetts and the United State had very high math testing scores. The differences for the United States are likely a manifestation of the importance attached to math in the respective education systems. The more emphasis placed on a subject the more likely that resources will be directed towards improving performance. The alternative hypothesis for the central research question was accepted for this variable.

Finally, the findings have several interpretations in relation to the central research question. The findings reveal four of the five independent variables had statistically significant correlation, but overall, the five independent variables had a statistically significant effect on the quality of education in the United States; it is essential to note, correlation does not equal causation. Since the resultant model had moderate statistically significant strength based on the *r*-square values, it is plausible the research needed to analyze each variable independently for further deep dive policy analysis that may influence the complexity of education inequities. Importantly, the findings reveal there are considerable differences in the enrollment rate, graduation rate, property tax funding rate for schools, and youth literacy rate between the United States, Germany, and Massachusetts.

### **Relating the Study to Previous Studies Discussed**

No previous studies have been carried out to develop an understanding of the correlation between enrollment rate, high school graduation rate, property tax funding for

schools, teacher quality, and youth literacy rates (Delaney & Yu, 2013). It is imperative to understand that the current research reveals there is a statistically significant correlation among the five independent variables. However, there are no significant differences in the youth literacy rates between United States, Massachusetts, and Germany except for math scores. To this end, I conclude the analysis supports OECD findings that Germany outperforms the United States overall in academic achievement.

### **Relating the Study Findings to the Theoretical Framework**

The polarities of democracy model is a theoretical framework developed by Benet (2013). The model involves five polar relationships: freedom-authority, justice-due process, diversity-equality, human rights-communal obligations, and participation-representation (Benet, 2013). Under this model, participation and representation are important poles in the attainment of a democracy. The current study reveals the five independent variables associated with participation and representation influence the quality of education. Moreover, the study reveals that there are positive elements associated with both representation and participation.

Full-time certified teachers are uniquely trained to deal with disparities in the urban education system (Carter, & Keiler, 2009). The current study fills the academic achievement gap in the existing knowledge by highlighting the lack of quality teachers in both the German and U.S. educational systems. Based on the findings of this study and OECD, both the United States and Germany have a lot to do to improve the representation of certified teacher quality.

### **Potential Bias and Limitations of the Study**

In Chapter 1, I discussed some limitations to this study. The most notable limitation of the study is that, because it surveyed 36 nations, some of the data retrieved from the OECD, PIACC, and PISA databases were large. I had to filter the information specific for this research. Also, since the study involved the use of secondary data, errors were noticeable in the reporting of information from the United States Department of Education and what was collected and analyzed in the database from OECD findings. In addition, for the five-year period for this research, Massachusetts data were limited. Thus, the external validity results of the three models were high.

The causal conclusion of the internal validity is warranted for this research because of bias and errors were minimal. To have few errors, I repeated the statistical analysis for the central research several times to confirm my results were consistent. Furthermore, the model for this research maintained a 90% variance. Therefore, I can say the causal conclusion of the internal validity had no concerns.

### **Recommendations for Future Research**

As noted previously there appear to be some discrepancies among findings, particularly with United States, reporting their ranking standing in graduation rate and literacy. National Public Radio (2015) report mention a concern among states and schools gaming the education system to artificially boost their graduation rates. The reporting is stating that this policy concept is taking at-risk students and putting them into homeschooling, and excess practice of credit recovery programs for high school graduation rate getting better is more misconception than reality (NPR, 2015). Also, previously noted, youth literacy rate was being increase and some areas decreased

differently from the OECD analysis for the United States Department of Education NCES reporting. Further, research and/or post-doctoral should be explored regarding some of the findings.

According to an interview released by NPR (2017), at the present time, President Donald. J. Trump and Secretary of Education Betsy DeVos plans to reduce funding to public schools that will result in overall reduction in federal public education spending. The plans of the Trump administration include removal of formula-allocated state grants programs, to assist in paying for private school vouchers (NPR, 2017). The current study reveals that such plans are ill informed and will result in an education system that is lopsided (failing public school system and a vibrant private school system). The efforts are being promoted as a move to take the federal government out of the education process (National Education Assessment, 2017). Ideally, if each state in the United States had a system like Massachusetts this might not be an issue.

Darrow (2016) asserted that the Every Student Succeeds Act (ESSA), seeks to ensure that every child succeeds. This law has the effect of shifting accountability provision from the federal government to the states (Darrow, 2016). In many respects, the ESSA seeks to ensure that students have every opportunity to succeed within their settings. By decentralizing accountability, the law has made it easier to serve the needs of underserved schools and students (Darrow, 2016). It makes it easier to change policies relating to the five independent variables. Depending on the state, it will be easier to address inequalities in education. The downside is that it will be easier for states to ignore educational inequalities. The voucher system proposed to repeal the elementary and secondary education act of 1965 is likely to affect the diversity of K-12 public schools

(Darrow, 2016). This move could improve access to private education. However, the proposed strategy could affect funding to public schools (Darrow, 2016). Loss of funds can affect the capacity to improve graduation and enrollment rates and recruit certified teachers in urban areas (Darrow, 2016). Further analysis of the new administration will need continue research to determine what education inequalities and qualities impact academic achievement for urban communities and for global competitiveness as a society at whole.

### **Implications for Social Change**

The implication for social change from this research hopefully provide insight into best practices regarding reducing educational inequality and improving educational quality, as the results and findings have been demonstrated. The results may influence intergenerational mobility of polarities affecting adult skills attainment, and ultimately influence the earnings distributions within the global market for United States future endeavors. Thus, academic achievement is a pathway to opportunities for the betterment of individuals and entire societies (Zeller-Berkman, 2012). This research may also enhance understanding of the polarities of democracy, mainly in relation to participation and representation, thereby supplementing the current body of literature.

The implication comparative analysis of Germany, and Massachusetts have managed to reduce inequalities in their education systems can provide important insights into the aspects that should be focused on in the fight against education inequalities overall for the United States. Secondly, it is evident that there is a need to improve the levels of academic performance for the United States, for males. The outcome analysis of women in academic for the United States over the past decades have outperformed the

academic performance of males. Investment in education for either females or males fails to reap the proportionate rewards when the learners drop out or fail to achieve.

Addressing inequalities via the education system requires a thorough understanding of the complexities within the education and barriers to education inequities. Lastly, investment in urban communities' education with the goal of reducing inequalities is required. The findings of this study show that nations and societies with low inequality scores have high academic achievement and performance aptitude scores.

### **Summary and Conclusion**

For this chapter, and interpreted the results of the findings I presented in Chapter 4. The independent variables of enrollment rate, high school graduation rate, property tax funding rates for schools, and youth literacy rate, confirmed a statistically significant association among four of the independent variables, and all five independent variables have a statistically significant association to contribute making quality education pathway of opportunities in urban communities. Hence, the findings of this study show the existence of significant, and sometimes unexpected, correlations between the independent variables that previous studies have linked to inequalities.

In conclusion, overcoming inequalities in education involves the establishment of several education policies that seek to harmonize the existing K-12 public education differences. For instance, a policy on universal education with funding for children from economically challenged backgrounds could help minimize the inequalities. Another important policy would be the upgrading of all public educational institutions so the level of intake and facilities are similar for all schools. States with casinos or lotteries have extra funding for publications, if all the funding goes toward public education. However,

this should not be a mean for funding education for the most powerful country.

Harmonization of the requirements in the working environment and the school curricular can also minimize the K-12 public education differences in education urban communities in the United States.

## References

- Adamczyk, J. (n.d.). GI Bill. *Encyclopedia of Activism and Social Justice*.  
doi:10.4135/9781412956215.n354
- Apple, M. W. (2015). *Education and political work: Is success possible?* In M. Apple (Ed.), *Education and Power* (pp. 165-177). London, United Kingdom: Routledge and Kegan. doi:10.4324/9780203143124
- Araujo, C., Ferreira, F., & Schady, N. (2004). *Is the world becoming more unequal? Changes in the world distribution of schooling*. Washington, DC: World Bank. doi:10.1596/1813-9450-4701
- Association for Supervision and Curriculum Development. (2014). Retrieved from <http://www.ascd.org/about-ascd.aspx>
- Baker, B. D., & Corcoran, S. P. (2012). *The Stealth Inequities of School Funding: How State and Local School Finance Systems Perpetuate Inequitable Student Spending*. Center for American Progress. Retrieved from <http://files.eric.ed.gov/fulltext/ED535555.pdf>
- Barbalet, J. (2015). Book review: *Weber's Rationalism and Modern Society: New Translations on Politics, Bureaucracy, and Social Stratification* T. Waters & D. Waters (Eds). New York, NY: Palgrave Macmillan. *Journal of Classical Sociology*, 16(1), 131–134. doi:10.1177/1468795x15611321
- Barnes, J. A. (1966). Durkheim's Division of Labour in Society. *Man* 1(2), 158-175. doi:10.2307/2796343

- Benet, W. J. (2013). Managing polarities of democracy: A theoretical framework for positive social change. *Journal of Social Change*, 5(1) 26-39. Retrieved from <http://scholarworks.waldenu.edu/cgi/viewcontent.cgi?article=1033&context=jsc>
- Berenyi, J. R. (2008). "Appropriate action," inappropriately defined: Amending the Equal Educational Opportunities Act of 1974. *Washington and Lee Law Review*, 65(2), 639-674. Retrieved from [http://law2.wlu.edu/deptimages/Law%20Review/65-2Berenyi.pdf?origin=publication\\_detail](http://law2.wlu.edu/deptimages/Law%20Review/65-2Berenyi.pdf?origin=publication_detail)
- Bergan, S., Gallagher, T., & Harkavy, I. (2016). *Higher education for democratic innovation*. Strasborg, France: Council of Europe. Retrieved from <https://book.coe.int/eur/en/higher-education-and-research>
- Bettie, J. (2003). *Women without class: Girls, race, and identity*. Oakland, CA: University of California Press. Retrieved from <http://www.jstor.org/stable/10.1525/j.ctt1pnz3q>
- Breen, R. (2004). *Social mobility in Europe*. Oxford, United Kingdom: Oxford University Press. doi10.1093/0199258457.001.0001
- Breen, R., & Goldthorpe, J. H. (2001). Class, mobility and merit: The experience of two British birth cohorts. *European Sociological Review*, 17, 81-101. doi:10.1093/esr/17.2.81
- Brumberg, D., & Hedemann, S. (2013). Global authoritarians and the Arab Spring: New challenges for U.S. diplomacy. *Democracy & Society*, 10(2). Retrieved from <https://government.georgetown.edu/sites/government/files/GU-D%26S-19.pdf>

- Carlson, J. (1993). Book Review: *Making All the Difference*, by Martha Minow. Ithaca, NY: Cornell University Press. *Social & Legal Studies*, 2(2), 247–250.  
doi:10.1177/096466399300200211
- Carter, J. H., & Keiler, L. S. (2009). Alternatively certified teachers in urban small schools: Where policy reform meets the road. *Urban Review*, 41(5), 437–460.  
doi:10.1007/s11256-008-0117-7
- Castello, A. (2010) Inequality and growth in advance economies: An empirical investigation *Journal of Economic Inequality*, 8(3), 293-321. doi:10.1007/s10888-010-9133-4
- Castello, A., & Domenech, R. (2002). Human capital inequality and economic growth: Some new evidence. *Economic Journal* 112(478), 187-200.  
doi.org/10.1111/1468-0297.00024
- Cavanagh, S. (2012) U.S. Education Pressured by International Comparisons. *Education Week*, 31(16), 6-10. Retrieved from.  
<http://www.edweek.org/ew/articles/2012/01/12/16overview.h31.html>
- Ceci, S. J., & Papierno, P. B. (2005). *The Rhetoric and Reality of Gap Closing When the “Have-Nots” Gain but the “Haves” Gain Even More*. Retrieved from.  
<http://www.human.cornell.edu/hd/circ/publications/upload/The-Rhetoric-and-Reality-of-Gap-Closing.pdf>
- Checchi, D. (2004). Does educational achievement help to explain income inequality? In A. Cornia (Ed.), *Inequality, growth and poverty in an era of liberalization and globalization*. New York, NY: Oxford University Press.  
doi.org/10.1093/0199271410.003.0004

- Chicosky, C. L. (2015) Restructuring the modern education system in the United States: A look at the value of compulsory education laws. *Brigham Young University Education & Law Journal*, 2015(1), 1-75. Retrieved from <http://digitalcommons.law.byu.edu/cgi/viewcontent.cgi?article=1355&context=elj>
- Cokely, E. T., & Kelley, C. M. (2009). Cognitive abilities and superior decision making under risk: A protocol analysis and process model evaluation. *Judgment and Decision Making* 4, 20-33. Retrieved from. <http://journal.sjdm.org/81125/jdm81125.pdf>
- Colby, J., & Witt, M. (2000). *Defining Quality in Education*. Paper presented at the meeting of The International Working Group on Education, June, 200, Florence, Italy. Retrieved From. <https://www.unicef.org/education/files/QualityEducation.PDF>
- Coleman, J. S. (1968). The concept of equality of educational opportunity. *Harvard Educational Review*, 38, 7-22. doi:10.17763/haer.38.1.m3770776577415m2
- Colclough, G., & Beck E. M. (1986). The American educational structure and the reproduction of social class. *Sociological Inquiry*, 56(4), 456-476. doi:10.1111/j.1475-682x.1986.tb01172.x
- Cordes, B., & Miller, G. (2001). Inequality of education in the United States. *Programs Quarterly*, 6(1), 1-12.
- Couto, R. A., & Eken, S. C. (2002). *To give their gifts: Health, community and democracy*. Nashville, TN: Vanderbilt University Press. Retrieved from <http://www.socresonline.org.uk/8/3/couto.html>

- Davids, S. L., Schapira, M. M., McAuliffe, T. L., & Nattinger, A. B (2004). Prediction of pessimistic breast cancer risk perceptions in a primary care population. *Journal of General Internal Medicine, 19*, 310-315. doi:10.1111/j.1525-1497.2004.20801.x
- Darrow, A. -A. (2016). *The Every Student Succeeds Act (ESSA)*. *General Music Today, 30*(1), 41–44. doi:10.1177/1048371316658327
- Delaney, J. A., & Yu, P. (2013). Policy innovation and tertiary education graduation rates: A cross-country analysis. *Compare, 43*(3), 387-409. doi:10.1080/03057925.2012.728375
- Dewey, J. (2012). *The Public and Its Problems: An Essay in Political Inquiry*. M. L. Rogers (Ed.). University Park, PA: Penn State University Press. Retrieved from <http://www.jstor.org/stable/10.5325/j.ctt7v1gh>
- Dubrow, J. K. (2014). *Political inequality in an age of democracy: Cross-national perspectives*. Abingdon-on-Thames, United Kingdom: Routledge. doi:10.4324/9780203797907
- Durkheim, E. (1893). 1984. *The division of labor in society*. New York: Free Press. Retrieved from [https://scholar.google.com/citations?view\\_op=view\\_citation&hl=en&user=ZCgFBIMAAAAJ&citation\\_for\\_view=ZCgFBIMAAAAJ:u-x6o8ySG0sC](https://scholar.google.com/citations?view_op=view_citation&hl=en&user=ZCgFBIMAAAAJ&citation_for_view=ZCgFBIMAAAAJ:u-x6o8ySG0sC)
- Education Week. (2014). *Motivation matters: Engaging students, creating learners*. Retrieved from <http://www.edweek.org/ew/toc/2014/06/05/>
- Farkas, G. (2006). *How Educational Inequality Develops*. Paper presented at The Colors of Poverty: Why Racial and Ethnic Disparities Exist conference, University of Michigan, September 15 – 16, 2005.

- Foldvari, P., & Van Leeuwen, B. (2011). Should less inequality in education lead to a more equal income distribution? *Education Economics* 19(5), 537-554.  
doi.org/10.1080/09645292.2010.488472
- Freire (as cited in Irwin, 2012). *Pedagogy of the oppressed*. New York, NY: The Continuum Publishing Company. doi:10.5040/9781472541222.ch-005
- Fuchs-Schuendeln, N. Krueger, D. Sommer, M. (2010). *Inequality trends for Germany in the last two decades: A tale of two countries*. Vol. 13, issue 1, pages 103-132. Retrieved from. <http://econpapers.repec.org/article/redissued/09-195.htm>
- Fukuyama, F., & Pierre, J. A. (1992). *The end of history and the last man*. New York, NY: Free Press. doi:10.2307/20045133
- Eide, E., & Showalter, M. (2011). Estimating the relation between health and education: What do we know and what do we need to know? *Economics of Education Review*, 30(5), 778-791. doi:10.1016/j.econedurev.2011.03.009
- Fritzberg, G. J. (2001). *What is Goals 2000: The Educate America Act?* Volume: 27 issue: 1, page(s): 78-80, Issue published: September 1, 1994 doi.org/10.1177/00400599940200117
- Gautier, P. A., Teulings, C. N., & Van Vuuren, A. (2009). *On-the-Job Search, Mismatch and Efficiency*. *Review of Economic Studies*, 77(1), 245–272. doi:10.1111/j.1467-937x.2009.00565.x
- Gelman, A. (2008). Variance, analysis of. *The new Palgrave dictionary of economics* (2nd ed.). New York, NY: Palgrave Macmillan.  
doi:10.1057/9780230226203.1787

- Ginsberg, E., & Solow, R. M. (Eds.). (1976). *The great society: Lessons for the Future*. New York, NY: Basic Books. doi.org/10.1086/643393
- Golbeck, A. L., Ahlers-Schmidt, C. R., Paschall, A. M., & Dismuke, S. E. (2005). A definition and operational framework for health numeracy. *American Journal of Preventive Medicine, 29*, 375-376. doi:0.1016/j.amepre.2005.06.012
- Haskins, R. Isaacs, J. B., & Sawhill, I. V. (2008). *Getting ahead or losing ground: Economic mobility in America* Washington, DC: The Pew Charitable Trusts. Retrieved from <https://www.brookings.edu/research/getting-ahead-or-losing-ground-economic-mobility-in-america/>
- Herbold, H. (1994) Never a level playing field: Blacks and the GI Bill *Journal of Blacks in Higher Education, Vol 6*, 104-108. doi:10.2307/2962479
- Hunter, L., & Leahey, E. (2008). *Collaborative Research in Sociology: Trends and Contributing Factors*. *The American Sociologist, 39*(4), 290–306. doi:10.1007/s12108-008-9042-1
- Isaacs, J. B., Sawhill, I. V., & Haskins, R. (2008). *Getting ahead or losing ground: Economic mobility in America* Washington, DC: The Pew Charitable Trusts. Retrieved from <https://www.brookings.edu/research/getting-ahead-or-losing-ground-economic-mobility-in-america/>
- Johnson, B. (1998). *Polarity management: Identifying and managing unsolvable problems* (60754th ed.). Human Resource Development Press. Retrieved from [http://www.jpr.org.uk/documents/14-06-19.Barry\\_Johnson.Polarity\\_Management.pdf](http://www.jpr.org.uk/documents/14-06-19.Barry_Johnson.Polarity_Management.pdf)

- Joumard, I., Mauro, P., & Debbie, B. (2012). *Less income inequality and more growth - are they compatible? Part 3. Income redistribution via taxes and transfers across OECD countries* (Working Paper No. 926). OECD Economic Department.  
doi:10.1787/19952856
- Junker, D., Gassert, P., Mausbach, W., & Morris, D. B. (2004). *The United States and Germany in the era of the Cold War, 1945-1990*. Washington, D. C.: Cambridge University Press. doi:10.1017/cbo9781139052436
- Karp, J. A., Banducci, S. A., & Bowler, S. (2003). To know it is to love it? Satisfaction with democracy in the European Union. *Comparative Political Studies*, 36(3), 271-292. doi:10.1177/0010414002250669
- Karwowski, W. (Ed.) (2006). *International encyclopedia of ergonomics and human factors* (vol. 3). London and New York: Routledge.  
doi:10.1201/9780849375477.ch29
- Keller (as cited in Education Week, 2011). *Teacher quality*. Retrieved from <http://www.edweek.org/ew/issues/teacher-quality/>
- Kohut, A., & Stokes, B. (2006). *America against the world: How we are different and why we are disliked* New York, NY: Times Books. doi:10.2307/20031993
- Kozol, J. (1991). *Savage inequalities: Children in America's schools*. New York, NY: Crown Publishers. doi:10.2307/2076291
- Larrive, P., & Lee, C. (2015). *Negation and polarity: Experimental perspectives*. Cham, Switzerland: Springer. doi:10.1007/978-3-319-17464-8\_8
- Lim, A. S. K., & Tang, K. K. (2008). Human capital inequality and the Kuznets curve. *Developing Economics*, 46(1), 26-51. doi.org/10.1111/j.1746-1049.2007.00054.x

- Lincoln Institute. (2014). Retrieved from <http://www.lincolnst.edu/news/press-releases/new-research-role-property-tax-funding-k-12-education>
- Lenhardt, G. (2005). *Hochschulen in Deutschland und in den USA*. Wiesbaden, Germany: VS Verlag für Sozialwissenschaften. Retrieved from <http://www.springer.com/gp/book/9783531148687>
- Lloyd S., (2016). *Nation earns C, Massachusetts ranks first in "State of the States" report card*. Retrieved from [http://www.edweek.org/media/qualitycounts2016\\_release.pdf](http://www.edweek.org/media/qualitycounts2016_release.pdf)
- Mandelbaum, M. (2007). *Democracy's good name: The rise and risks of the world's most popular form of government*. New York, NY: Public Affairs. Retrieved from <http://www.publicaffairsbooks.com/book/ebook/democracys-good-name/9781586486303>
- Marshall, G., Roberts, R., & Swift, A. (1997). *Against the odds? Social class and social justice in industrial societies*. Oxford, UK: Clarendon Press. Retrieved from <http://scholarworks.wmich.edu/cgi/viewcontent.cgi?article=2520&context=jssw>
- McCall, L. (2013.). *Beyond the Opposition between Opportunity and Inequality*. The Undeserving Rich, 21–52. doi:10.1017/cbo9781139225687.003
- McFatter, R. (2017). Comp formulas ANAOVA. Retrieved from <http://www.ucs.louisiana.edu/~rmm2440/CompFormulasANOVA.pdf>
- Meiksins E. (1995). *Democracy against capitalism: Renewing historical materialism*. 96: Verso, *Discovery eBooks*. doi:10.1017/cbo9780511558344.001

- Merryman, M. (1998). *Clipped wings: The rise and fall of the women Air Force service pilots of World War II*. New York, NY: New York University Press.  
doi.org/10.2307/2650455
- Munger, F. J., & Fenno, R. F. (1963). *National politics and federal aid to education*. Syracuse, NY: Syracuse University Press. doi:10.1002/ncr.4100520612
- National Public Radio. (2015) American high school graduation rate reach all time high. Retrieved from <http://www.npr.org/2016/10/17/498301547/american-high-school-graduation-rates-reach-all-time-high>
- National Public Radio. (2017). *Education Department Faces Deep Cuts; DeVos Faces Tough Questions*. Retrieved from.  
<http://www.npr.org/sections/ed/2017/05/27/529867484/education-department-faces-deep-cuts-devos-faces-tough-questions>
- Nelson, W., Reyna, V. F., Fagerlin, A., Lipkus, I., & Peters, E. (2008). Clinical implications of numeracy: Theory and practice. *Annals of Behavioral Medicine* 35, 261-274. Retrieved from. <https://www.ncbi.nlm.nih.gov/pubmed/18677452>
- Noreen, E. (1988). An empirical comparison of probit and OLS regression hypothesis tests. *Journal of Accounting Research*, 26(1), 119-133.
- Organisation for Economic Cooperation and Development. (2011), *An Overview of growing income inequalities in OECD countries*, *Divided We Stand*, 21-45.  
doi:10.1787/9789264119536-3-en
- Organisation for Economic Cooperation and Development. (2012). *How pronounced is income inequality around the world – and how can education help reduce it?*

Organization of Economics and Cooperation Development.

doi:10.1787/5k97krntvqtf-en

Organisation for Economic Cooperation and Development. (2013). *OECD skills outlook 2013: First results from the Survey of Adult Skills* Retrieved from [http://skills.oecd.org/OECD\\_Skills\\_Outlook\\_2013.pdf](http://skills.oecd.org/OECD_Skills_Outlook_2013.pdf)

Organisation for Economic Cooperation and Development. (2014). *Society at a glance*. Directorate for Employment, Labour, and Social Affairs, OECD. Retrieved from <https://www.oecd.org/australia/sag2016-australia.pdf>

Organisation for Economic Cooperation and Development. (2015). *Education at a Glance 2015*. Education at a Glance. doi:10.1787/eag-2015-en

Organisation for Economic Cooperation and Development. (2016, & 2017). *Education at a Glance 2016*. Education at a Glance. doi:10.1787/eag-2016-en

Orji, H. O. (2011). *Platinum essays in the philosophy of applied economics of development: Theories, techniques and Practice*. New York, NY: AuthorHouse. Retrieved from <http://bookstore.authorhouse.com/Products/SKU-000419650/platinum-essays-in-the-philosophy-of-applied-economics-of-development.aspx>

Owen, A., & Zhou, Y. (2000). *Safe and Effective Importance Sampling*. Journal of the American Statistical Association, 95(449), 135. doi:10.2307/2669533

Parker, W. C. (2003) *Teaching democracy: Unity and diversity in public life*. New York: NY: Teachers College Press. doi:10.4135/9781452218533.n192

Pomerleau, K. (2015). *2015 International tax competitiveness index*. Retrieved from <http://taxfoundation.org/article/2015-international-tax-competitiveness-index>

- Powell, J. (2003). Constructing disability and social inequality early in the life course: The case of special education in Germany and in the United States. *Disability Studies Quarterly Journal*, 23(2), 57-75. doi:10.18061/dsq.v23i2.414
- Powell, J. W. (2009). To segregate or to separate? Special education expansion and divergence in the United States and Germany. *Comparative Education Review* 53(2), 161-187. doi:10.1086/597816
- Power, J.J.W., & Solga, H. (2010). Analyzing the nexus of higher education and vocational training in Europe: A comparative-institutional framework. *Studies in Higher Education* 35(6), 705-721. Retrieved from.  
[http://publications.uni.lu/bitstream/10993/4788/1/PowellSolga2010\\_NexusVET-HE.pdf](http://publications.uni.lu/bitstream/10993/4788/1/PowellSolga2010_NexusVET-HE.pdf)
- Programme for the International Assessment of Adult Competencies. (2017). Assessments and surveys. Retrieved from <https://nces.ed.gov/surveys/piaac/>
- Quinnan, T. W. (1997). *Adult students "at-risk": Culture bias in higher education*. Westport, CT: Bergin and Garvey. doi:10.5860/choice.35-3450
- Reilly, B. (2014). *Constitutional engineering and ethnic conflict*. Retrieved from <https://government.georgetown.edu/sites/government/files/GU-D%26S-22.pdf>
- Re-Education; *an Analysis of the Institutional System of the United States*. (1918). *JAMA*, 70(5), 339. doi:10.1001/jama.1918.02600050061027
- Rindermann, H. (2007). *The g-factor of international cognitive ability comparisons: The homogeneity of results in PISA, TIMSS, PIRLS and IQ-tests across nations*. *European Journal of Personality*, 21, 667-706. doi:10.1002/per.634

- Rivlin, A. M., & McClellan, M. B. (2014). *Health Policy Issue Brief: Improving Health While Reducing Cost Growth, What is Possible?* Retrieved from.  
<https://www.brookings.edu/research/health-policy-issue-brief-improving-health-while-reducing-cost-growth-what-is-possible/>
- Rosenberg, G. (2004). The 1964 civil rights act: The crucial role of social movements in the enactment and implementation of anti-discrimination law. *Saint Louis University Law Journal* 49, 1147-1154. Retrieved from.  
[http://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?article=2924&context=journal\\_articles](http://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?article=2924&context=journal_articles)
- Rue, J. (2016). *EU economic governance must be more social, greener and equality-driven*. Retrieved from the European Public Service Union website:  
<http://www.epsu.org/article/eu-economic-governance-must-be-more-social-greener-and-equality-driven>
- Schlosser, A. (2009). *Does Education Really Help? Skill, Work, and Inequality*. By Edward N. Wolff. *Economica*, 76(302), 406–407. doi:10.1111/j.1468-0335.2009.00654.x
- Shavit, Y., Arum, R., Gamoran, A., & Menachem, G. (2007). *Stratification in higher education: A comparative study*. Palo Alto, CA: Stanford University Press.
- Simon, M.K. & Goes, J. (2103). *Dissertation and Scholarly Research*. Retrieved From.  
<http://www.dissertationrecipes.com/wp-content/uploads/2011/04/Assumptions-Limitations-Delimitations-and-Scope-of-the-Study.pdf>
- Sherman, J., & Poirier, J. (2007). *Educational equity and public policy: Comparing results from 16 countries* (Working Paper No 6). Montreal, Canada: UNESCO

- Institute for Statistics. Retrieved from  
<http://unesdoc.unesco.org/images/0014/001495/149523e.pdf>
- Sloan, W. M. (2012). *What Is the purpose of education?* Retrieved from  
<http://www.ascd.org/publications/newsletters/education-update/jul12/vol54>
- Smith, A. (1776). *An inquiry into the nature and causes of the wealth of nations*.  
 Retrieved from <http://www.econlib.org/library/Smith/smWN.html>
- Stigler, J. W. & Hiebert, J. (1999). *The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom*. New York: Press Retrieved from. [http://hepg.org/her-home/issues/harvard-educational-review-volume-71-issue-4/herbooknote/the-teaching-gap\\_99](http://hepg.org/her-home/issues/harvard-educational-review-volume-71-issue-4/herbooknote/the-teaching-gap_99)
- Thomas, J Y., & Brady, K. P. (2005). Chapter 3: The elementary and secondary education act at 40: *Equity, accountability, and the evolving federal role in public education*. *Review of Research in Education* 29, 51-67.  
[doi.org/10.3102/0091732X029001051](https://doi.org/10.3102/0091732X029001051)
- Tillman, L. C., Scheurich, J. J. (2013). *Handbook of Research on Educational Leadership for Equity and Diversity*. (2013). [doi:10.4324/9780203076934](https://doi.org/10.4324/9780203076934)
- Topping, K. (2011). *Primary–secondary transition: Differences between teachers' and children's perceptions*. Vol: 14 issue: 3, page(s): 268-285 Article first published online: November 15, 2011; Issue published: November 1, 2011. doi:  
<https://doi.org/10.1177/1365480211419587>
- U.S. Department of Education, Census Bureau. (2009). *Current Population Survey*  
[https://www.census.gov/mp/www/cat/people\\_and\\_households/current\\_population\\_survey.html](https://www.census.gov/mp/www/cat/people_and_households/current_population_survey.html)

- U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. (2014a). *PIACC Skills Outlook 2013 from OECD*. Center on International Education Benchmarking. Retrieved from <http://www.ncee.org/cieb/piaac-skills-outlook-2013-from-oecd/>
- U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. (2014b). *Program for the international assessment of adult competencies*. Retrieved from <http://nces.ed.gov/surveys/piaac/>
- U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. (2015). *Trends in International Mathematics and Science Study: TIMSS participating countries*. Retrieved from <https://nces.ed.gov/timss/countries.asp>
- U.S. Department of Education. (2016). Retrieved from <http://www2.ed.gov/rschstat/catalog/k-12-students-schools.html>
- U.S. National Library of Medicine National Institutes of Health. (1974). *The Great Society: Lessons for the future*. New York, NY: Basic Books. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4266933/#R58>
- Waters, T., & Waters, D. (2015). *Bureaucracy. Weber's Rationalism and Modern Society*, 73–127. doi:10.1057/9781137365866\_6
- White, K. R. (1982). *The relation between socioeconomic status and academic achievement*. *Psychological Bulletin*, Issue 91, 461-481. doi:10.1037//0033-2909.91.3.461

- Williams, D. (2015). *Where Adam Smith and Occupy agree: Inequality*. Bloomberg View. Retrieved from <http://www.bloombergview.com/articles/2015-09-02/adam-smith-and-occupy-agree-on-inequality>.
- Zeller-Berkman, S. (2012). Occupying youth development: The pitfalls and potential of literacy policies and youth development. *Journal of Adolescent & Adult Literacy*, 55(8), 748-750. doi:10.1002/JAAL.00090
- Zirkel, S., & Cantor, N. (2004). 50 Years After Brown v. Board of Education: The Promise and Challenge of Multicultural Education. *Journal of Social Issues*, 60(1), 1–15. doi:10.1111/j.0022-4537.2004.00096.x

## Appendix A: Terms and Acronyms

1. ANOVA: Analysis of variance
2. EPI: Economic Policy Institute
3. ICSPR: Interuniversity Consortium for Political and Social Research
4. ISCED: The International Standard Classification of Education
5. OECD: Organisation for Economic Cooperation and Development
6. PIAAC: Programme for the International Assessment of Adult Competencies
7. POD: Polarities of Democracy
8. PISA: Programme for International Student Assessment
9. TIMSS: Trends in International Mathematics and Science Study

## Appendix B: NIH Certificate

**Certificate of Completion**

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Bruce Carter** successfully completed the NIH Web-based training course “Protecting Human Research Participants.”

Date of completion: 09/20/2012

Certification Number: 977738