Summer 8-2020

Property, Wealth, Race, and Power: An Introduction to Critical Resource Theory

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PROPERTY, WEALTH, RACE, AND POWER: AN INTRODUCTION TO CRITICAL

RESOURCE THEORY

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A Dissertation Submitted to the Faculty of

Old Dominion University in Partial Fulfillment of the

Requirements for the Degree of

DOCTOR OF PHILOSOPHY

EDUCATIONAL LEADERSHIP AND FOUNDATIONS

OLD DOMINION UNIVERSITY

August 2020

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ABSTRACT

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RESOURCE THEORY

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School funding inequality is an issue that has plagued America and the Commonwealth of Virginia for years (Owings & Kaplan, 2020). Understanding the role that funding plays in education is one that is of extreme importance today This study explored the relationship between income inequality and how education is funded. This study follows a quantitative study approach using correlational methods. This study takes multiple facets from Critcal Theory, Critical Race Theory, and Resource Dependency Theory to introduce a new theory, Critical Resource Theory The results indicated there is a practically significant relationship between income inequality and education funding. These findings are a stepping stone to a larger theory development.

This dissertation is dedicated to everyone fighting for an equitable education for all children everywhere.

ACKNOWLEDGEMENTS

None of this would have been possible would have been possible without support from my family. I have to start with thanking my amazing wife, Kaitlin. Your unconditional support and encouragement from the start of this journey has meant the world to me. My son, Deacon, this has all been for you bud, I hope Daddy made you proud. My parents, Missy and Steve, for always believing in me and pushing me. Thank you to Andrea Everett, you were a great sounding board for my ideas and the Gini Database would not exist if it were not for you.

Each member of my dissertation committee contributed greatly to the development of this research. I would especially like to thank Dr. William Owings. You have always been a great mentor and without your guidance the project would have been impossible.

TABLE OF CONTENTS

Page

LIST OF TABLES

CHAPTER 1

INTRODUCTION

Problem Statement

The tenth amendment of the United States Constitution, also known as the reserved powers clause, states that any power not specifically delegated to the national government is reserved for the states. At the state level, one of the main areas that is able to function due to this amendment is the State Education Agency. Each state is responsible for its own education system, and all of the different aspects of it, including school funding. Each state is responsible for coming up with a funding formula to financially support their school districts. In theory, this should allow each state to fairly distribute funds. However, since the Great Recession in 2009 numerous states have decreased their public-school funding (Evans, Schwab & Wagner, 2019, p. 3).

The Commonwealth of Virginia has yet to return to their education funding levels of 2008-2009, the year in which Virginia cut funding due to the Great Recession. As of the 2018-2019 school year Virginia's direct aid towards public schools is 9.1% below where it was pre-recession. (Duncombe and Cassidy, 2018, p. 1) Approximately 46% of all public-school funding comes from the state level. According to a study completed by the Commonwealth Institute in Virginia, Virginia is funding schools at $1 billion less than it would have been at prerecession levels. With the amount of funding from states decreasing, it has allowed the Commonwealth's most vulnerable students to suffer from lack of support. For example, in the 2017 fiscal year the city of Norfolk appropriated $118,499,322 for Norfolk Public Schools from revenue that the city received primarily from property taxes. Whereas Virginia Beach Public Schools appropriated $771,218,341 from revenue the city also received primarily from property taxes. These figures

translate to $3,849 and $11,179 spent per pupil in each district respectively. Even though Virginia Beach has almost double the number of students and 32 more schools the reason for this discrepancy is the amount of money brought in from property wealth. Despite the disperity in the amount of money each city is able to bring in through revenue, each school division is treated as an equal unit of measurement regardless of the division's size, capacity, or fiscal effort for determining one measure of Standards of Quality (SOQ) funding - salaries (Owings, 2012).

The SOQ are the minimum standards Virginia requires for its schools. Virginia, by utilizing what is known as the Composite Index, tries to create a semblance of equity among each division. Virginia's Composite Index treats each school division equally regardless of size, fiscal capacity, or the fiscal effort that the division puts forward. Virginia has created a Local Composite Index (LCI) to show how much money each division should be able to contribute to their schools. The current LCI ranges from 0.1754 to 0.8000. A division with an LCI of 0.1754 would be required to contribute 17.54% of funds towards the required SOQs. A division whose LCI is 0.8000 would be required to fund 80% of the SOQ costs. However, Virginia caps a division's LCI at .8 so the division will receive a minimum of 20% assistance from the state in order to meet the SOQs, the bare minimum funding per student. As a result of using the Linear Estimator formula, a large population of students remains under-served due to lack of adequate funding.

Schools in general are overcrowded (Leachman, et al., 2016, p. 3). Every state has schools that are overachieving and underachieving. This is a status quo most individuals involved in education are accustomed to. However, the thought process surrounding this issue should be altered to ask the question "are we funding schools and providing resources to meet the needs of the students in this specific area with their specific needs?" Consequently, any time

a policy comes forward the conflict arises over who the issue belongs to. Is it an issue that the federal government, the state government, or the local government will take care of? Another question that could be asked is why should certain schools and students receive more funding and resources than others? In order to be an expert on this topic, understanding what goes into creating a specific funding formula for a state or locality is necessary. Additionally, it is important to understand what research exists surrounding the association between school funding and student achievement. In order to fully understand this issue, it is necessary to ask are funding plans created in order to specifically meet the needs of the students or are they created solely to provide blanket-funding across an entire state? The purpose of this dissertation is to investigate the relationship between available resources and the inequalities within public schools. The study will examine the funding formula in Virginia and examine its effects on multiple school districts in order to develop a new theory – Critical Resource Theory which William Owings and Leslie Kaplan orginally conceived and this study aims to advance.

Research Question(s)

Critical Theory and Critical Race Theory (CRT) are theoretical frameworks used to analyze society and how it works with power. As Gloria Ladson-Billings states:

"Critical race theory begins with the notion that racism is normal in American society. It critiques liberalism and argues that Whites have been the primary beneficiaries of civil rights legislation. Since schooling in the USA purports to prepare citizens, CRT looks at how citizenship and race might interact." (Ladson-Billings, 1999, p. 12)

Resource Dependency Theory (RDT) is another theoretical framework that studies how power and resource dependence are directly linked, for example, one organization's power over

another is only as strong as the second organizations dependence on the first organization's resources. For the sake of this study the organizations in question will be the state government and school divisions, with the primary resource being funding.

This paper will use Critical Theory, Critical Race Theory, and Resource Dependency Theory to explore Virginia's education funding system in regard to their distribution of tax revenue towards public education in school districts with high-need low-income populations. The four research questions that this paper seeks to answer are as follows;

1) How much income inequality currently exists throughout Virginia's public-school districts?

2) Is there a correlation between how much a district funds their SOQs and their Gini Coefficient?

3) How can Virginia's Composite Index can be changed in order to account for localities with a higher level of income inequality and a lower overall fiscal capacity?

4) How a new Composite Index based upon Critical Resource Theory moves high needs, low-income localities towards equity.

This paper will also suggest a new theory, Critical Resource Theory, developed by my dissertation chair, his wife, and myself, that demonstrates how funding disparities in education primarily benefit wealthier localities (those with power and voice) at the expense of poorer localities (with less power and voice). This allows for greater resources and long-term social and economic benefits for students in the wealthy school systems and keeping those resources and long-term benefits lower for poorer localities perpetuating a wealth and class distinction.

Significance of the Study

The significance of this study is four-fold. The first aspect is to understand how the Code of Virginia and the evolution of Virginia's funding formula over time has created an inherent disadvantage for high-poverty students in low-income localities. The second is to understand the relationship between income inequality, education funding, and a division's Composite Index. The third is to explore how state funding formulas can be altered to create a more adequate funding plan for districts with a lower fiscal capacity. The fourth is to use the information gained to generate a new theory in regard to resource management in education, Critical Resource Theory. By examining changes to education funding over time to account for new additions to its student population, we can discover what may have been overlooked by the General Assembly in making these revisions to education funding. Often, these priorities favored those with power, whether it was power through property ownership, wealth, or race. This study seeks to understand how this has impacted high needs students and ways that it can be altered in the future. Without the information from this study, it is possible that these inequalities will continue to remain a part of school finance policy in Virginia.

Chapter 2

Literature Review

Introduction

The following literature seeks to contribute to contribute to the process of developing the framework for Critical Resource Theory. Theory building is an integral part of any field of study, including education, to increase the field's scope of understanding on a topic. Theory building is definied by Giola and Pitre (1990) as the process or cycle by which such representations are generated, tested, and refined. This paper seeks to do just that by beginning to develop a new theory, Critical Resource Theory, and reshape the field of education funding. In order to do this the roots of Critical Theory, Resource Dependence Theory, and education funding must be established. By doing this it will allow this research to account for the underlying and differing paradigmatic assumptions that must be understood to develop comprehensive views of the organizational phenomena under investigation (Myran & Southerland, 2019). This shift will hopefully lay the ground work for education finance reform in the United States, beginning within Virginia.

History of Education in Virginia

The roots of education in Virginia can be traced back to the early 1700s. Most education stayed inside the home of wealthier individuals who had already undergone a formal education. There was an established apprentice education system to help individuals become profitable farmers, as well as Latin grammar schools for the children of wealthy land-owning individuals. Only children of wealthy landowners were able to attend these schools at first, as they were seen as preparation to become professionals (Heatwole, 1916, p. X). The idea that schools were primarily created to be used by children of wealthy landowning individuals, sow the roots of

inequality that is present today in Virginia's education system. Ellwood Cubberley writes about this idea in *The History of Education,* and describes the phenomenon happening with education in Virginia as pauper and parochial schools (Cubberley, 1920, p. 371). Due to the Virginian colonists' wealth from their time in England and their support of the Anglican church the colonists tried to keep their education system much the same as it was in England. This meant that the privileged class received education from a private tutor at home or through a private *parochial* school. The only education the *paupers* received was apprenticeship training or charity schools (p. 372). Due to these feelings towards education that the southern colonists had, one would not be misguided to see the early blueprint for a type of education discrimination between wealthy and non-wealthy students.

It was not until the first Code of Virginia was created in 1819 that free schools finally became instituted by law and paid for by the Commonwealth's general fund. This fund would become known as the Literary Fund for the future revisions of the Code of Virginia until the funding formula was changed in the 1980s to the Standards of Quality measures we have today. The Literary Fund sets the tone for how schools in Virginia would be funded in the future, through a large amount of appropriations from both state and local funds as well as tuition from student's parents. The Literary Fund being funded from three different sources, sales tax, property tax, and income tax is another reason that the public-school systems in Virginia can be seen as catering to those living in wealthier localities and coming from wealthier families. Less-wealthy non-property-owning families were unable to finance these schools to adequately meet the needs of all students.

In the mid 1800's, the Commonwealth of Virginia also had another population that was not being adequately served. In 1869, there was still not an effective school system in place to

allow newly freed African American students to be educated. Two thirds of the population in Virginia was African American, and the education system was not set up to educate even half of the white students in the state, so reform was necessary (Heatwolfe, 1916, p. 210). All of these aspects fed into the current inequalities facing the Commonwealth of Virginia. With an education system that was established to help benefit those who came from families with monetary and property wealth, the system was never established to promote success of less fortunate individuals.

Critical Theory

Marxism

Marxism is a socioeconomic theory that was developed in the late 19th century by Karl Marx and Friedrich Engels. The beliefs behind Marxism can be defined by a statement Marx made in the introduction of *A Contribution to the Critique of Political Economy* (1859). Marx states;

> "at a certain stage of development, the material productive forces of society come
> into conflict with the existing relations of production or—this merely expresses
> the same thing in legal terms—with the property relations within the framework
> of which they have operated hitherto. From forms of development of the
> productive forces these relations turn into their fetters. Then begins an era of
> social revolution." (Marx, 1859, p. 103).

It is from this statement that the roots of Marxism can be understood as a growing conflict between the forces of production and the final product itself. In simpler terms it can be defined as who owns a final product, the worker within the factory or the owner of the factory. This is a conflict that has existed since the Industrial Revolution and still exists today, while the

idea of Marxism has grown and been further developed over time. To fully understand Marxism and the relation that is has to Critical Resource Theory, there must first be an understanding of what Marxism is, how it was created, and why it has played the role that it has in the history of the world. This literature reviews seeks to do just that.

The basis of Marxism as defined by political revolutionary Vladimir Lenin are a combination of "the three main ideological currents of the 19th century; classical German philosophy (post-Hegel), classical English political economy, and French socialism" (Lenin, 1968, p. 35). When synthesizing aspects from each of these three fields, Marx was sure to critique and challenge them. This is an idea that lends itself directly to Critical Theory, which will be discussed later. The first aspect that will be approached in this brief background of Marxism is that of German philosophy.

Like many philosophers of his time coming from Western Europe Marx was heavily influenced by the works of Georg Wilhelm Friedrich Hegel. Marx used the works of Hegel to help create his idea of a civil society being economic based versus what Hegel originally had intended a civil society to be, a marriage between the state and the citizen. The largest difference between Marx and Hegel comes from their beliefs of Materialism and Idealism, respectively. Hegel believed that the world was a projection of ideas brought forth by the thinking mind of the citizens, and these ideas are what helped influence and shape society. Marx, on the other hand, during his time as a supporter of the Young Hegelian movement, began to support the idea that everything in the world, including the ideas humans have, is a result of our material culture. Marx would further go on to develop this idea into his Theory of Historical Materialism. (Marx, 1993, p. 265)

Another aspect that Marx derived from Hegel is the use of dialectical thinking, or going through the steps of thesis, antithesis, and synthesis when developing an idea or thought experiment to further develop an understanding of a topic Dialectics will be key to Marx being able to develop Marxism into a working political and socioeconomic theory. This dialectical thinking was a relatively modern way of thinking at the time of Marx and Hegel because it allowed for a level of understanding to be achieved about the relationships between two subjects, even though those subjects may constantly be in a state of flux. (Marx, 1873, p. 91). By synthesizing these two aforementioned ideas together, materialism and dialectical thinking into dialectical materialism, Marx was now able to examine and understand the true underpinnings of society.

Now armed with the idea of dialectical materialism, Marx set out to understand how the material substructure of society worked. In order to do this Marx examined the works of Adam Smith and David Ricardo to better understand the effects that capitalism has on society. This is where Marx begins to evaluate the concepts mentioned earlier that are key to Marxism, mode of production, labor force, etc. In this examination Marx looks at the instruments and subject of labor and their relation to the means of production, this is referred to by Marx as the forces of production (Calhoun, 2002, p. 22). From this point Marx goes on to examine what he refers to as the relations of production or "the sum total of relations that people must enter into in order to survive, produce, and reproduce the means of their life." (Marx, 1859, p. 73) The relations of production are a wide umbrella that includes division of labor, hierarchical relations, political relations, family relations, and social economic class. In more simplistic terms relations of production refers to any relation an individual might have to the forces of production, and how those forces impact any aspect of their life. By combining these ideas of forces of production and

relations of production it creates what Marx refers to as a "mode of production". For his argument Marx seeks to change the idea of the Capitalist mode of production to that of a Socialist mode of production.

When trying to develop the Socialist mode of production from the ideals of French social theory Marx needed to better understand the relationship between social and economic life, and in order to do this Marx developed the Labor Theory of Value. Marx stated that, "the root source of value and profit is labor." (Marx, 1867) This idea that profit is tied to labor is not a new one solely attributed to Marx, however, the idea that this desire for the maximum amount of profit one can achieve being tied to the exploitation of labor is one that can be attributed to Marx. In reference to this desire for profit Marx writes "the source of profit is the exploitation of surplus labor, paying less for the labor than the labor was ultimately worth." (Marx, 1959, p. 23) To further strengthen his argument between the relations of labor and profit Marx quotes the philosophers John Locke and Lysander Spooner on their writings on property and ownership in that "something becomes your property when you infuse it with your labor." (Spooner, 1855, p. 48) This idea of property rights and product ownership is one that is relatively new to post-industrial revolution Europe. Reason being that now with the labor force working in factories owned by someone else, creating products that are then sold by someone else, among many other aspects of a capitalistic run business. When you bring many different individuals together to work collectively on multiple aspects one final product, the product is made with a group effort and no one individually can point to the product and claim sole ownership over that product. With all of this being said that profit that comes back to the company is not shared amongst all of these parts of labor, but instead by the owner of the company. The individual mode of labor had been replaced with a social mode of labor; however, the profits were still very much

individualized. Karl Marx takes all of the ideas presented in this section; ownership, labor, profit, and value, and packages them up nicely in a theory called Marxism. This theory lends itself to be the starting point to many other theories that will be discussed in this chapter, as well as the creation of a new concept, Critical Resource Theory.

Marxism and Education

Like its influence on many other parts of the world, Marxism views the education system through an extremely critical lens. Marxism views the education system as an aspect of society that continues to allow the elites to stay in control and continue to fulfil their interests (Hicox, 1982, p. 563). Through this lens the education system is seen to reproduce and legitimize class inequality over generations, as well as serving the interests of capitalist employers. For the purpose of this dissertation the two most compelling aspects of this argument are the reproduction and legitimization of class inequality over time. The reproduction of class inequality can be seen in schools through the middle class using their material and cultural capital to ensure that their children get into the best schools and the top academic programs available to them in their locality. This means that the wealthier students tend to receive the best education possible to them which in turn allows them to attend college and eventually work in middle class jobs. Meanwhile working-class children are more likely to attend a school with a lower standard of education, due to the locality where they live having less of a tax base to compete with the school districts in a locality with a higher tax base. Due to this lack of quality education these students from the working-class or lower socioeconomic status tend to not receive any form of higher education and end up in working class jobs (Calhoun, 2009, pp. 120-123). In this way class inequality is reproduced generation after generation.

The legitimization of class inequality through the education system is also an aspect that traditional Marxists have issues with. Marxists argue that money determines how good of an education you receive (Horkheimer, 1968, pp. 249-250), but individuals do not realize this because schools spread the 'myth of meritocracy' – in school students are taught that everyone has an equal chance to succeed and that a student's grades depend on their effort and ability. Thus, if a student fails, the student believes it is their own fault. This legitimizes or justifies the system because students and society think this is fair when in reality it is not.

Finally, there is the aspect of the skills that students are supposed to learn in schools. In 'Schooling in Capitalist America' (1976) Bowles and Gintis suggest that there is a relationship between values students learn in school and the way in which the workplace operates outside of school. These values, they suggest, are taught through a 'Hidden Curriculum.' This 'Hidden Curriculum' consists of skills that pupils learn through the experience of attending school rather than main curriculum subjects. Students learn values that are necessary for them to be successful in their lives outside of school. These skills are passive subservience, acceptance of hierarchy, and motivation by external rewards. It can be argued by anyone working a job currently and being a member of society that each of these skills, that are seen negatively through the eyes of Marxist, are key to being successful in the world once students move on from school. It is for this reason alone that this aspect of the Marxist view of education will not be further examined in this research. As Henry Giroux says this aspect theory is too deterministic (1988, pp. 163). Giroux argues that working class pupils are not entirely molded by the capitalist system, and do not accept everything that they are taught. John Goodlad also dives into the idea of the hidden curriculum in his 1988 study in which he observed that schools "do not place a high premium on experiencing democratic processes, independent thinking, creativity, personal autonomy, and

learning for the sake of learning" (340-341). These six characteristics that Goodlad feels are underdeveloped in the public education system can be seen as a type of oppression for the students, to keep them held down and not speaking out against inequalities in society.

Overall, the belief and ideas that Marxism have towards society can draw comparisons to the education system. As will be gone over in future sections of this literature review Marxism plays a vital role in both establishing the essence of Critical Theory, and by nature Critical Resource Theory, but also sets the stage for the likes of the Frankfurt School and other critical theorists to challenge aspects of society that are taken as gospel and work to transform these aspects into a more equitable life for all of those involved.

The Frankfurt School

Without the Frankfurt School there would not be a branch of research called Critical Theory. The Frankfurt School was developed in Germany after World War I. This post World War I time period lent itself to being one in which many political systems were being tested. Governments were being created and rising to power under different socio-economic beliefs and it was the researchers of the Frankfurt School who felt that these societal changes needed be to examine through a different lens. Critical Theory was created out of the Frankfurt Schools' examination and continued development of the works of both Hegel and Marx. Theorists within the Frankfurt School sought to examine society and challenge the philosophical ideas of the 20th century, specifically that of the current societal conditions. The main researchers of the Frankfurt School were Max Horkheimer, Theodor Adorno, and Herbert Marcuse. Although there were many other intellectuals involved within the Frankfurt School, these three established the basis of research that the Frankfurt School would become known for, as well as developing the basis of Critical Theory.

Understanding society through a lens that combined both Marxism and Hegeleian philosophy was the main goal of the Frankfurt School. In order to do this the Frankfurt School incorporated psychoanalysis, sociology, and other studies across disciplines. This allowed them to better understand the full picture of society in order to challenge established norms and beliefs as to why aspects of society are the way they are. An understanding of Marxism allowed for the analysis of social relations within capitalist economic systems.

Critical Theory in Education

As stated earlier the main creation from the Frankfurt School was the field of philosophy termed Critical Theory. Critical Theory was defined by Frankfurt School theorist Max Horkheimer as a theory that seeks "to liberate human beings from the circumstances that enslave them" (1968, p. 244). Although Horkheimer worked to develop this theory in the 1930s and 40s, it was not broadly published in English until 1968. Critical Theory has also been seen as the belief that "ideology is the principal obstacle to human liberation" (Geuss, 1981, p. 588). Although it was originally developed in the early 20th century, research in Critical Theory has continually developed by theorists such as György Lukás, Jügen Habermas, and specifically in the field of education by Paulo Freire. This section will be a brief overview of Critical Theory.

There are two core concepts of Critical Theory. The first concept is that a critical analysis of social theory is one that is directed towards the totality of society. In order to examine theory in this light one must fully understand how society has reached this specific point in time. Marxist theory resembles this aspect by examining society after the achievement of the Industrial Revolution in order to fully realize how the recent development of corporations affected society. The second key feature of Critical Theory is that understanding of society must improve through examining it through a combined lens of the social sciences.

With these two aspects in mind Critical Theory was used to examine education by Paulo Freire in his text *Pedagogy of the Oppressed* (1968). In his text Freire examines the state of education in the 1960s and how it needs to be changed for the future. The first idea presented by Freire is the idea of the justification of oppression and that in order to achieve freedom one must fight for it through praxis. Praxis is a term that Freire develops to explain the ideas between the balance of theory and practice, and that both of these key features need to be the base layer to education around the world (Freire, 1968, p. 47). However, the idea that students are empty cells until the teachers put knowledge into them is one that Freire argued to be changed (Freire, 1968, p. 63). This belief needs to be changed because it dehumanizes the students and take away from their education experience. Instead, Freire argues that education is something that needs to be authentic in order to fully shape the student. Freire names this idea conscientization. All of these beliefs are ones that culminate in the idea that Freire remains the most critical of, the relationship between the student and teacher as well as the colonizer and colonized. This idea will be analyzed further in this study to examine the role that school finance plays in further perpetuating socio-economic inequality throughout the country.

Critical Race Theory

Critical Race Theory (CRT), in the form that we understand it today, rose to popularity in the 1970s following after Critical Theory in the 1960s. The core tenants of CRT seek to understand the relationships between race, racism, and power. Critical Race Theory does this by questioning the very foundations of liberal order, including equality theory, legal reasoning, enlightenment rationalism, and neutral principles of constitutional law (Delgado and Stefancic, 2017, p. 3). It is for the reasons above that Critical Race Theory has been used to analyze court

cases which have impacted American society. By examining the racial aspects of legislation and other factors of society, CRT gives a voice to the voiceless and helps tell their story.

One of the prominent works of analyzing the field of education through a Critical Race Theory lens was Derrick Bell's work *Brown v. Board of Education and the Interest Convergence Dilemma* (1980). In this paper, Bell sought to truly analyze school desegregation, and the potential reasoning's behind why this legislation occurred when it did. Bell argues that instead of the *Brown v. Board* case happening in order to eliminate segregation from public schools, it was passed because it was in the best interests of the white individuals in power. Bell concludes the piece by saying;

"criticism, as we in the movement for minority rights have every reason to learn, is a synonym for neither cowardice or capitulation. It may instead bring awareness, always the first step toward overcoming still another barrier in the struggle for racial equality" (Bell, 1980, p. 533)

It is with this, that a common theme emerges from numerous Critical Race Theory studies; awareness for who really has the power in society. Cheryl Harris is able to tie this idea of power back to property ownership in her work *Whiteness as Property*. In this text Harris argues that "it was not the concept of race alone that oppressed blacks….it was the interaction between conceptions of race and property which played a critical role" (Harris, 1992). The idea of who owns the property is who has the power has a direct effect in the education system in the state of Virginia. At first, property was valued as a way to be able to vote and make your voice heard. At this time many African Americans who were not slaves did not actually own property, so their voice was not heard. Even once property became less of a factor in one's ability to vote, there was always something new in place to keep African American's voice from being heard

through legislation. This continuation of the belief of both whiteness and property as being the way for an individual to have power in America, is why this idea continues to be studied in CRT text. One cannot properly explore the racialized impact of educational funding and the history of it in Virginia without at first understand which group of people primarily have had power since 1776.

Resource Dependency Theory

Pfeffer & Salancik (1978) have defined the foundations of Resource Dependence Theory as: "The key to organizational survival is the ability to acquire and maintain resources." Acquiring and maintaining resources can be difficult due to the environmental conditions of scarcity and uncertainty (Froelich, 1999). The main assumption of the theory is that organizations are not autonomous entities but are constrained by the environments because of their need for resources. According to Pfeffer & Salancik (1978) these resources can be monetary and physical resources, information, or social legitimacy. Organizations cannot survive if they are not responsive to the changing environment impacting resources (Pfeffer & Salancik, 1978). This relationship is seen in education by local school divisions having to answer the legislation enacted by the state. Local school divisions rely on the state for funding, and if these schools do not meet standards set forth by the state, the divsions will not receive funding. Imagine if this relationship was being dominated by a legislature that actively sought to oppress a group of individuals.

School Funding

The idea of school funding and where the money should be coming from has been a constant struggle since the implementation of public schools in America. However, most commonly it is found that school districts are primarily funded by the localities and states to

which they belong. However, this does not mean that it comes without issues on its own. Andrew Reschovsky and Jennifer Imazeki discuss issues that school divisions located in poor rural areas or who serve students which come from economically disadvantaged areas face in their work *Achieving Educational Adequacy through School Finance Reform* (2001). They conclude that by reforming the existing state aid programs to provide more weight to students who come from disadvantaged backgrounds, it would better align the distribution of educational resources and hopefully increase student performance (Reschovsky and Imazeki, 2001, p. 395). Although this paper was published in 2001, and numerous other papers arguing for the same position have been published more recently, the idea of examining school funding or lack thereof. There has been little examination of funding policy through a racialized lens. Furthermore, Enrique Alemán argues this point in *Is Robin Hood the "Prince of Thieves" or a Pathway to Equity* (2006) but adds to it that "a racial discourse in the political process and racial analysis of school finance policy are vital in the pursuit of equity and social justice" (Aleman, 2006, p. 134). This type of examination is important because minority groups have not had power or a voice to contribute to past and present legislation. Critical Resource Theory seeks to provide reason to inequalities in school funding as well as providing those with power a way to see and understand how individuals from groups without power are being affected. Without examining current school funding legislation, as well as legislation that has been created in the past through a racialized lens, we will never truly know what groups of people are being underserved the most.

School Finance Equity

The equity movement in school finance can be traced back to the 1970s. The reason for this movement as the name states was to ensure that all students were receiving an equitable education regardless of where they were living. The two largest ways that equity plans were

established are based on equalization or foundation funding. Equalization dealt with creating a centralized school finance system. Property and sales taxes would all be lumped together into one pile and the state would distribute the money equally to all divisions within the state on a per-pupil basis. However, as Joan Youngman states in her article *School Finance and Property Taxes* "equivalent houses in different municipalities that receive similar services but bear unequal tax liabilities, and will command prices that reflect this difference in tax payments" (Youngman, 2016, p. 27). This statement is one of the arguments brought up against school finance equalization. People move to certain neighborhoods with the sole purpose that their children will attend high quality schools in high quality school divisions. Most often this move comes with a much larger price tag in terms of property value as well as property taxes. These individuals feel like it is unfair to them to be paying more than other individuals, in less wealthy districts with lower home values, with all of their taxes going into the same pot to be dispersed across districts. On the opposite end, individuals living in less wealthy divisions benefit from receiving higher levels of funding than they would have been able to generate from their own revenue sources alone. Although school finance centralization can help less wealthier districts immensely, it will always receive pushback from individuals who would prefer that the taxes they pay be put back into their own community.

On the other end of the school finance equity spectrum is a finance system based on foundation. Virginia has a foundation system where each division is required to finance a minimum level of funding as set forth by the governing education body of that state. Once that has been met they also receive a chunk of financing from the state in order to make sure their financing levels are adequate. However, as Hina Khalid and Erika Martin state in their article *School Finance Reforms* "state include flat grants into their funding formula, which makes it

difficult to isolate the success of a program" (Khalid and Martin, 2016, p. 7). Due to this inclusion of funds as well as the variation from state to state in how their foundation programs are set up, it is extremely difficult to quantify the success of a program as well as reproduce that program with the same results in a different state.

One last way to create equity within the realm of school finance is accounting for regional cost differences. In her article, *When Equality is Not Equity: Regional Cost Differences and the Real Allocation,* Lori Taylor seeks to examine disparities in education funding systems across different states as well as within the states themselves. One of her main focuses in this endeavor is to look at the implications of geographic adjustment for interstate and intrastate measures of school finance equity. The main idea that Taylor presents is the concept of geographic cost adjustments; additional funds would be allocated to school divisions who pay more for a cost of living or to cover the lack of local amenities. In the end, this would allow for all divisions to be equal in the amount of resources they are able to provide for their school system. Taylor states that, "school leaders interested in educational equity or adequacy must recognize that those concepts start with real resources…geographic cost adjustment is needed to provide that foundation" (Taylor, 2015, p. 263). Real school equity measures can successfully be created by accounting for specific needs that a division has based on its geographic location, and what that location either financially provides or hinders for the division as a whole.

Public Education Funding

Education funding has been an issue since schools have existed in America. As discussed earlier, education funding is a hard issue to solve and figure out the correct formula to fix it due to all the stakeholders involved in financing education; federal, state, and local governments. This tone has been set since slavery in America was ended due to the 13th Amendment and black

schools were founded. Between 1902 and1918 an individual education philanthropic group known as the General Education Board gave $2.4 million to black schools while donating $25 million to white schools (Fairclough, 2007, p. 248). It is actions like this that begin a skewed way of thinking when it comes to funding majority minority schools in America. In 1954 the movement to integrate the schools began after the decision in the landmark court case, Brown v. Board of Education of Topeka. However, even though schools were beginning to integrate, Robert Cottrol posits that there was "concrete knowledge that black schools had worse facilities than white schools and that black teachers were paid less than white teachers" (Cottrol, 2004, p. 123). These historical actions that happened nearly 100 years ago set education funding down a path that has created such critical resource disparities that are rampant and are allowed to continue in education today.

The number of students living in poverty in America has become an epidemic. As of the 2017-2018 school year, 63.6 million students were enrolled in school in America and at least 12.9 million of these students are eligible for free or reduced-price lunch and living below the US Census Bureau's poverty threshold. That is 18% of students meet the requirements for be considered an "at-risk" student (Snyder et al., 2019, p. 28). However, students receiving free or reduced-price lunch is not the most glaring statistic. In 2017 32% of Black school-age children were living below the poverty line of approximately $24,000 for a family of four (Snyder et al., 2019, p.167). That is over a quarter of the students in America. Often these students are not having their basic educational needs met due to a lack of school funding by both the state and federal governments. A majority of these impoverished students live in urban school districts that are plagued by failing academics, weak performance on standardized exams, low graduation rates, high teacher turnover, and high dropout rates (Heiling, Ward, Weisman, and Cole, 2014, p.

872). Research shows students coming from areas of concentrated poverty are at a significant disadvantage when it comes to educational progress.

At a time when America is trying to maintain its standing as a globally competitive education system, the localities, the states, and the federal government are failing their students who need the most help by not offering schools the funding necessary to meet the educational needs for all of their students. Barro (1989, p. 28) states, "there are reasons for special concern about inequalities, if not irrationalities, in the financing of funding schemes." States and localities are finding loopholes in funding legislation where they can reduce the amount of funds, they distribute towards their respective educational systems by including the amount of money given to them by the federal government. This example is just one way states are trying to pass on the educational funding burden to localities. Baker, Sciarra, and Farrie found in their report on school funding: "the consequences of a failure to design, implement, and sustain fair systems of school funding are felt directly in the everyday classroom experiences of students across the country" (p. 41). It is important that a change happens to try and curb these issues. Without proper funding within the school setting, the student suffers, and policy change is vital in order to maintain equity across state lines.

Educational researchers also believe something needs to be done to improve the distribution of finances in education. In their 2019 litigation review, Michael Rebell (2017) states that since 1989, 25 of 46 final state court rulings on school finance have held that current funding systems do not provide students with access to an adequate education. The Center for Educational Equity's definition of adequacy is "providing a level of resources to schools that will enable them to make substantial improvements in student performance" (Rebell, 2017). Information like this is not asking too much of states and their education systems, and for anyone

involved with education this adequacy should be the bare minimum that localities and states should strive for when it comes to funding. However, even though school funding information is public, it continues to show that since the Great Recession of 2008 states have reduced their revenue as well as the resources they are putting towards the nation's public schools (Baker, Sciarra, Farrie, 2016, p. 41). States reducing funding for education is why the federal government needs to step in and pass legislation that will eventually lead to a policy on the minimum amount of funding a state must contribute to its education system in order to meet adequacy.

The issue is not that legislation for minimum adequate funding does not exist, the issue is that it is not the same across the country for all states. One state could fund students who are labeled as "at-risk" double the amount that they do regular students, and one state could fund "at-risk" students equally or 20% more than regular students. California has created the Local Control Funding Formula (LCFF) requiring districts with over a 55% at-risk student population to fund these students 50% more than the base for non at-risk students (Heiling, Ward, Weisman, and Cole, 2014, p. 883). Examples like the LCFF are a great step and are helping schools out enormously with funding these students. However, at the other end of the funding spectrum, in Oregon, legislation was passed to limit the amount of funding schools receive from local property taxes. Legislation such as this hurts schools because local governments, on average, are responsible for just under 50% of a district's funds (Chingos and Blagg, 2017, p. 3). The more often that laws like this one are passed to reduce the amount of revenue that schools are able to acquire the more the need for federal legislation grows.

Although there is a need for more federal legislation, some funding legislation has been passed in the form of the Elementary and Secondary Education Act of 1965 (ESEA). ESEA was

one of the biggest forms of education legislation ever passed in America and it has one of the largest components of federal funding in schools known as Title I. Title I of ESEA was created to distribute funds to schools serving students from low-income families. Most recently, Title I has given schools $727 per pupil who meets their definition of being at-risk. However, Baker and Weber (2017, p. 701) state "there are no specific legal protections dictating that low-income students require and must receive supplemental resources". It is possible that these students may not receive the educational support they need and because of this it is vital to assist these at-risk students as much as possible. Baker found on average it costs 1.2 times more to educate an at-risk student as it does to educate a 'typical' student (Baker and Weber, 2017, p. 703; Reschovsky & Imazeki, 2001). By using these statistics on average, it costs schools $10,700 per pupil in 2013, or $12,840 per at-risk pupil. Even though the added funding from Title I is a large help to numerous schools, it is not enough to make up the extra $2,140 that it costs schools to educate an at-risk child, due to other factors such as teacher quality (Rivera Rodas, 2019, p.19).

When it comes to developing a national funding formula, it is a difficult process that will require numerous individuals to create. The first step that Barro (1989) believes should be taken is to examine the fund distribution mechanisms associated with particular existing and proposed reform and assess the equity implications. This step is extremely important in creating this new funding formula. There are numerous different states trying to create their own funding formulas to account for these at-risk students. If a state or locality has a formula that has proven to be effective than it should be tested to see if that formula can be used on a national level. Another important aspect is to ensure this new funding formula is fair for each state. Although fairness is usually seen as a relative statistic based on opinion, the way to measure fairness in state mandated funding is by looking at the funding level of the state, funding distribution, effort, and

coverage (Barker, Sciarra, Farrie, 2015; Baker and Weber, 2017; Chingos and Blagg,

2017). Using fairness as a derivative to measure funding distribution, one must address the

state's attempt to fund public schools in comparison to the state's GDP (Barker, Sciarra, Farrie,

2015, p. 22) or as Owings and Kaplan (2020) explain funding based on a state's wealth as called

fiscal effort. Even though there, is not one perfect formula to use as a basis for a national

funding policy there are numerous funding formulas out there such as California's LCFF and the

Fairness Formula developed by Barker, Sciarra, and Farrie (2015) that could be used as a starting

point. There are many advantages to creating a national funding formula model. One example

that Oden, Picus, and Goetz (2011) make is that in states that are funding at-risk students the

1.2% extra that they need, schools and districts have made large gains in student performance

over 4-6 years (p. 631). In 2015, 22 countries that are a part of the Organization for Economic

Cooperation and Development (OECD) participated in the 2012 Program for the International

Assessment of Adult Competencies (PIAAC) assessment. This assessment measures literacy,

numerical, and problem-solving skills. The United States has an achievement gap between the

bottom 10th and top 90th percentile scores that is higher than that of any other country in the

world (Owings & Kaplan, 2015, p.146). If schools are able to fund these students who fall into

the lower percentile ranges, there is no telling what kind of improvement that will give our

education system. The effects of making sure these students receive the quality education they

deserve do not solely rest with the students, schools, or the districts themselves. Society benefits

greatly from increased funding.

　　　At risk populations are a quickly growing percentage of the American labor force.

Without a proper education background, these former at-risk students will not be able to find

regular jobs and in turn will rely on public assistance. By putting more money towards

education it has the potential to save the United States $2 billion per year in reduced crime costs (Lochner, 2010, p. 12). When a student is able to receive a quality education, it not only helps the student, but eventually will be paid back to society, either through his or her own benefits to their community. As evidenced by Ellison (2015) in the inverse relation between state fiscal effort towards education and juvenile incarceration rates. Making sure that legislation exists so that these students are able to receive at least that 1.2 factor weighting Baker suggests as needed will far outweigh the extra social safety network costs that would otherwise be required. (Lochner, 2010; Ellison 2015).

Human Capital Theory and Educational Investment

Human capital theorists and classic economists have stressed the importance of educational investment as a method to increase labor productivity (Smith, 1776; Schultz, 1961; Becker, 1994). This capital enhances networks with valuable individuals being a part of the economy in a wide variety of ways (Fowler, 2013). For example, an educated workforce contributes to the market whether or not members of the community are a direct contributor to a citizen's education (Friedman, 1955). An educated citizenry also increases labor participation with a quality workforce being more prone to solve novel problems and provide innovative solutions as well as a strong middle class (Schumputer, 1939; Davidsson & Honig, 2013). As individuals maneuver in legitimate relationships of mutual benefit and social relations, human capital develops into social capital (Bourdieu & Wacquant, 1992). Family, friends, community, and other informal relationships contribute to this space with individual human capital interacting in a broader, more recognizable social context (O'Sullivan & Sheffrin, 2007). These networks combined with formal education and prior job experience increases an individual's specific and explicit knowledge base (Nahapiet & Ghoshal, 1998; Urbano, Alvarez, & Turró,

2013). How an individual is educated, plays a vital role within a wide array of future social situations and overall productivity.

Educational Funding Analysis

Funding for Success.

Monetary input and result-based output analysis is difficult to determine because student success is not exactly defined (Hanushek, 2015, p.153). Levin and McEwan (2001) attempted an "ingredients method" to assign value to certain program components. However, the same combination of resources may be available, and different yet acceptable results can occur through a different recipe. Issues arise with program implementation and evaluation requiring several years for effective analysis. Fullan (2007) provided implications for quality reform and the need for program implementation to occur over five years in order to provide noticeable, systemic, and quantifiable change. Therefore, a financial analysis of a certain program providing a snapshot into allocation and expenditures may ignore the total effects of program implementation. A program may be immediately successful, but later become a failed enterprise, while a program may start as a failure, but later be successful.

Funding cycles also vary with federal and state share changing throughout the years. Various ideologies and political events dictate educational funding and an exact formula for future, anticipated funding is mercurial. For example, states' share towards educational funding saw increases until mid-1980 when local share began to increase: "Between 1919-20 and 2013–14, the state share increased from ~17% to ~ 49% , however more recently state funding has reduced from ~55% in 1999-2000 to ~49% in 2013-2014" (Snyder et al., 2019, p. 61). Federal funding initiatives also impact local and state budget allocations. For example, Hauptli and Cohen-Vogel (2013) found adolescent literacy has been driving force in educational policy since

President Johnson's Economic Opportunity Act of 1964. Political changes can trump previous reform efforts and effect funding patterns and expectations. Therefore, educational initiatives from federal, state, and local levels can impact funding and not be predicted on a year-to-year basis.

Each state and district possesses its own unique characteristics and available resource allocations. Combined with federal funding fluctuations, input-output analysis includes numerous variations in both independent and dependent variables. For example, states utilize different state-issued standardized tests to determine success through various curriculum goals, while serving students with demographics unique to that state or district. Changes in any demographic count or political climate can influence funding at the federal, state, and local level. Spillover effects can include quick demographic changes and result in fiscal competition between districts. Ajilore (2013) found districts with higher populations of elderly citizens and residents with bachelor's degree spend more per pupil than neighboring districts. Owings and Kaplan (2013) stress the importance in understanding the risk factors relative to a school's demographics and its impact on student success. Driscoll and Salmon (2013) warn of demographic changes and disparate, inadequate fiscal resources challenging Virginia schools. The implications of such changes require districts and localities to provide alternative measures in an effort to continue its support for all students.

Required and Local Fiscal Effort.

The level of fiscal effort describes how a division supports education in localities with different levels of wealth. Fiscal effort is defined as "the level to which the locality chooses to support education relative to its capacity" (Owings & Kaplan, 2020, p. 126). The level of fiscal effort exerted for education shows how much a state or school division's contribution can lead

to enhancing local human capital. How a division provides funding requires an analysis of a division's local wealth. In Virginia, this analysis combines the division's property value, gross income, taxable sales revenue, and divides it by the school division's daily membership (students actively attending school). In order to determine a localities fiscal effort, understanding how much a locality can afford is needed. This is known as a fiscal capacity and is defined as "the ability of a locality, state or nation to fund those services it deems import" (Owings & Kaplan, 2020, p. 132). Virginia defines this fiscal capacity with the Local Composite Index (LCI) weighing for 50% property values, 40% per-capita income, and 10% revenue from sales tax. A school division's expenditures are divided by local wealth per pupil to determine local effort, as shown in the equation $E = {R}/{Tb}$. In this equation E is a localities local effort, R is a localities revenue, and Tb is their tax base (Owings & Kaplan, 2020, p. 147). This share is the amount required for school divisions to meet Standards of Quality (SOQ) expectations. However, every school division in Virginia exceeds this requirement due to how low the bar is set by the local Composite Index. Table 1 is comprised of division's Composite Index scores for the 2017 fiscal year.

Table 1

Composite Index by Virginia Public School Division

Division Name	CI	Division Name	CI	Division Name	CI	Division Name	CI
Alexandria	.8000	Westmoreland	.4557	Botetourt	.3766	Colonial Beach	.3402
Arlington	.8000	Rockbridge	.4522	Fluvanna	.3759	Floyd	.3402
Bath	.8000	Madison	.4411	Gloucester	.3730	Prince Edward	.3377
Falls Church	.8000	Winchester	.4326	Salem	.3704	Grayson	.3338
Goochland	.8000	Essex	.4316	King George	.3664	Greene	.3281
Highland	.8000	Hanover	.4285	Shenandoah	.3663	Caroline	.3258
Surry	.8000	Colonial Heights	.4182	Lynchburg	.3630	Amelia	.3182
Lancaster	.7566	Henrico	.4158	Spotsylvania	.3617	Richmond County	.3180
Northumberland	.7542	King And Queen	.4154	Roanoke County	.3587	Buchanan	.3171
Rappahannock	.7398	New Kent	.4152	Manassas	.3582	Amherst	.3132
Fairfax County	.6844	Lexington	.4054	Culpeper	.3576	Bedford County	.3132
Charlottesville	.6590	Warren	.4043	Rockingham	.3561	Wythe	.3122
Albemarle	.6394	Powhatan	.4033	Waynesboro	.3556	King William	.3120
Middlesex	.6336	Isle Of Wight	.4011	Chesterfield	.3510	Pulaski	.3105
Fredericksburg	.6071	Franklin County	.3948	Augusta	.3508	Bristol	.3043
Nelson	.5933	Virginia Beach	.3925	Washington	.3494	Craig	.3026
Fauquier	.5827	York	.3905	Mecklenburg	.3491	Halifax	.3024
Loudoun	.5497	Frederick	.3889	Sussex	.3481	Bland	.3002
Clarke	.5437	Harrisonburg	.3855	Accomack	.3462	Norfolk	.2988
Louisa	.5436	Prince William	.3848	Stafford	.3445	Page	.2960
Mathews	.5232	Montgomery	.3832	Roanoke City	.3443	Franklin City	.2930
Northampton	.4913	Staunton	.3827	Chesapeake	.3439	Appomattox	.2917
Charles City	.4910	Orange	.3811	Suffolk	.3409	Norton	.2857
Richmond City	.4758	Poquoson	.3797	Buckingham	.3405	Southampton	.2856

Division Name	CI	Division Name	CI	Division Name	CI
Newport News	.2821	Charlotte	.2539	Hopewell	.2108
Cumberland	.2817	Radford	.2512	Scott	.1888
Brunswick	.2808	Portsmouth	.2506	Buena Vista	.1773
Covington	.2803	Patrick	.2479	Lee	.1701
Dinwiddie	.2777	Prince George	.2454	Hopewell	.2108
Hampton	.2773	Lunenburg	.2434	Scott	.1888
Campbell	.2746	Alleghany	.2423	Buena Vista	.1773
Tazewell	.2745	West Point	.2422	Lee	.1701
Giles	.2740	Pittsylvania	.2410		
Carroll	.2722	Russell	.2375		
Dickenson	.2700	Nottoway	.2366		
Manassas Park	.2676	Petersburg	.2365		
Wise	.2669	Greensville	.2236		
Danville	.2629	Smyth	.2136		
Galax	.2609	Martinsville	.2111		

External Pressures.

Fiscal stress can occur and may affect fiscal effort. Fiscal stress is defined as anytime a fiscal decision and available resources are misaligned, for example wanting to increase funding in education but not having the funds (Chapman, 2008). It is important for states and divisions to respond to these difficult times and react appropriately before, during, and after times of distress. White, Martin, Scorsone, and Bowman (2015) use fiscal health indicators to determine funding intervention with district transparency. Trussel and Patrick (2012) use indicators such as revenue concentration, organizational slack, debt usage, and entity resources to show districts having a higher revenue concentration, lower capital expenditures, and are smaller in size are more likely to cut instructional funding during times of fiscal stress. Baker (2012) found within-district resource allocation includes a focus on higher poverty schools in an attempt to increase teacher capacity when instructional funding is expected to diminish. This means that districts spend more money paying for teachers to attend professional development sessions, while failing to provide funding towards other areas of need i.e. more teachers, more administrators, more support positions. Some districts even have to maneuver funding within a state with bargaining rights. For example, Pantuosco and Ullrich (2010) found a negative correlation between gross state product (GSP) and states where bargaining is permitted, despite a positive wage effect with teacher salaries. Meaning that even in states where teachers get paid more there can be a negative trend in overall GSP. However, these findings can be anomalous because other studies have shown that there can be a positive correlation between GSP and education funding (Owings & Kaplan, 2020, p. 161). These environmental stresses exist in various forms and divisions must be proactive in budget allocations and expectations for funding from the federal, state, and local level.

The School and the Community.

The litany of a school system's costs, and expected outcomes require many different

working parts to support student success. Instruction may be at the school division's

philosophical core; however, facility management and other costs remain an important

component. While common educational research highlights the effectiveness of teacher quality

(Hattie, 2009; Darling-Hammond, 2011), other services such as transportation, facility use,

maintenance, and staff technology require funding separate from the instructional budget

(DeLuca, 2013). School districts still have to pay to heat and cool the buildings, fix leaky roofs,

and transport students to and from school. Hidden costs include school security (DeAngelis,

Brent, & Ianni, 2011), food services, athletics, building facilities, maintenance, and capital

outlays are other requirements of school districts. Glen Earthman (2002) found that "if class

sizes are reduced below 20 students, the related increase in student achievement moves the

average student from the 50th percentile up to somewhere above the 60th percentile.

Achievement results for disadvantaged and minority students are somewhat larger" (p.14). In the

same seminal study, a 5 to 17 point difference was found between students solely from attending

well maintained schools compared to students from poor facilities. This allows researchers and

lawmakers to see the numerous factors both inside and outside of the instructional realm that can

complicate or contribute to a student's probability of graduating on time.

Outside of the school's efforts in graduating students, the community also plays an

important role. A reciprocal relationship exists as social capital is impacted with dropouts within

the labor force not possessing acceptable skills to contribute to whatever economy of scale.

Social interaction remains critical within a school's culture and community of the school. For

example, Hawkins, Jaccard, and Needle (2013) found behaviors such as adolescent sexual

activity, smoking habits, and acts of delinquency contributing to dropout out rates through this aberration from social norms. Kearney and Levine (2016) found higher rates of student dropout in areas in which there were greater gaps between middle and low-income distribution. Kirk and Sampson (2013) highlight juvenile arrest as a predictor for future dropouts as a major component in future struggles within the societal context of a criminal record and the stereotypical high school dropout.

   Fiscal Effort and Student Success.

   There have been some studies analyzing fiscal effort and factors relative to student success. Jackson, C. K., Johnson, R. C., & Persico, C. (2015) and Cedo (2014) found no significant correlation between high school graduation rates and division fiscal effort. Results did support previous studies highlighting socioeconomic and racial disparities in graduation and dropout rates. Fiscal effort has also been associated with juvenile incarceration rates as Ellison (2015) found an inverse relation between incarceration rates and state fiscal effort using a generalized estimating question. Ellison states that increasing state fiscal effort by 1% yearly can lead to an average savings of $136,548.16 in direct incarceration costs per incarcerated juvenile and $4,953,967.25 across the United States per year. Jackson, Johnson, and Persico (2015) found a 10% increase in per pupil funding increased completed years of education, higher wages, and lower incidences of adult poverty.

   These studies highlight the complexity surrounding local fiscal effort and numerous outcomes of student success. The profile of a graduate outlines certain success criteria a student must possess in order to be considered a high school graduate and schools and school divisions seek to have all students earn a diploma. School funding, however, is not as concrete as a conditional "if this, then that" statement. Factors ranging from local property taxes, school

organization, student demographics, accessibility to programs, and other external pressures contribute to student outcomes. School districts must understand this multifaceted approach to graduate success and exhaust fiscal effort in order to reach this goal and other outcomes geared toward student achievement.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

Overview

The significance of this study is three-fold. The first aspect is to understand how Virginia's Composite Index has created inherent inequality for students in low-income localities. In order to do this a database has been created to measure the total amount of income per household for each school district within Virginia and using those data to calculate each districts' Gini Coefficient to better understand the inequality within that locality. The Gini Coefficient test is a economic measure used around the world to study income inequality.

In most cases the Gini Coefficient is used to measure inequality in countries around the world, especially when trying to understand the differences in development between Less Developed Countries and More Developed Countries. The Gini Coefficient is being used in order to see how much inequality a locality is experiencing. For this study each district's Gini Coefficient will be analyzed in order to understand where each district falls on the spectrum of being truly equal (0) or truly unequal (1) in relation to their income. After this, the districts' Gini Coefficient will be compared to their Composite Index score and education funding levels to see if a correlation between the variables exists for how funding looks for each district. The second is to explore how Virginia's Composite Index can be altered to create a more adequate funding plan for districts with a lower fiscal capacity. This will be completed by taking Virginia's current Composite Index and changing aspects of it that primarily draw from property tax revenue. The third is to use the information gained to generate a new theory in regard to resource management in education, Critical Resource Theory. By examining current funding patterns in Virginia as well as changes to the Composite Index, a new method to adequately fund schools within

Virginia and the United States can be discovered. In the past, Critical theorists would suggest that school funding priorities favored those with power, whether it was power through property ownership, wealth, or race. This study seeks to understand how this has impacted minority students as well as students from low income localities and ways that it can be altered in the future. Without the information from this study, it is possible that these inequalities will continue to remain a part of school finance policy in Virginia.

Research Questions

There are four questions that this study seeks to answer. The first question (RQ1) is how much income inequality currently exists throughout Virginia public school districts. The second question (RQ2) seeks to examine is there a correlation between how much a district funds their SOQs and their Gini Coefficient. The third question (RQ3) is how Virginia's Composite Index can be changed in order to account for localities with a higher level of income inequality and a lower overall fiscal capacity. Finally, the fourth research question (RQ4) is how a new Composite Index will be based upon Critical Resource Theory moves high-needs, low-income localities towards equality.

Research Design

The design of this study will be correlational. The reason that this type of study will be used is to examine how changes to the Composite Index, currently used within the Commonwealth of Virginia, will cause the Gini Coefficient for each locality to move towards equity. Gini Coefficient data will be collected for 130 school divisions within Virginia. These data will create a picture of how much income inequality currently exists within each district. As income tax revenue is a large attribute towards education funding within Virginia, we can then extrapolate district household income inequality into inequality within the schools. Next,

changes to the Virginia Composite Index will be made to take less of the funding burden off of property tax revenue and put it onto income tax. Finally, after these changes have been made, a new correlation test will be conducted in order to see how the relationship between variables has changed.

The Gini Coefficient test is a economic measure used around the world to study income inequality. The measure was first created by a sociologist named Corrado Gini in his 1912 article titled *Variability and Mutability*. Gini created this index in order to fully understand how wealth is distributed throughout a country or geographic region. The Gini Coefficient seeks to examine does one-person account for 99% of wealth in a country or do 100 people each make up 1% of a country's wealth. In most cases the Gini Coefficient is used to measure inequality in countries around the world, especially when trying to understand the differences in development between Less Developed Countries and More Developed Countries. For reference the United States' current Gini Coefficient is .49, and Virginia's is .47 (27th amongst all states). This is saying that when all citizens and their incomes are calculated both the United States and Virginia have a moderate inequality amongst individual's incomes. Gini Coefficients are being used in this study to get an economic view of each locality in Virginia because income tax is a key attribute of SOQ funding for localities. Therefore, if a locality has an extremely unequal distribution of income wealth among its residents, it gives us reasons to believe that the schools within that district are going to be unequal as well. This phenomenon can be seen through "nicer" schools in high income areas of a locality and vice versa. Although these results will be estimated due to the fact that it takes time to see changes in income tax revenue, we will be able to use understanding of the effects that school funding has on future income to create these measures.

Participant Selection

For this study 130 school divisions within Virginia will be participating. Four divisions were not tested due to a lack of fiscal and population data provided from the Virginia Department of Education. The following divisions that have been removed from the study are Henry County, Williamsburg/James City County, Fairfax City, and Emporia. Household income data collected for the purposes of this study includes all public data provided by the Census Bureau.

Data Collection

Data for this study will be collected from the U.S. Census Bureau. The Bureau was able to provide household income data for the past 12 months for each school district within Virginia. These data were generated by the U.S. Census Bureau from the 2013-2017 American Community Survey 5-Year Estimates. Data from the American Community survey has been chosen because although it is estimated it gives access to data that was previously only available in the decennial census. The 5-Year Estimates are the most recent data that has been made available and blocked into school districts. Within these data household income is broken down into total household count, 10 distinct income bands ranging from less than $10,000 to more than $200,000, as well as median and mean income within the districts themselves. With this data a database will be created that creates a Gini Coefficient for each district. This will show how close each district is to being truly equal or truly unequal. After the Gini Coefficients have been analyzed, especially in districts that have a high minority population, a high population living below the poverty line, or both, a new Composite Index will be created. Once this new Composite Index has been created and changes to future income for each district are calculated a

new Gini Coefficient test will be run to see if a new Composite Index has helped move each

district towards being equal.

Data Analysis

In order to accurately analyze these data, Matlab will be used. Matlab is a computational

software that produces results based on mathematic based program. A program has been written

within Matlab in order to accurately break up estimated household incomes into different income

percentage groups or tax brackets. From there data are inserted into the Gini Coefficient database

within Microsoft Excel and a Gini Coefficient is calculated for each individual school division.

Each district's Gini Coefficient will be analyzed in order to understand where each district falls

on the spectrum of being truly equal (0) or truly unequal (1). After this, the districts' Gini

Coefficient will be compared to their Composite Index score to see if there is a correlation

between the two variables for how funding looks for each district. Next, changes to the

Composite Index will be proposed in order to create a more equitable funding plan for each

district, by examining if there are other potential sources of funding to use besides forms of

taxation (property, sales, and income) or mitigate the weighting of each tax. Finally, after these

changes have been made, tests will be conducted to see the correlation between the modified

Composite Index and education funding.

CHAPTER 4

STUDY FINDINGS

Overview

The following chapter will review the results of the study through the use of tables as well as Pearson Correlation tests. To reiterate, this study used correlational research methods in order to find the relationship between variables in a given data set. We are trying to determine if there is a correlation between a school division's Gini Coefficient score (meaning how income wealth is distributed among households within that division) and the division's Composite Index score and their percentage of funding above their required local effort (RLE). It is hypothesized that the higher a division's Gini Coefficient, meaning the closer that division's income wealth is to being distributed unequally, the lower their funding above the RLE will be.

This purpose of this study is to explore Virginia's education funding system in regard to their distribution of tax revenue towards public education in school districts with high-need low-income populations. The four research questions that this paper seeks to answer are as follows;

1) How much income inequality currently exists throughout Virginia's public-school districts?

    a. What current income wealth distribution trends exist within Virginia?

2) Is there a correlation between how much a district funds their SOQs and their Gini Coefficient?

    a. Is there a relationship between a divisions Gini Coefficient and the education spending above the Required Local Effort (RLE)?

    b. Is there a relationship between a divisions Gini Coefficient and their Composite Index?

  c. Is there a relationship between a division's education spending above the

    Required Local Effort (RLE) and their Composite Index?

3) How can Virginia's composite index can be changed in order to account for localities

  with a higher level of income inequality and a lower overall fiscal capacity?

4) How a new composite index based upon Critical Resource Theory moves high needs,

  low-income localities towards equity.

   This paper will also suggest a new theory, critical resource theory, developed by my dissertation chair, his wife, and I, that demonstrates how states allow funding disparities in education that primarily benefits wealthier localities (those with power and voice) at the expense of poorer localities (with less power and voice). This allows for greater resources and long-term social and economic benefits for students in the wealthy school systems and keeping those resources and long-term benefits lower for poorer localities perpetuating a wealth and class distinction.

Population and Descriptive Findings

   The population of this study included *N=130*, consisting of nearly all public-school divisions within the commonwealth of Virginia. For this study four divisions were not tested due to a lack of fiscal and population data provided from the Virginia Department of Education. The divisions that have been removed from the study are Henry County, Williamsburg/James City County, Fairfax City, and Emporia. Datasets being used for this study were retrieved from the Virginia Department of Education as well as the United States Census Bureau. From the Virginia Department of Education yearly information regarding statewide fiscal effort and composite index was retrieved through public information and superintendent's memos. The United States. Census Bureau was able to provide household income data for the past 12 months for each

school district within Virginia. These data were generated by the U.S. Census Bureau from the 2013-2017 American Community Survey 5-Year Estimates. Data from the American Community survey has been chosen because although it is estimated it gives access to data that was previously only available in the decennial census. The 5-Year Estimates are the most recent data that has been made available and blocked into school districts. Within these data household income is broken down into total household count, 10 distinct income bands ranging from less than $10,000 to more than $200,000, as well as median and mean income within the districts themselves. For this study data will be investigated using data from the 2017 fiscal year. Although this is a small range of time the processes used within this study are able to be scaled to cover multiple years. Descriptive and demographic data were collected for this study; however, they are not being utilized in the data analysis but can be reviewed when analyzing data results. The inferential statistics that will be utilized for this study are descriptive statistics as well as Pearson Correlation tests, to measure whether the scores of the three variable groups (Gini Coefficient, Composite Index, and precentage of funding above the RLE) are related to one another and to test for significance among the relationships between the scores respectively.

Assumptions

The dataset was examined to make sure all assumptions necessary of a correlational and regression analyses of study were managed including the absence of missing data, absence of outliers, normality, linearity, and homoscedasticity. Most of the data necessary were available in the creation of the Gini Coefficient database. The only divisions that were deleted from this data as mentioned earlier were Williamsburg/James City County, Fairfax City, Henry County, and Emporia. These divisions were removed from the study in order to help the study gain as much power as possible. However, even though the divisions were removed for the correlational

studies, they were still included in the creation of their Gini Coefficients as well as the modified Composite Index, and those data are available for each of these divisions.

Research Question 2 focuses on regression analysis and for that SPSS was utilized. This is when the five aforementioned divisions were eliminated from this section of the study because information was not available or adequately provided for each of the divisions. These divisions were only removed from analysis in Research Question 2, thus retaining as much data and power as possible. This allowed for the assumption of absence of missing data to be met for the regression analyses.

Research Question 3 modified the current Virginia Composite Index in order to lessen the burden of less fiscally wealthy districts and add the burden on to more fiscally wealthy districts. Finally, in Research Question 4, the newly modified Composite Index is put through a regression analysis in SPSS. For continuity purposes the four aforementioned divisions were still eliminated from this section of the study because information was not available or adequately provided for each of the divisions.

Data Analysis

The results of the analysis are presented below according to each research question. Table 2 presents data used to generate a Gini Coefficient for each public-school division within Virginia and other information necessary to answer Research Question 1.

1. How much income inequality currently exists within the public-school divisions of Virginia?

In order to answer this question, it was deemed necessary that utilization of the Gini Coefficient economic measure would be the most accurate way to gain a full understanding of income wealth discrepancies within Virginia. A Gini Coefficient analyzes the way wealth is

distributed in a given area; does one-person account for 99% of wealth in a country or do 100 people each make up 1% of a country's wealth? For reference, the United States' current Gini Coefficient is .49, and Virginia's is .47 (27th amongst all states). This is saying that when all citizens and their incomes are calculated both the United States and Virginia have a moderate inequality amongst individuals' income wealth. It is probable that further analysis would show that there is a large inequality of income wealth in the poorest population or richest population both within the United States and Virginia. Gini Coefficients are being used in this study to obtain an economic view of each locality in Virginia because income tax is a key attribute accounting for approximately 40% of SOQ funding for localities.

In order to calculate the Gini Coefficient, it was first necessary to take total household population data for each division to determine how many households made up that area. Then the total income was measured into three groups, the bottom 25% of the population, the middle 50% of the population, and the top 25% of the population according to income wealth. Once income wealth was broken into those three groupings, analysis was able to continue by breaking down what fraction of the income each third of the population accounted for, the fraction of households each third was accounted for, as well as the measure of how much of the poorest third and middle third of the population was needed to amount to the richest third of the population. This section of the analysis was necessary to make sure that the wealth within a division was accurately being distributed to the individuals who contributed to it. Next we were able to generate a score for each of the income wealth categories for each school division. This score identified how much of the overall wealth within a division came from the poorest third, the middle third, or the richest third. Finally, from the wealth distribution score we were able to generate a Gini Coefficient for each public-school division within Virginia. Table 2 provides a

breakdown of each divisions' Gini Coefficient from largest (most unequal distribution of income wealth) to smallest (most equal distribution of income wealth).

A wealth of information was created when the Gini Coefficients were able to be generated for these school divisions. Virginia has a broad spectrum of coefficients within this table. The divisions which had the lowest Gini Coefficients, the divisions which were closest to 0 representing total equality among income wealth distribution, were Accomack County (*GC*= .011), Alleghany County (*GC*= .161), and Albemarle County (*GC*= .174). The divisions which had the highest Gini Coefficients, the divisions which were closest to 1 representing total inequality among income wealth distribution, were Alexandria City (*GC*= .491), Goochland County (*GC*= .313), and Martinsville County (*GC*=.292).

While none of these divisions fall into the realm of being a division in which wealth is distributed truly equally or truly unequally, there are interesting data points that deserve further analysis. Accomack County has the lowest overall Gini Coefficient at .011, which means that as a division should be the closest to having a truly equal income wealth distribution. Although this may be true, having an equal distribution of wealth does necessarily indicate the district has a whole having wealth. This is evidenced in Accomack County funding their school division at just 26% above their required local effort in the 2017 fiscal year as well as having a relatively low Composite Index of .3462. Under further examination most of Accomack's income wealth resides in the middle third of the population, with barely 20% of the division's income wealth regarding with the poorest or richest third. On the opposite end of the spectrum, Alexandria City, has the highest Gini Coefficient at .491. This is much higher than the next highest Gini Coefficient which would be Goochland County at .313. When you look at the data you see that Alexandria City has a lot of wealth, this is shown by their Composite Index (*CI* = .800) and their

percentage of funding above the required local effort (*ALE* = 153.07) which is the 9th highest in Virginia. Alexandria's wealth is also seen in that 76% of their income wealth resides with the richest 25% of the population.

The descriptive statistics also show relevant information when it comes to answering our questions on current inequality existing within Virginia. Currently, when the descriptive statistics are examined, we see that (*M* = .244, and *SD* = .0389). These statistics show that the average Gini Coefficient within Virginia is at .244 which is relatively close to being truly equal. Even though no division is perfect, this average and a low standard deviation, showing that the overall Gini Coefficients are not far off from the mean, lets us know that with some tweaking current income wealth distribution could be a crucial contributor and identifier to creating a more equitable education funding method within Virginia.

    a.   What current income wealth distribution trends exist within Virginia?

For this section utilization of the Superintendent of Virginia's Region Map was necessary. On this map the Virginia Department of Education has broken down Virginia in its entirety into eight geographically similar regions. The eight regions are Central Virginia (Region 1), the Tidewater Region (Region 2), The Northern Neck (Region 3), Northern Virginia (Region 4), the Valley (Region 5), Western Virginia (Region 6), the Southwest (Region 7), and Southside (Region 8). Each of these regions include from twelve to twenty different school divisions. For the sake of this study, analyzing data for how it looks for each division within a region and how the regions compare to one another.

For each of the eight regions in Virginia, an average was taken of their divisions' Composite Index, percentage of funding above the RLE, and their Gini Coefficient. The highest average for the Composite Index was Northern Virginia (Region 4). Region 4 is one of the

wealthiest regions in the state and it is evident based on not only how much they are required to fund their education system by the state (.5041) but also, they have the highest in funding above the RLE (107.30). This means that even though the divisions of Region 4 are required to fund their education systems more than the other divisions throughout Virginia, they also tend to go above and beyond that RLE by nearly double (percentage). Also, when you look at demographic and socioeconomic statistics for Region 4, they have the second lowest percentage of African American students (.0937), the lowest percentage of students receiving free and reduced priced lunch (.3867), while their Gini Coefficient is the fifth lowest (.2426). Each of these variables is an indicator for overall wealth within the region. Further examination will be required to see if and how the racial statistics play a role in the overall wealth in the region.

To contrast with Region 4, the Southwest (Region 7) has the lowest average Composite Index in Virginia (.2733). This means that on average the school divisions within Region 7 are only required to fund 27.33% of the SOQ, while the state funds the other 72.67%. Region 7 also has the second lowest average percentage of funding above the RLE (45.78). Region 8, another largely rural region, has the lowest average percentage of funding above the RLE (31.29). The poverty that Region 7 experiences is evident throughout their data. Region 7 has the highest Gini Coefficient (.2579), lowest precentage of African American students (.0317), largest percentage of White students (.8978), and second largest percentage of students receiving free and reduced priced lunch (.5678).

When a smaller scale lens is applied to this regional analysis it is evident that the wealthiest divisions by Composite Index are along the coast of Virginia (Region 1, Region 2, Region 3, and Region 4). This could due to a multitude of reasons from population size, property wealth revenue from coastal towns, or a larger amount of income tax revenue. In the rural

counties of western Virginia and the mountains of the Appalachian region the money dries up. These western regions (5, 6, 7, 8) have the lowest averages for required funding by the state, the largest example of income wealth inequality, and the largest percentages of students receiving free and reduced-price lunch. Even though these statistics are staggering, they are not surprising and if a nationwide study were done chances are these numbers would be similar in numerous rural areas around the country. However, while it was interesting to look at the regional variance, this information may not be useful to this study due to the drastic differences between localities within the same region causing the less wealthy localities to be "hidden" by their wealthier neighbors.

51

Table 2

Gini Coefficient by Virginia Public School Division

Division Name	Gini Cof	Division Name	Gini Cof	Division Name	Gini Cof	Division Name	Gini Cof
Alexandria	0.491	Norfolk	0.263	Chesapeake	0.250	Colonial Heights	0.242
Goochland	0.313	Tazewell	0.262	Prince Edward	0.250	Nelson	0.242
Martinsville	0.292	Grayson	0.262	Manassas Park	0.249	Staunton	0.242
Poquoson	0.291	Middlesex	0.261	New Kent	0.249	Northumberland	0.241
Radford	0.289	Bristol	0.261	Bath	0.248	Newport News	0.241
Dickinson	0.289	Nottoway	0.260	Patrick	0.248	Westmoreland	0.240
Richmond City	0.288	Harrisonburg	0.260	Madison	0.248	Portsmouth	0.240
Clarke	0.288	Roanoke City	0.260	Chesterfield	0.248	Waynesboro	0.240
Lexington	0.288	Lancaster	0.260	Highland	0.247	Virginia Beach	0.238
Buchanan	0.283	Wise	0.259	Buena Vista	0.247	Culpeper	0.237
Petersburg	0.279	Cumberland	0.258	Brunswick	0.247	Pulaski	0.237
Galax	0.277	Henrico	0.258	Smyth	0.247	Carroll	0.236
Norton	0.277	Covington	0.257	Manassas	0.246	Southampton	0.236
Franklin City	0.276	Charlotte	0.255	Rockbridge	0.245	Hampton	0.236
Hanover	0.272	Fredericksburg	0.255	Franklin County	0.245	Dinwiddie	0.235
Charlottesville	0.272	Halifax	0.255	Pittsylvania	0.244	Charles City	0.235
Northampton	0.272	Washington	0.254	Mathews	0.244	Lunenburg	0.234
Lee	0.271	Mecklenburg	0.253	Powhatan	0.244	Louisa	0.234
Danville	0.270	Scott	0.252	Wythe	0.244	Frederick	0.234
Montgomery	0.266	Sussex	0.252	Page	0.244	Bedford County	0.234
Spotsylvania	0.265	Prince George	0.251	Richmond County	0.243	Amherst	0.233
Lynchburg	0.263	Colonial Bch	0.251	Campbell	0.243	Buckingham	0.232
King George	0.263	Winchester	0.250	Warren	0.243	Shenandoah	0.232
Hopewell	0.263	Russell	0.250	Rappahannock	0.242	Greensville	0.232

Division Name	Gini Cof	Division Name	Gini Cof	Division Name	Gini Cof	Division Name	Gini Cof
Bland	0.231	King and Queen	0.222	Prince William	0.188	Stafford	0.188
Floyd	0.231	Giles	0.222	Albemarle	0.174	Prince William	0.188
Essex	0.230	Suffolk	0.220	Alleghany	0.161	Albemarle	0.174
Roanoke County	0.229	Amelia	0.220	Accomack	0.011	Alleghany	0.161
Salem	0.227	Isle of Wight	0.217	Amelia	0.220	Accomack	0.011
Craig	0.227	Caroline	0.215	Isle of Wight	0.217		
Appomattox	0.227	King William	0.209	Caroline	0.215		
Orange	0.226	Falls Church	0.205	King William	0.209		
Gloucester	0.226	Arlington	0.202	Falls Church	0.205		
Surry	0.225	Fauquier	0.199	Arlington	0.202		
Greene	0.225	West Point	0.198	Fauquier	0.199		
Fluvanna	0.223	Fairfax County	0.196	West Point	0.198		
Augusta	0.223	Loudoun	0.190	Fairfax County	0.196		
Rockingham	0.223	York	0.188	Loudoun	0.190		
Botetourt	0.223	Stafford	0.188	York	0.188		

Table 3

Demographic and Socioeconomic Data by Geographic Region of Virginia

	CI Average	RLE Average	Gini Cof	% African American	% White	% Free and Reduced-Price Lunch
Region 1	.4212	87.5447	.2570	.3720	.4947	.4848
Region 2	.3410	102.6321	.2270	.3786	.4564	.4939
Region 3	.4448	85.7424	.2359	.2882	.5482	.5173
Region 4	.5041	107.3095	.2426	.0937	.5816	.3867
Region 5	.4434	93.7540	.2403	.1300	.7115	.4670
Region 6	.3112	91.0086	.2414	.2371	.6557	.5718
Region 7	.2733	45.7853	.2579	.0317	.8978	.5678
Region 8	.2883	31.2933	.2435	.4308	.4700	.6333

2. Is there a relationship between Standards of Quality funding and a division's Gini Coefficient?

    a. Is there a relationship between a division's Gini Coefficient and the education spending above the Required Local Effort (RLE)?

    b. Is there a relationship between a divisions Gini Coefficient and their Composite Index?

    c. Is there a relationship between a divisions education spending above the Required Local Effort (RLE) and their Composite Index?

A series of Pearson's correlational analyses were performed in order to measure any potential correlation between a division's Gini Coefficient, their Composite Index, and their actual funding above their RLE. Effects of correlation coefficients can be defined as (a) +/- .10 to +/- .29 = weak effect; (b) +/- .30 to +/-.49 = moderate effect; and (c) +/- .50 to +/- 1.0 = strong effect (Pallant, 2013). Also examined is the p-value of this correlation. The p-value (p) seeks to show that the probability of the theory being tested is false. For our study the p-value must be

less than .05 or ($p > .05$) to show that our theory being tested is true. A significant relationship was only found between a division's Composite Index and their funding above their RLE. Using the information obtained from the correlation coefficients, the items of Research Question 2, "Is there a relationship between Standards of Quality funding and a division's Gini Coefficient?" can be addressed as follows:

> a. Is there a relationship between a division's Gini Coefficient and the education spending above the Required Local Effort (RLE)?

As shown in Table 4 when a Pearson Correlation test was run between the Gini Coefficient values for each division and the percentage that divisions fund above their required local fiscal effort. It was found that no significant correlation exists. The reason for this is due to the Pearson Correlation (r) and the level of significance (p) for the test ($r = -.086, p = .331$). The data show that for this specific correlation although there is a very weak negative correlation ($r = -.086$), meaning that a positive increase in one of the variables (Gini Coefficient or percentage above the RLE) would result in a decrease in the other variable. Although a negative trend would be a helpful indicator to see due to the fact that an increase in the Gini Coefficient would result in lower overall percentage spent above the RLE and vice versa. However, even though there is a weak negative correlation, the level of significance is too high ($p = .331, p > .05$) for the data to be statistically significant. In the future it will be beneficial to run this test over multiple years of data for each division to see if this negative correlation and the level of significance both strengthen.

Table 5 was generated to analyze if there was a correlation between the Gini Coefficient values for the five lowest scoring Gini Coefficient divisions and the percentage that these divisions fund above their required local fiscal effort. It was found that no significant correlation

exists between these variables. The data show that the Pearson Correlation (*r*) and the level of significance (*p)* for this test (*r* = .764, *p* = .133). Even though the correlation may not be statistically significant, in this smaller population size a strong positive correlation does exist between the Gini Coefficient and the percentage above the RLE that a locality funds their school division. This means that as the Gini Coefficient increases, amount of income wealth becomes more unequal, the amount funded above the RLE also increases. Similarly, Table 6 was generated to analyze if there was a correlation between the Gini Coefficient values for the five highest scoring Gini Coefficient divisions and the percentage that these divisions fund above their required local fiscal effort. It was found that no significant correlation exists between these variables. The data show that the Pearson Correlation (*r*) and the level of significance (*p)* for this test (*r* = .543, *p* = .344). This similar trend was seen on a larger scale with divisions with the highest Gini Coefficient going above and beyond their RLE.

  b. Is there a relationship between a division's Gini Coefficient and their Composite
      Index?

Also using the data available in Table 2, a Pearson Correlation was run between the Gini Coefficient values for each division and the division's Composite Index. It was also found that no significant correlation exists. The reason for this, as stated above, is due to the p-value and the level of significance for the test (*r* = .074, *p* =.403). The data show that for this specific correlation that there is a very weak positive correlation (*r* = .074), meaning with every positive increase in one of the variable tests (Gini Coefficient or Composite Index) there will be a positive increase in the other variable. This would look similar to Alexandria's statistics mentioned earlier, that with a higher Composite Index also comes a higher Gini Coefficient, meaning the level of income wealth inequality would be much higher in areas that have a high

Composite Index. However, once again the level of significance is too high ($p = .403$, $p > .05$) for the data to be statistically significant. This correlation would also benefit from this test being conducted over multiple years of data to see if there is a strengthening of the positive correlation as well as an increase in the level of significance. Table 5, which measures if there was a correlation between the Gini Coefficient values for the five lowest scoring Gini Coefficient divisions and the percentage that these divisions fund above their required local fiscal effort, was examined it was found that no significant correlation exists between these variables. The data show that the Pearson Correlation (r) and the level of significance (p) for this test ($r = .191$, $p = .758$). Even though the correlation may not be statistically significant, in this smaller population size a weak positive correlation does exist between the Gini Coefficient and the localities composite index score. This means that as the Gini Coefficient increases, amount of income wealth becomes more unequal, their Composite Index also increases. Table 6 found that no significant correlation exists between these variables, Gini Coefficient and the Composite Index. The data show that the Pearson Correlation (r) and the level of significance (p) for this test ($r = .680$, $p = .207$). Once again, a similar trend is seen with the increasing of a localities Gini Coefficient there is also an increase of their Composite Index score.

      c.   Is there a relationship between a division's education spending above the Required Local Effort (RLE) and their Composite Index?

Finally, a Pearson's correlation test was conducted that is also available in Table 4, concerning the relationship between a division's education spending above the RLE and their Composite Index. It was found that a significant correlation does exist between these two variables. This is due to the p-value and level of significance for the test ($r = .248$, $p = .004$). This indicates that there is a weak positive correlation between the two variables. The weak

positive correlation ($r = .248$), shows that with every increase to education spending above the RLE there is an increase to the Composite Index and vice versa. This data is also statistically significant ($p = .004$, p < .01), meaning that there is above a 99% of this correlation being true. The same tests were run on a smaller sample size in Tables 5 and 6. Table 5 shows a very weak positive correlation between the variables, but it is not significant ($r = .057, p = .927$). A different trend was evident with Table 6 in that there was a weak negative correlation between a localities composite index score and how much they fund their education systems above the RLE ($r = -.136, p = .827$). Although these data are beneficial to this study, this test would also benefit from being conducted over multiple years to add validation to the data.

Table 4

Pearson Correlations Among Total Funding Data

		1. Gini Coefficient	2. Percentage above RLE	3. Composite Index
1. Gini Coefficient	Pearson Correlation	1	-.086	.074
	Sig. (2-tailed)		.331	.403
	N	130	130	130
2. Percent above RLE	Pearson Correlation	-.086	1	.248**
	Sig. (2-tailed)	.331		.004
	N	130	130	130
3. Composite Index	Pearson Correlation	.074	.248**	1
	Sig. (2-tailed)	.403	.004	
	N	130	130	130

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

Table 5

Pearson Correlations Among Lowest 5 Gini Coefficient Divisions Funding Data

		1. Gini Coefficient	2. Percentage above RLE	3. Composite Index
1. Gini Coefficient	Pearson Correlation	1	.764	.191
	Sig. (2-tailed)		.133	.758
	N	5	5	5
2. Percent above RLE	Pearson Correlation	.764	1	.057
	Sig. (2-tailed)	.133		.927
	N	5	5	5
3. Composite Index	Pearson Correlation	.191	.057	1
	Sig. (2-tailed)	.758	.927	
	N	5	5	5

Table 6

Pearson Correlations Among Highest 5 Gini Coefficient Divisions Funding Data

		1. Gini Coefficient	2. Percentage above RLE	3. Composite Index
1. Gini Coefficient	Pearson Correlation	1	.543	.680
	Sig. (2-tailed)		.344	.207
	N	5	5	5
2. Percent above RLE	Pearson Correlation	.543	1	-.136
	Sig. (2-tailed)	.344		.827
	N	5	5	5
3. Composite Index	Pearson Correlation	.680	-.136	1
	Sig. (2-tailed)	.207	.827	
	N	5	5	5

3. How can Virginia's Composite Index can be changed in order to account for localities with a higher level of income inequality and a lower overall fiscal capacity?

The heart of this study is to be able to create a more equitable school funding formula for Virginia. Up to this point there has been analysis of the income wealth inequality that currently exists among the different localities of Virginia, as well as the correlations that exist between a divisions income wealth inequality (Gini Coefficient), how much each division funds their

education system above the required local effort set forth by Virginia's Standard of Quality, and each divisions Composite Index score. This next research question looks to analyze how the Composite Index score can be changed in order to account for localities with a higher level of income inequality and a lower overall fiscal capacity. To do this a handicap was created in order to offset division wealth or lack of wealth. The handicap that was decided on was to take each division which had a Composite Index score above a .7 and increase it by a point. For example, if Division X had a Composite Index score of a .763, their new handicapped Composite Index score would be .863. This new Composite Index would require Division X to cover at a minimum 86% of their SOQ measures with Virginia contributing the remaining 14%. In contrast the handicap that would affect the divisions which had a Composite Index score below .7 would be to decrease their score by a point. For example, if Division Y had a Composite Index score of .212 their new Composite Index score would be .112. In contrast to the wealthy divisions, this would require Division Y to cover at a minimum 11% of their SOQ measures contributing the remaining 89%.

This handicap was created in order to decrease the burden of localities that had a higher level of income wealth inequality and lower overall fiscal capacity and increase the burden on divisions with a higher fiscal capacity and lower level of income wealth inequality. For the purpose of this study and examination the new modified Composite Index will be used as the Composite Index measure in Research Question 4.

4. How does a new Composite Index based upon Critical Resource Theory moves high needs, low-income localities towards equity?

In order to measure if the newly modified Composite Index score does in fact create a more equitable funding situation for Virginia, similar tests will be conducted and analyzed to see

if that goal has been achieved. The first analysis that will be conducted in this section is a regional analysis to see if the modified Composite Index has affected the regions with the highest Composite Index as well as the lowest. Along with a regional analysis a geographic analysis will be done to see if the coastal region of Virginia still houses the divisions with the highest Composite Index scores. Finally, correlation tests will be conducted to see if the modified Composite Index has created any change in these measures.

For this section utilization of the Superintendent of Virginia's Region Map was necessary. On this map the Virginia Department of Education has broken down Virginia in its entirety into eight geographically similar regions. The eight regions are Central Virginia (Region 1), the Tidewater Region (Region 2), The Northern Neck (Region 3), Northern Virginia (Region 4), the Valley (Region 5), Western Virginia (Region 6), the Southwest (Region 7), and Southside (Region 8). Each region consists of twelve to twenty different school divisions.

Once again, for each of the eight regions in Virginia, an average was taken of their divisions' new Composite Index. The highest average for the Composite Index was still Northern Virginia (Region 4). As mentioned previously Region 4 is one of the wealthiest regions in the state and under the previous Composite Index they were required to fund their Composite Index share of the SOQ costs at 50.41%. However, under the modified Composite Index Region 4 is now required their funding system at .4568. This is a decrease of .0473, and even though the average Composite Index is lower under the modified measures, Region 4 still has the highest Composite Index average in Virginia. This means that even though the divisions of Region 4 are required to fund their education systems more than the other divisions throughout Virginia, on average divisions within this region will have to spend less meeting their SOQs, freeing up funds that these divisions can use to go above and beyond their RLE.

To contrast with Region 4, the Southwest (Region 7) still remains the lowest average Composite Index in Virginia (.1733) down from the previous lowest .2733. This means that on average the school divisions within Region 7 are now only required to fund 17% of their RLE, while the state government funds the other 83%. As mentioned earlier the poverty that Region 7 experiences is evident throughout their data. Region 7 has the highest Gini Coefficient (.2579), and second largest precentage of students receiving free and reduced-priced lunch (56.78%). By decreasing the level that Region 7 is required to fund at, funds are also freed up by these localities to either continue to put towards education or redistribute to other areas within the locality.

As conducted earlier when a smaller scale lens is applied to this regional analysis the wealthiest divisions by the newly modified Composite Index are still the regions along the coast of Virginia (Region 1, Region 2, Region 3, and Region 4). Similarly, the farther west the data goes into the rural counties of western Virginia and the mountains of the Appalachian region the money dries up. However, these western regions (5, 6, 7, 8) now have lower Composite Index scores .3634, .2112, .1733, and .1883 respectively. By decreasing the overall burden these localities within these regions have to put towards education, it allows divisions to either add additional funding towards their school divisions or take these funds and redistribute them in other ways across the locality to provide for their citizens.

Although the changes are evident at how modifying a division's Composite Index can bring fiscal benefits to the division, correlation tests need to be conducted in order to see how these new changes affect the relationship between a division's Composite Index, their Gini Coefficient, and their precentage of funding above their required local effort. Table 7 was created in order to best interpret this data.

As mentioned earlier the data in Table 7 is the information gained from a Pearson

Correlation test was run between each divisions' Composite Index, their Gini Coefficient values,

and the divisions' precentage of funding above the Required Local Effort. This test was

conducted to see the effects that the modified Composite Index would have on the relationship

between the Gini Coefficient values and funding above the RLE. When the Gini Coefficient

correlations were conducted, it was found that no significant correlation exists. The reason for

this is due to the Pearson correlation and the level of significance for the test. The new values

were as follow, for the total school division population in Virginia ($r = .108$, $p =.223$) for the five

divisions with the lowest Gini Coefficients ($r = .191$, $p =.758$), and for the five divisions with the

highest Gini Coefficients ($r = .687$, $p =.200$). Even though the data show that each of these data

sets are not statistically significant, some observations can be drawn from them. When the total

divisions were examined there was a strengthening of the correlation between the modified

Composite Index and the Gini Coefficients ($r = .074$, $p = .403$) to ($r = .108$, $p = .223$), meaning

there there is a weak positive correlation between the two variables. Even though the correlation

is still considered weak, the fact that the correlation is strengthening and that the data is moving

towards being statistically significant are both variables that should be monitored over time to

see how yearly differences affect the values. Similar trends are evident when the five divisions

with the highest Gini Coefficients are examined. The strength of the correlation is increasing as

well as statistical significance ($r = .680$, $p = .207$) to ($r = .687$, $p = .200$). However, level of

significance is still too high ($p = .200$, $p > .05$) for the data to be statistically significant.

Similar tests were conducted in relation to the correlation of the modified Composite

Index and the precentage that divisions fund above the RLE. The new values were as follow, for

the total school division population in Virginia ($r = .226$, $p =.010$) for the five divisions with the

lowest Gini Coefficients (r = .057, p =.927), and for the five divisions with the highest Gini

Coefficients (r = -.121, p =.847). Even though there is an overall weakening of the correlation

for the total school division population (r = .226, p =.010), this data is still statistically

significant. This means there is a weak positive correlation between the modified Composite

Index and the amount localities fund their public divisions above the required local effort. For

every positive increase there is to the modified Composite Index there is a positive increase in

amount localities fund their public divisions above the required local effort. This information is

also evident when the five divisions with the highest Gini Coefficients are examined. The

strength of the correlation is decreasing, and the statistical significance is weakening (r = -.121,

p= .847). Even though under the modified Composite Index the wealthy divisions are still able to

go above and beyond the RLE set forth by Virginia, there is weaker a negative correlation

between the two variables than there was before.

Table 7

Modified Composite Index Pearson Correlations Among Total Funding Data

		Gini Coefficient	Percentage above RLE
Total	Pearson Correlation	.108	.226**
	Sig. (2-tailed)	.223	.010
	N	130	130
Highest 5 Gini Coefficient Divisions	Pearson Correlation	.687	-.121
	Sig. (2-tailed)	.200	.847
	N	5	5
Lowest 5 Gini Coefficient Divisions	Pearson Correlation	.191	.057
	Sig. (2-tailed)	.758	.927
	N	5	5

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

Summary

At the beginning of Chapter 4 a description of the population being tested as well as the tests that were going to be conducted were explained. After this the required assumptions for the inferential analyses were presented and discussed. Following the descriptive and assumption sections, inferential analyses were performed to investigate the research questions.

For Research Question 1 a database was created to highlight how much income wealth inequality currently exists within Virginia. In order to do this a database was created to give a breakdown of every public-school division in Virginia's Gini Coefficient. A Gini Coefficient is a measure of economic development in an area, for this study it is being used to understand how much income wealth inequality or equality exists within each public-school division in Virginia. After this, demographic and geographic data was analyzed to find similarities among school divisions.

Research Question 2 sought to answer is there any correlation between a school division's Gini Coefficient, their Composite Index, and how much a division spends above their RLE. In order to answer this question a Pearson's Correlation test was run in SPSS and the data was examined. A Pearson's Correlation test was run to measure the correlation between Gini Coefficient and the division spending above their RLE, Gini Coefficient and the Composite Index, and finally the division spending above their RLE and their Composite Index. Once these tests were conducted and analyzed, the data was further examined for outliers and trends that exist with a focus on rural versus urban areas as well as wealthy divisions versus poor divisions.

In Research Question 3 changes to the Composite Index were made in order to be measured in their effectiveness. The changes that were made were adding a point to divisions who had a Composite Index score above a .7 (increase from .7 to .8) as well as subtracting a

point from divisions who had a Composite Index score below a .7 (decrease from a .6 to a .5). This was done in order to increase the funding burden on wealthy divisions and ease the burden on divisions with a lower fiscal capacity.

Finally, in Research Question 4 using the modified Composite Index a Pearson's Correlation test was run to measure the correlation between Gini Coefficient and the division spending above their RLE, Gini Coefficient and the Composite Index, and finally the division spending above their RLE and their Composite Index.

CHAPTER 5

DISCUSSION OF FINDINGS AND IMPLICATIONS

Overview

Schools in general are overcrowded (Leachman, et al., 2016, p. 3). Every state has schools that are overachieving and underachieving. This is a status quo most individuals involved in education are accustomed to. However, the thought process surrounding this issue should be altered to ask the question "are we funding schools and providing resources to meet the needs of the students in this specific area with their specific needs?" Consequently, any time a policy comes forward the conflict arises over who the issue belongs to. Is it an issue that the federal government, the state government, or the local government will take care of? Another question that could be asked is why should certain schools and students receive more funding and resources than others? In order to be an expert on this topic, understanding what goes into creating a specific funding formula for a state or locality is necessary. Additionally, it is important to understand what research exists surrounding the association between school funding and student achievement. In order to fully understand this issue, it is necessary to ask are funding plans created in order to specifically meet the needs of the students or are they created solely to provide blanket-funding across an entire state? The purpose of this dissertation is to investigate the relationship between available resources and the inequalities within public schools. The study will examine the funding formula in Virginia and examine its effects on multiple school districts in order to develop a new theory – Critical Resource Theory which William Owings and Leslie Kaplan originally conceived, and this study aims to advance.

This paper used Critical Theory and Resource Dependency Theory to explore Virginia's education funding system in regard to their distribution of tax revenue towards public education

in school districts with high-need low-income populations. The four research questions that this paper sought to answer were as follows;

1) How much income inequality currently exists throughout Virginia's public-school districts?

2) Is there a correlation between how much a district funds their SOQs and their Gini Coefficient?

3) How can Virginia's Composite Index can be changed in order to account for localities with a higher level of income inequality and a lower overall fiscal capacity?

4) How a new Composite Index based upon Critical Resource Theory moves high needs, low-income localities towards equality.

This paper suggests a new theory, Critical Resource Theory, developed by my dissertation chair, his wife, and I, that demonstrates how states allow funding disparities in education that primarily benefits wealthier localities (those with power and voice) at the expense of poorer localities (with less power and voice). This allows for greater resources and long-term social and economic benefits for students in the wealthy school systems and keeping those resources and long-term benefits lower for poorer localities perpetuating a wealth and class distinction.

Major Findings

This study examined if there was existing income inequality within divisions across the commonwealth of Virginia. Once the existence of this income inequality was established, correlation tests were conducted to see if there was a correlation between income wealth inequality and the way that divisions were funded within the state. Finally, way to alter state funding formulas by increasing the fiscal burden on wealthy divisions and decreasing the fiscal

burden on less fiscally capable divisions was established. From each aspect of the study, evidence was found to support the claims presented and they will be highlighted below.

Research Question 1 sought to answer how much income inequality currently exists throughout Virginia's public-school divisions. To answer this, we used an economic measure called a Gini Coefficient to determine the severity of this income wealth inequality. It was concluded that income inequality does exist within Virginia and varies from region to region. The notable outliers from this study were Accomack County and Alexandria City. Accomack County had the lowest Gini Coefficient at .011, meaning that Accomack County does not have much income wealth inequality. At first this may seem like a good thing but when our focus is on Accomack County we can see that the reason for the lack of income wealth inequality is due to the fact that most of the households within Accomack County lie within the same tax band ($25,000 to $34,999) and variations within income wealth are not very spread out amongst the people living there. On the other end of the spectrum Alexandria City had the highest Gini Coefficient at .491, meaning that Alexandria City has a high amount of income inequality. This is due to the fact that most of the wealth within Alexandria City lies within a small number of households.

After Research Question 1 established that public-school divisions within Virginia were experiencing income wealth disparities and to what extent that was the case the examination moved towards understanding if correlations does exist between the level of income wealth inequality within a division and how much each division funds their public-education system. From what was analyzed there was not a significant strong correlation between the level of income wealth inequality within a division and their level of funding. However, there was a correlation between each divisions' Composite Index and how much they were able to fund

above and beyond the SOQ measures required by the Virginia Department of Education. This may be due to the fact that divisions with a higher Composite Index means that the division is wealthier. With a division being wealthy they are able to fund at the floor level required of them by the VDOE and then go above and beyond that minimum threshold. The reason for this is due to the fact that Virginia only requires divisions, regardless of wealth, to fund a maximum of 80% of their public-education system with the remaining 20% being provided by the state. This allows wealthier divisions to decide on how much more they should fund their schools, and in some cases as will be discussed below making the decision between supplementing or supplanting their education funding.

Results

1) How much income inequality currently exists throughout Virginia's public-school districts?

A wealth of information was created when the Gini Coefficients were able to be generated for these school divisions. The divisions which had the lowest Gini Coefficients, the divisions which were closest to 0 representing total equality among income wealth distribution, were Accomack County (*GC*= .011), Alleghany County (*GC*= .161), and Albemarle County (*GC*= .174). The divisions which had the highest Gini Coefficients, the divisions which were closest to 1 representing total inequality among income wealth distribution, were Alexandria City (*GC*= .491), Goochland County (*GC*= .313), and Martinsville County (*GC*=.292).

a. What current income wealth distribution trends exist within Virginia?

When a smaller scale lens is applied to this regional analysis it is evident that the wealthiest divisions by Composite Index are along the coast of Virginia (Region 1, Region 2, Region 3, and Region 4). These western regions (5, 6, 7, 8) have the lowest averages for required

funding by the state, the largest example of income wealth inequality, and the largest percentages of students receiving free and reduced-price lunch.

2) Is there a correlation between how much a district funds their SOQs and their Gini Coefficient?

    a. Is there a relationship between a division's Gini Coefficient and the education spending above the Required Local Effort (RLE)?

When a Pearson Correlation test was conducted among the five divisions with the highest Gini Coefficient within Virginia and their spending above the RLE the data shows that the Pearson Correlation (r) and the level of significance (p) for this test ($r = .764$, $p = .133$). A Pearson Correlation test was also conducted among the five divisions with the lowest Gini Coefficient within Virginia and their spending above the RLE the data show that the Pearson Correlation (r) and the level of significance (p) for this test ($r = .543$, $p = .344$). This means that for both subgroups even though it is not statistically significant there is a positive correlation between each variable. As a division's Gini Coefficient increases, there is also an increase in their spending above the RLE. The reason for this may be due to the fact that there are a higher number of wealthy households in a division with a large amount of income inequality.

    b. Is there a relationship between a division's Gini Coefficient and their Composite Index?

It was also found that no significant correlation exists due to the p-value and the level of significance for the test ($r = .074$, $p = .403$). The data show that for this specific correlation that there is a very weak positive correlation ($r = .074$), meaning with every positive increase in one of the variable tests (Gini Coefficient or Composite Index) there will be a positive increase in the other variable. Table 5 also found that no significant correlation exists between these variables,

Gini Coefficient and the Composite Index. The data show that the Pearson Correlation (*r*) and the level of significance (*p*) for this test (*r* = .680, *p* = .207). Once again, a similar trend is seen with the increasing of a locality's Gini Coefficient there is also an increase of their Composite Index score. This means that the higher a division's Gini Coefficient score (the more income wealth inequality exists) the higher the division's Composite Index tends to be.

      c.   Is there a relationship between a division's education spending above the

            Required Local Effort (RLE) and their Composite Index?

It was found that a significant correlation does exist between these two variables. This is due to the p-value and level of significance for the test (*r* = .248, *p* = .004). This indicates that there is a slightly weak positive correlation between the two variables. The weak positive correlation (*r* = .248). This is also statistically significant (*p* = .004, p < .01), meaning that there is above a 99% chance of this correlation existing. The same tests were run on a smaller sample size in Tables 5 and 6. Table 5 shows a very weak positive correlation between the variables, but it is not significant (*r* = .057, *p* = .927). A different trend was evident with Table 6 in that there was a weak negative correlation between a localities Composite Index score and how much localities fund their education systems above the RLE (*r* = -.136, *p* = .827). This means that for every decrease in a localities Required Local Effort there is an increase in the localities Composite Index and vice versa.

   3) How can Virginia's Composite Index can be changed in order to account for localities

       with a higher level of income inequality and a lower overall fiscal capacity?

To do this a handicap was created in order to offset division wealth or lack of wealth. The handicap was to take each division which had a Composite Index score above a .7 and increase it by a point. This handicap was created in order to decrease the burden of localities that had a

higher level of income wealth inequality and lower overall fiscal capacity and increase the burden on divisions with a higher fiscal capacity and lower level of income wealth inequality.

4) How a new Composite Index based upon Critical Resource Theory moves high needs, low-income localities towards equity.

Similar tests were conducted in relation to the correlation of the modified Composite Index and the precentage that divisions fund above the RLE. The new values were as follow, for the total school division population in Virginia ($r = .226, p = .010$) for the five divisions with the lowest Gini Coefficients ($r = .057, p = .927$), and for the five divisions with the highest Gini Coefficients ($r = -.121, p = .847$). Even though there is an overall weakening of the correlation for the total school division population ($r = .226, p = .010$), this is still statistically significant. This means there is a weak positive correlation between the modified Composite Index and the amount localities fund their public divisions above the required local effort. For every positive increase there is to the modified Composite Index there is a positive increase in amount localities fund their public divisions above the required local effort. This information is also evident when the five divisions with the highest Gini Coefficients are examined. The strength of the correlation is decreasing, and the statistical significance is weakening ($r = -.121, p = .847$). Even though under the modified Composite Index the wealthy divisions are still able to go above and beyond the RLE set forth by Virginia, there is weaker a negative correlation between the two variables than there was before, meaning that for every increase in one variable there is a decrease in the other variable. For example, with a division's Composite Index increases the amount they go above and beyond the RLE decreases, showing that the more a division is required to fund education by the state the less they fund above that minimum threshold.

Summary of Findings

This study reviewed data from 130 school divisions within the Commonwealth of Virginia regarding division income wealth inequality and education funding for the 2017 fiscal year. The reason that only 130 divisions were selected is attributed for missing fiscal or population data for these divisions. The study revealed findings but only two findings were statistically significant regarding the variables within the research question, that there is a correlation between a division's funding above the RLE and their Composite Index. Using a Pearson's correlational analysis, there is a statistically significant positive association between educational funding levels above the required local effort and each division's Composite Index. This means that when a division's Composite Index increases, their funding above the required local effort also increases. It was found that there was an association between the division's Gini Coefficient and their Composite Index, however these findings were not statistically significant, but they are practically significant. This does not mean that these findings do not have value, instead their value needs to be understood within the scope of practical significance to be discussed in the following section.

Discussion of Results

The results of this study have multiple facets with numerous implications for the public-education system within Virginia. The most basic of our findings show that school divisions with a high or low Gini Coefficient, meaning they have a high or low level of income wealth inequality, do not necessarily correlate to having a high or low Composite Index measure. The data that were available for this study show that these two variables tend to be much more random than originally expected. However, what we are able to gain from this is that even though a division's wealth may be hidden by extremely wealthy or extremely poor residents

Virginia needs to have a funding system that makes education funding more equitable for all localities within the Commonwealth. It was also evident that division that divisions with a high Composite Index tend to be the ones who fund above and beyond the floor level SOQ measures the most. It is this aspect that will be analyzed in the following sections.

The first question which may not be that difficult to answer is why would there be a correlation between a division's Composite Index and the amount they are funding above the Required Local Effort (RLE)? The most simple and straightforward answer for this question is that the higher the Composite Index the wealthier a locality is. This is due to the fact that the Composite Index is based upon a division's tax revenue. The Composite Index looks at how much income, property, and sales tax revenue a division receives during the year and determines the floor level of funding a division is required to put into their public schools. The issue with a tax-based funding system is that if a locality is already wealthy it is not as big of a hurdle for them to fund above and beyond the RLE. On the opposite end if a locality is not particularly wealthy it may be difficult for them to provide for any amount of funding above the RLE. In order to create a more equitable system the state needs to either adjust the funding formula to provide aid to less wealthy divisions and to increase the minimum required funding levels so that more wealthy divisions are required to put more funding into their education systems and that burden is lifted from less wealthy divisions.

When looking at the other questions posed in this study regarding the role that income wealth inequality plays in education funding the answer is much foggier. The answers gained in this study are that there is a correlation between a division's Gini Coefficient, how much income wealth inequality exists within that division, and both their Composite Index and the funding above the RLE. The issue is that the data were not deemed statistically significant, so it is hard to

say the value that information holds. Although this information may not be statistically significant it does have practical significance. In the seminal work on practical significance Robert Kirk writes that "focusing on p-values and rejecting the null hypothesis actually distracts us from our real goals: deciding whether data supports our scientific hypothesis and are practically significant or useful" (p. 755). If we are basing future funding research on statistical significance, the findings within this study may not be considered the strongest. However, when a practical significance lens is applied it allows us to understand the value these findings have. Yes, income wealth inequality exists within Virginia and yes it does play a role in how much or how little funding a locality provides for their school division. Unfortunately, due to the narrow time scope, only data from the 2017 fiscal year were used, it is difficult to see the extent of the effect income inequality has on education funding. These findings do, however, allow Virginia to see that something new needs to be done in order to create a more equitable funding plan to meet the needs of all students within the Commonwealth.

Policy

There are multiple pathways that Virginia could take in order to create a more equitable funding solution for education. The most drastic policy affect that this study could have is for Virginia to completely overhaul their funding system. School divisions in Virginia are currently funded through a foundation program. As discussed earlier the Virginia Department of Education has established Standards of Quality (SOQ) measures that are the floor level of funding the state says localities must provide. The other funding methods that are currently in use among other states in America are full state funding, semi-flat grant funding, foundation funding formulae, district power equalizing, and a combination system. Semi-flat grant funding place the burden of funding education on the state and allows divisions to supplement funding. However, as evident

in North Carolina, semi-flat grant funding still places a not insignificant burden on divisions to decide how much of their local revenue to put towards education. This is due to the fact that each division within North Carolina is funded at the same level, and less wealthy divisions would still not have enough funding to add onto the minimum that they are funded by the state (Needham and Houck, 2019, p. 18). Semi-flat grant funding would continue to create disparities between high and low wealth areas that are already evident within Virginia.

The next way of funding could be through a district power equalizing system. As Deborah Verstegen shows in her 2011 article *Public Education Finance Systems in the United States and Funding Policies for Population with Special Education Needs* "these finance systems shift decision choices and policy options for taxing and spending for public schools from the state to the locality. The local district determines spending and taxing levels and the state matches differences between what is raised locally and what is guaranteed" (p. 9). The most common issue with this system is that to increase funding for education it increases the tax rate to put this new level of funding towards the education system. In doing this it is bound to create strife between citizens to do not wish to have their tax rate increased, as well as the divisions who already lack wealth when it comes to tax revenue sources. Finally, there is a combination system in which states pay for public education through a combination of all of the above funding methods. Each method comes with their own positive and negative aspects, but it could be possible to move Virginia towards a new funding method in order to create a more equitable funding system.

A second possible solution to creating a more equitable system in Virginia is a possible handicapping of divisions within Virginia's current Composite Index. In this study we adjusted the Composite Index of each division by adding a point or subtracting a point. These adjustments

were based on their current Composite Index, if the division had a Composite Index above .7 it was increased to .8 and if it was below .7 it was decreased by a point. With these new adjustment certain high wealth areas would now be required to fund up to 90% of their SOQs with a state only adding the remaining 10%. These new funding adjustments allow less wealthy divisions to fund their education systems at a lower rate, allowing these divisions to receive more assistance from the state. As shown in the table below, before the handicap Lee County was required to fund 17% of their SOQs and the state funded the remaining 83%. After the handicap Lee County is now required to fund 7% of their SOQs and the state would fun the remaining 93%. This handicap takes financial pressure off of less wealthy divisions to meet their required SOQs, but instead can reinvest the funds already apportioned for education before the handicapped CI and supplement their Education funding at an even higher level. Due to education being a state function and Virginia's Standards of Quality are so low that every school system funds above that level, the state is shifting an undue burden to the localities. This allows wealthier school divisions to supplement their state funding to a greater degree than poorer school divisions exacerbating the wealth and education disparities.

By implementing a handicapped system, it would allow the state to utilize their education funds to fund divisions with less tax revenue and require wealthier divisions to be more self-sufficient. The main issue with this system is the loopholes divisions may find in order to supplant their school funding instead of supplementing education funding. This was a common issue with Title 1 funding across the country. Divisions and specific schools were given extra funding to meet the extra needs of their at-risk student population. Instead of using this additional funding to add an extra boost to their schools, supplementing, divisions would cut their total education funding by the additional amount they gained from Title 1 funding to keep

their education funding levels the same while moving the other funds to a new area, supplanting.

In 2016 the U.S. Department of Education passed a proposal that would "help ensure that federal

funds are additive and do not take the place of state and local funds in low-income schools, in

keeping with the longstanding commitment under Title I that the nation's highest need students

receive the additional financial resources necessary to help them succeed and end the issue of

supplementing versus supplanting" (U.S. Department of Education, 2016). It is possible that the

issues that were commonplace with Title 1 funding could become an issue if funding

requirements were adjusted for each locality to hopefully allow them to supplement more

funding towards education.

Table 8

Modified Composite Index Values

Five Highest Divisions

	Old Composite Index	New Composite Index
Alexandria	.8000	.9000
Arlington	.8000	.9000
Falls Church	.8000	.9000
Goochland	.8000	.9000
Highland	.8000	.9000

Five Lowest Divisions

	Old Composite Index	New Composite Index
Lee	.1701	.0701
Buena Vista	.1773	.0773
Scott	.1888	.0888
Hopewell	.2108	.1108
Martinsville	.2111	.1111

Along with a possible handicapping of the Composite Index another modification that

could be made to the Composite Index is to reweight the values of true property value and

income tax revenue. Currently in Virginia true property value is weighted at 50% of a division's

Composite Index score and income tax revenue is weighted at 40% of a division's Composite

Index score. Property value can be seen as an indicator of debt for most people unless they outright own their property. Taxing property in itself in America dates back to the Massachusetts Bay Colony and how individuals were taxed at first based on the ability to use the land, such as on farms. However, most individuals today only make money on their property once they sell it so using property as a measure of wealth today is an outdated system (Owings and Kaplan, 2020). When Virginia created their funding formula based on property, income and sales tax, they did not mean to discriminate against any individuals, however the funding formula inadvertently does discriminate against less wealthy populations. Issues like funding based on property value have been an issue since Virginia's Literary Fund. The Literary Fund was created in 1867 and required schools to be funded from three different sources, sales tax, property tax, and income tax. This is another reason that the public-school systems in Virginia can be seen as catering to those living in wealthier localities and coming from wealthier families. Students who came from less-wealthy non-property-owning families were unable to finance these schools to adequately meet the needs of all students (Owings & Kaplan, 2019). In order to make the Composite Index a more realistic indicator of wealth in a locality, switching the weights between property tax and income tax may help to balance the scales within Virginia**.**

The final policy change that could be implemented within Virginia is to change the Standards of Quality that divisions are required to fund. Currently, the SOQs are the minimal level of funding that a division must provide to their schools. It is not meant to be the ceiling level to which divisions fund their schools. Instead it is meant to be the floor level. However, the current SOQs are at such a low level it is necessary for divisions to go above and beyond them in order to fund a working school division. Every division in Virginia goes above and beyond their current RLE amounts created by the SOQs from Westmoreland County (1% above) to

Portsmouth (296% above) (Constantino, 2018). As mentioned earlier, Virginia's Standards of Quality are set so low that every school system funds above that level, the state is shifting an undue burden to the localities causing localities like Portsmouth, which has a low fiscal capacity, to increase their fiscal effort to provide a adequate education funding. This increased effort for education reduces other tax revenue for other local programs. Although variations like this are expected when you compare the Composite Index to how much these divisions are going above and beyond it gives you a different picture of wealth with Westmoreland being required to fund 46% of their SOQs and Portsmouth being required to fund 25% of their SOQs. By creating a Standards of Quality funding formula that is higher and requiring a higher base level of funding from each division as well as requiring more funding from the state, as well as reconfiguring the Composite Index to ease the burden on less wealthy districts and increase the burden on wealthier districts, it may have a chance to create an equitable education system for all students in Virginia. Wealthy divisions will now be required to fund a higher precentage of their school system, reducing the amount that Virginia will contribute to their division. In turn this will allow Virginia to these funds to provide more aid to less wealthy divisions. Below is an example of how funding would look in the five highest and lowest divisions in Virginia. Although a Composite Index above 1.0 may not be realistic. There would be the potential for any funding above 1.0 to be added into a state education fund to distribute to higher need localities in order to ease the funding burden on the state. For this to be effective it would require support from divisions across Virginia, which is more easier said than done. It would also require divisions to continue to maintain previous funding levels above the SOQs in order to truly be affective, and less divisions may be willing to do so if they are being required to fund their education system much more than they were previously.

Table 9

Modified Composite Index Weights Examples

Five Highest Divisions

	Old Composite Index	New Composite Index
Alexandria	.8000	1.1238
Arlington	.8000	1.2211
Falls Church	.8000	.8478
Goochland	.8000	.9167
Highland	.8000	.8409

Five Lowest Divisions

	Old Composite Index	New Composite Index
Lee	.1701	.1728
Buena Vista	.1773	.1827
Scott	.1888	.1893
Hopewell	.2108	.2098
Martinsville	.2111	.2182

Implications

The implications for this study have the chance to do something to help students in Virginia and across the country receive a more equitable education. It is evident that there is a correlation between income wealth inequality in a division, how much the divisions are required to fund their schools, and the level to which they actually fund their schools. If more research is able to be conducted on these variables across multiple years it should allow policy makers to see faults within their state's own educational funding systems and work towards making new systems that will make funding overall more equitable. Requiring more effort on the state's behalf to reduce the burden on low wealth localities and increase the burden on high wealth localities could make a large difference. Also, seeing the issues that arise from a tax revenue-based system may also being to push the pendulum towards investigating new measures of education funding. The reason for this is due to the relationship that exists between education funding being an investment in human capital and the role it plays in the economy (Pirim, 2011,

p. 94). By investing more into education now and creating a more equitable situation for all students, that investment will return future dividends to both the locality and Virginia as a whole.

Critical Resource Theory

The purpose of this study was to not only look at education funding issues that exist within the state of Virginia but also lay the foundation to develop a new theory, Critical Resource Theory. As mentioned earlier, Critical Resource Theory demonstrates how states allow education funding disparities that primarily benefit wealthier localities (those with power and voice) at the expense of poorer localities (with less power and voice). This allows for greater resources and long-term social and economic benefits for students in the wealthy school systems and keeping those resources and long-term benefits lower for poorer localities perpetuating a wealth and class distinction. This study shows that these divisions that are already required to fund their schools at the highest level, continue to go above and beyond their required funding levels. Although this is a enviable situation to be in for residents within these wealthier districts as well as the students who attend schools here, it is also important to see the glaring issues at the other end of the spectrum which are the divisions that can barely afford to meet the needs of their students as it is. By allowing these discrepancies to exist the students will always be the ones bearing the brunt of the inequality and continuing to widen the gap between the haves and the have nots. The essence of Critical Resource Theory is that the critical resources go to the wealthier residents at the expense of poorer residents as seen in the Alpha and Omega study (Owings & Kaplan, 2010).

Recommendations for Further Research

This study was just the ground level for a developing new theory. Now that Critical Resource Theory has been introduced, more research needs to be done to continue to develop it.

From this point on Critical Resource Theory needs to be a lens that examines the interconnectedness between localities within states and the relationships between those localities and their schools. More studies need to be conducted to look at the redistribution of wealth within localities. Although it may be seen as a punishment for the wealthier divisions to have to pay more just because they are wealthier, this frees up funds for the state to provide for less wealthy divisions. Future studies need to look at the effects that new funding methods have on the schools in these localities, it needs to be examined at the impacts that funding had both positive and negative. However, it also needs to be understood that these studies need time in order to see changes. By allowing studies to have a 5, 10, or 15-year time lag to allows us to see true effects that funding changes have not only on schools but also the citizens of localities. Critical Resource Theory can also be used on a broader scale to understand the relationships with education funding at a local, state, or national level and the effects that has on a citizenry. With so many different countries existing, and with each country having their own education funding methods, one of the only common factors is the true critical resource; money. Understanding the chaotic relationship between money, schools, and society is imperative in the mission of Critical Resource Theory and without this lens it is possible that the same issues that have plagued the field of education in previous years will continue.

Another area of further study would be on the financial impact changes like these would have on Virginia's education budget. Changing the formula by which the amount divisions are required to fund their schools to one that is a more realistic measure of wealth, could lead to widespread changes throughout Virginia. Leglislators within Virginia would have a much better idea as to actual funding levels that divisions are able to come up with, as well as a better picture as to which divisions are truly in need of more fiscal assistance from the state. Along with these

measures a longitudinal study could be conducted to measure how much fiscal changes within a division eventually pay back into the locality. For example, now that students attend schools in an area with an increased amount of funding how are these changes affecting their lives after they graduate. Are these students going to colleges, or becoming members of the workforce and contributing even larger amounts of money to the divisions revenue pools? These are all new areas that can potentially be examined to see the positive impacts changes to education finance policy can have on a local and state level.

A final recommendation for future research is an examination on revising the SOQ. Currently, every school division in Virginia exceeds the SOQ funding requirement due to how low the bar is set by the local Composite Index. By creating such a low level of funding for the required local effort (RLE), it allows divisions to continuously underfund education by saying they are meeting the minimum funding levels required by Virginia. A study could be conducted on the effects that raising the SOQ would have on localities throughout Virginia. Although increasing the SOQ would potentially decrease how much each division was able to go above and beyond the RLE, it would allow the state to see which divisions are truly in need of assistance and redirect funding to those divisions. With more funding being applied to high needs districts it would be interesting to see the long term economic effects these changes could have on both localities and the state as a whole.

Conclusion

This study revealed several practically significant findings regarding income wealth inequality, required education funding, and actual education funding. It was found that income inequality does exist within Virginia. Income wealth inequality is not just something divisions experience in rural areas or urban areas but all over Virginia. There was a weak negative

correlation between the measure of a division's income wealth inequality and their funding above their RLE. It was also found that a weak positive correlation exists between a division's Gini Coefficient and their Composite Index. A statistically significant weak positive correlation exists between a division's Composite Index and their funding above their RLE. Multiple methods were also offered to see how Virginia's Composite Index funding formula can be adjusted to create a more equitable situation for students across the Commonwealth.

This dissertation also sought to investigate the relationship between available resources and the inequalities within public schools in order to develop a new theory, Critical Resource Theory. The groundwork has been laid for Critical Resource Theory but it is up to researchers in the future to continue to apply this lens to their research when examining education systems around the world to see what issues exist within these schools, and what can be done to minimize the inequality that exists and give society a more equitable voice.

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