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The Influence of Arts Participation on New Jersey Middle School Student Outcomes in Grades 6 through 8

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Abstract

Many studies over the past several decades point to the overall academic benefit that arts education provides to students. A large number of those studies look at the impact that arts education has on economically disadvantaged students (Catterall, 2009; Bellisario & Donovan, 2012; Israel, 2009; Costa-Giomi, 2004; Kinney, 2008). In fact, several federal and state government initiatives have used arts integration as a means for improving under-performing schools (Stoelinga, et al., 2015). However, there is limited quantifiable evidence to show whether or not arts education can have a significant positive impact on the overall academic performance of students from across the spectrum of socioeconomic backgrounds. The purpose of this study was to determine if arts education adds any significant value to public school student efficacy for students in middle school when controlling for socioeconomic status.

This study analyzed the efficacy of arts education using three different statistical methods to answer a total of five research questions. The study found that in four out of five areas measured, the arts did not have a significant impact on student achievement when controlling for socioeconomic status and other student and school demographic variables. In research question No. 1, an ANOVA found that there is no significant difference in the mean levels of arts participation reported by schools among the six groups of median household incomes, as measured by the Federal Income & Benefits ranges. In research questions No. 2 and 3, it was determined that the level of arts participation does not significantly affect academic achievement as defined and measured by PARCC English Language Arts and Math performance scores. In research question No. 4, we found that arts participation does significantly impact the school climate variable of "chronic absenteeism", contributing 1.3% variability as a predictor variable. Finally, in research question No. 5, we found that arts participation does not significantly impact

the school climate variable of “student suspension” rates. The analysis for questions 2 to 5, showed that the strongest predictor variable was socioeconomic status as measured by school district median household income.

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CHAPTER I: INTRODUCTION

Introduction

In media and government reports on the need for American Education Reform and improvement, the creative arts subjects are largely left out of the conversation. However, history shows that the creative arts were considered a vital part of a general education for centuries before now. Indeed, education experts such as John Dewey at the beginning of America's compulsory education history called for, and implemented, arts education as integral to the standard curriculum (Mark, 2008). Yet, because of school funding changes as a result of the No Child Left Behind Act, and the clamoring for additional funds through the Race to the Top and Common Core initiatives, schools are focused primarily on reading and mathematics standardized test scores and are minimizing the creative arts subjects (Robinson, 2011). Sir Ken Robinson brilliantly summarizes the current state of and need for arts education in the post-industrialized world:

> One of the consequences of standardization is that the curriculum has become increasingly narrow. In many school systems, the emphasis is on language and the so-called STEM disciplines—at the expense of the arts, humanities, and physical education. It is essential that there is an equal balance between these areas of the curriculum because each reflects major areas of cultural knowledge and experience, to which we all should have equal access. Each addresses different modes of intelligence and creative development. The strengths of any individual may be in one or more of them. A narrow, unbalanced curriculum will lead to a narrow, unbalanced education (Robinson, 2011, p. 273).

Many recent studies point to the overall academic benefit that arts education provided to students. In one such study, Lesley University performed research on arts integration in general classrooms to determine what types of learning benefits students gain by combining the arts with other curriculum subjects. The study found:

> For students, teachers observed that arts integration can: (1) Lead to deep learning, increased student ownership, and engagement with academic content; (2) Provide a variety of strategies for accessing content and expressing understanding; (3) Create learning that is culturally responsive and relevant in students' lives; (4) Engage students in 21st century skills including creativity, innovation; and imagination; and (5) Develop empathy, awareness of multiple perspectives and cultural sensitivity to others (Bellisario & Donovan, 2012, pp. 1).

All of these learning outcomes are excellent and could potentially benefit student performance on standardized testing (Stoelinga, Silk, Reddy, & Rahman, 2015). The graduate student teachers who participated in this study were obtaining a Masters of Education degree in Arts Integration from Leslie University. When they went into the teaching field after obtaining this specialized degree, they reported to researchers that: lack of space, class size, teacher feelings of isolation; lack of support from administration; and increased standardized testing pressure hamper their ability to put their degree techniques into practice (Bellisario & Donovan, 2012, p. 3).

Beyond seeing the benefits of integrating the arts into the general classroom, several studies have also shown that regular participation in arts-specific activities have crossover benefits to other academic areas. Researcher James Catterall (2009) wrote a book based on his research entitled, *Doing Well and Doing Good by Doing Art: A 12 Year Longitudinal Study of Arts Education.* The study found a significant connection between arts learning and academic

achievement. Academic performance increased for all arts-engaged students, but the returns were greater for low-income students who had participated in arts programs for several years. Furthermore, arts-engaged students were more likely to graduate from college and maintain a job even after they graduated from their high school arts programs (Catterall, 2009).

Harvard University's REAP (Reviewing Education and the Arts Project) performed a meta-analysis of the studies published between 1950-1999 to test the question as to whether or not regular participation in arts activities improves achievement in other academic areas. The study found that participation in drama programs improved students' reading and language arts capabilities. The study also pointed out that, "a 'large' causal relationship was found between learning to make music and acquiring spatial-temporal reasoning skills"(Hanna, Patterson, Rollins, & Sherman, 2011, p. 20). Furthermore, researcher Douglas Israel presented a report in 2009 that linked improved graduation rates in New York City public schools to the level of access to arts programs and coursework in the schools. According to the NEA report, Israel (2009) "found that schools in the top third of graduation rates offered their students the most access to arts education and the most resources that support arts education. Schools in the bottom third of graduation rates consistently offered the least access and fewest resources" (Hanna, et al., 2011, p. 21).

Finally, the New Jersey Department of Education recognizes that arts education is vital to the "thorough and efficient education" that is meant to be provided by the State Constitution (NJ Constitution, Article 8, Section 4, para.1). Since 1996, arts education has been a core curriculum subject area with clearly defined content standards, and arts coursework credits are required for graduation in New Jersey (NJ Arts Census, 2011, p.7). Yet, statistics show that it is receiving limited funding, making its position weak in the broad sense of the academic curriculum. In

2011, the NJ Arts Education Partnership found that between 2006 and 2011, per pupil spending on arts education decreased nearly 30% at the elementary level, and 44% at the combined middle/high school levels (NJ Arts Census, 2011, p.15). Additionally, nearly one quarter of NJ schools use outside funding, such as parent groups and district foundations, to off-set arts budget deficiencies (NJ Arts Census, 2011, p.15).

Statement of the Problem

Very few studies, if any, have been done to determine quantifiably if arts education might influence the overall academic achievement of students from high socioeconomic schools and/or school districts. Yet, in special cases, the arts have been used as a central means to improve the overall academic health of low-income schools. For example, in 2011 the Obama Administration implemented the "Turnaround Arts Initiative" in eight strategically chosen, chronically under-performing schools in high-poverty areas (Stoelinga, et al., 2015). After careful evaluation of the program, which was funded and administered by both public and private funds, the study concluded that: (a) seven out of eight schools improved their reading proficiency rates between 2011-2014, (b) six out of eight schools improved their math proficiency rates, both at significantly higher improvement rates than other schools in their respective districts (Stoelinga, et al., 2015, p. 47-50). Furthermore, half of the schools in the program had significant improvement in attendance rates, and five of eight schools reported a significant reduction in school suspensions during the program (Stoelinga, et al., 2015, p. 51-52).

Older studies by two social scientists showed similar results. Heath and Soep in 1998 found that students in low-income neighborhoods who regularly participated in after-school arts programs at youth centers were "three times more likely to win an award for school attendance and twice as likely to win an award for academic achievement" (Heath & Soep, 1998, p. 12).

This research was duplicated by Milbrey McLaughlin in 2000 after a longitudinal study that found that low-income students who regularly participated in the arts were higher academic achievers. Finally, a longitudinal study by James Catterall found that low-income students from "arts rich schools" experienced academic and social gains, such as earning a college degree and having stable employment, well into their adulthood, after their experience of secondary school arts programs (Catterall, 2009).

Despite these research studies and other reports that exist to show the benefits of arts education for student learning and success among students from low socioeconomic backgrounds, there is still "huge ambivalence about their position in the curriculum" (Eisner, 2002, p. xi). Starting with the 1981 Reagan-era policy brief, *A Nation at Risk,* and continuing through the content standards movement of No Child Left Behind, the majority of states by 2006 created curriculum content standards for the arts disciplines. Even though the directives of the law were followed, arts subjects were still at a disadvantage. According to the arts researcher and music professor Michael Mark, "High stakes testing in reading, mathematics, and science forced administrators and teachers to place more emphasis on preparing students in those areas, usually by increasing classroom time for them…The Center for Education Policy found that instructional time for school music and art had been reduced by 22 percent by 2006" (Mark, 2008, p. 174). The reason for the lack of focus on the arts in education is a general presumption within the American culture that they just are not as important for school and/or career. As Sir Ken Robinson states, "*Practicing* the arts as distinct from writing about them, is not part of the rationalist view of intelligence. Making music, painting pictures, involvement with drama, and writing poetry are not associated with academic ability" (Robinson, 2011, p. 103).

Thus, the problem is that there is a paucity of quantifiable evidence to show whether or not arts education can have a significant positive impact on the overall academic performance of students from across the spectrum of socioeconomic backgrounds and, in particular, from a high or affluent socio-economic background. Using the income ranges established by the 2015 US Census, "affluent" includes the top three income ranges: $100,000-149,999 (13.1% of the population); $150,000-149,999 (5.1% of the population); and $200,000 or more (5.3% of the population). (Retrieved: https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_15_5YR_DP03&src=pt)

Purpose of the Study

The purpose of this study is to determine if arts education adds any significant value to public school student efficacy for students in middle school, when controlling for socioeconomic status. As detailed above, many studies have been done to examine the benefits of arts education on under-performing urban and rural schools. However, there is little empirical research done to see if students from high socioeconomic schools obtain any particular gains to their overall academic achievement through participation in the arts. Typically, students from high SES schools are already performing well academically in comparison to their lower SES peers. This phenomenon is often attributed to the fact that students from higher SES backgrounds have a greater amount of "cultural capital," as defined by Pierre Bourdieu's cultural reproduction theory of 1977. A 2013 Danish paper discussing cultural capital in the educational context defined Bourdieu's theory as follows: "Bourdieu famously argued that parents transmit cultural capital to children, children convert their acquired cultural capital into academic success and, as a consequence, families who possess cultural capital have a comparative advantage which helps them reproduce their privileged socioeconomic position" (Andersen & Jaeger, 2013, p. 2). If

evidence is found that greater amounts of arts education adds significant benefits to high SES students' overall academic achievement, the study would provide further empirical data to support the inclusion and increase of arts education in all public schools.

Conceptual Framework

The Elliot Eisner, professor of Education and Art at Stanford University wrote that there are several rationales for including arts education as a core subject area in the general curriculum. These curricular goals include: (1) discipline-based arts education that develops imagination needed for high-quality art performance; (2) visual cultural understanding that help students develop the language necessary to discuss the art they see and hear; (3) creative problem-solving skills that address challenges such as those experienced in the field of design; (4) creative self-expression that is central to human development; (5) preparation for the world of work where the arts are used to develop broad skill-sets that can be used for productive work; (6) cognitive development where the arts foster complex forms of thinking; (7) using arts to boost other areas of academic performance; and, (8) integrating arts as a way to explain and teach other subject areas (Eisner, 2002, p. 26-42).

The central component of my conceptual framework for this study rests on Eisner's sixth and seventh rationales. "Work in the arts contributes to the development of complex and subtle forms of thinking" (Eisner, 2002, p. 35). The 1998 NJ Visual and Performing Arts Curriculum Framework dedicated the entire first chapter of the document to discussing how the arts foster complex forms of thinking. The document encourages teachers to use the curriculum standards to develop creative thinking in students. "Entertain, require, demand, solicit, include, instruct, and expect to enhance the factors and behaviors … to generate creative thinkers" (Doolan, et al., 1998, p. 12). Dr. Eisner also had a vision that "justifies the arts in schools through their

contribution to boosting academic performance in the so-called basics" (Eisner 2002, p. 38). For example, this is the philosophy that is used to create and support "arts integration" programs that specifically use arts education as a means to improve overall student academic performance. The NJ Department of Education website explains one such initiative. "The Title I Arts Integration Pilot Program…investigates how Arts education can be applied as a strategy to assist Title I students in meeting New Jersey's academic achievement standards as well as bolster school improvement efforts" (Retrieved: http://www.state.nj.us/cgi-bin/education/grants/gropps2.pl?string=recnum=01716&maxhits=1). This present study aims to analyze these two justifications for arts education quantitatively.

Similarly, the federal government instituted the "Turnaround Arts Initiative" during the Obama administration. This program was a three-year instrument for school improvement using Dr. Eisner's premise that arts education can "boost academic performance in the so-called basics" (Eisner, 2002, p. 38). Furthermore, Stanford University has created a "d. school", which is an interdisciplinary program that combines the arts with many other fields to address global design needs. The "d. school" rationale for arts education has migrated to the K-12 education level in certain private schools, such as Riverdale Country School in the Bronx, NY, which actually helped develop the *Design Thinking Toolkit for Educators*.

This paper specifically focuses on the transferable benefits that arts education in the school may have on students' increased academic performance in other subject areas. In Eisner's book, *Arts and the Creation of the Mind* (2002), he advocated for research into the transferability of arts learning onto other curricular areas. "Although, I do not endorse the practice of justifying the arts on the basis of their putative effects on academic achievement, I support the pursuit of research in this domain because such effects might exist and because studying the relationships

between learning and thinking in one area on performance in another might advance our general understanding of cognition" (Eisner, 2002, p. 224).

Research Questions

1. On average, does student participation in middle school arts programs/classes differ significantly based on the school district's socioeconomic status, as defined by median household income?

2. What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education and their academic performance in ELA as measured by PARCC, when controlling for overall school level variables and the school district's median household income?

3. What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education and their academic performance in math as measured by PARCC, when controlling for overall school level variables and the school district's median household income?

4. What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education and the school's rate of student attendance, and can that relationship be classified as "value-added"?

5. What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education, and the school's student suspension rate and can that relationship be classified as "value-added"?

Hypothesis

Null Hypothesis 1: There is no statistically significant difference in the percentage of students who participate in the arts at the middle school level based on a school district's socioeconomic status.

Null Hypothesis 2: There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and language arts performance as measured by the 2015-2016 PARCC assessment.

Null Hypothesis 3: There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and mathematics performance as measured by the 2015-2016 PARCC assessment.

Null Hypotheses 4: There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and a middle school's attendance rates.

Null Hypothesis 5: There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and student discipline as measured by middle school suspension rates.

Study Design

This study is primarily a non-experimental, quantitative analysis of the relationship between student achievement and participation in visual and performing arts for students in all NJ public middle schools with a 6^{th}-, 7^{th}-, and 8^{th}- grade only configuration. Socioeconomic status is identified for each school in the study using the median household income for each school district, as reported by the US Census *2015 American Community Survey* (https://factfinder.census.gov). Socioeconomic status is further defined by categorizing school

districts into groups as determined by the ten different income ranges established by the US census. (Retrieved: https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_15_5YR_DP03&src=pt). An Analysis of Variance (ANOVA) provides a comparative statistical analysis of the differences in arts participation rates by socioeconomic status across all schools in the study. A regression analysis provides statistical evidence as to whether or not arts participation influences overall academic performance. Data for this study was collected from the NJ Department of Education website, using the 2015-2016 academic year *School Performance Report*. I will look at school level PARCC performance data on English language arts and mathematics, which is reported as both a schoolwide percentage level of total students meeting or exceeding the state standard score, and also as schoolwide mean scores for ELA and math for each grade: 6, 7, & 8. Schoolwide arts participation is also documented as a percentage of all students enrolled in each of the four arts disciplines (music, visual arts, drama, and dance). Finally, school level attendance and suspension rates will also be presented as percentages. All of this data is publicly available on the NJ Department of Education website (https://rc.doe.state.nj.us/PerformanceReports.aspx).

An ANOVA will be run to determine whether or not there is a significant difference in arts participation rates among the different socioeconomic groups as determined by the ten income ranges established by the US Census. The composite arts participation rate for the school will be analyzed with an ANOVA against levels of median household incomes.

A Hierarchical Linear Regression analysis will be used to analyze the influence of a school's total percentage of students enrolled in an arts education program on the school's academic performance, attendance and behavior as measured by suspension rate. The independent variable of interest is the percentage of students schoolwide that participate in the

arts. Each arts discipline will be added in a hierarchical order to determine what impact, if any, the percentage of participation has on the overall model, beginning with music, followed by visual arts, drama, and dance. The dependent variables will be the grade level mean score for both language arts and mathematics for students in 6th, 7th, and 8th grade. A similar hierarchical linear regression will be run with the same independent variables, but the dependent variables will be the schoolwide percentage of students meeting or exceeding the state standard school, which is reported as a combined percentage of all three grade levels for both ELA and Math. Other dependent variables will be student attendance rates and student behavior as measured by school suspension.

Significance of the Study

This study will provide valuable empirical data for policy-makers, school administrators, and the academic community. According to a New Jersey Department of Education school performance brief, "National studies have found that students from lower socioeconomic communities who are involved in the arts are three times more likely to receive a bachelor's degree than students with little or no art involvement" (Yaple, 2016, p.1). It is hoped that this study will add to the research to show that students from all socioeconomic backgrounds benefit academically as a result of participation in music and visual arts. Such information could be used to encourage policy-makers to continue to fund arts education. Furthermore, it could sway school administrators to increase music and art courses in their schools. Finally, it will add to the body of research knowledge that is currently lacking in the literature. As noted above, there is a paucity in the academic literature regarding the transferable academic benefits that high socioeconomic students may or may note gain through participation in music and arts education.

Limitations of the Study

This study is limited to New Jersey public schools. The reason for selecting New Jersey is because it is one of the very few states that reports on the visual and performing arts participation rates of its students along with academic performance and demographic statistics. Prior to the 2014-2015 school year, arts participation data was only reported at the high school level. As of the 2014-2015 academic year, the State of NJ began reporting participation percentiles for the arts at the K-8 level. This study will focus specifically on the middle school level to address a concern that was raised by the New Jersey Arts Partnership that "the percentage of schools with full time arts teachers has declined significantly at the elementary level" (NJ Arts Census, 2011, p.12). The NJ Arts Census report often refers to the K-8 grade levels as "elementary" in comparison to its reporting on "high schools", 9th through 12th grade. By limiting this study to the middle-school level, where almost all students participate in some arts course of their choice, and all students take the PARCC exam, it will test the statistical impact of arts participation on student academic achievement, attendance, and behavior at the level of the whole school.

Additionally, New Jersey has mandated since 1996 that the visual and performing arts be included as one of nine curricular content areas in public schools, and the arts are a high school graduation requirement. By limiting the study to New Jersey, researchers, policy-makers, and school administrators can see if there is any statistically significant merit for this policy. If the arts are found to be significantly beneficial for student achievement in New Jersey, this policy could stand as a model for other states to follow.

Finally, the school performance reports for the 2015-2016 academic year will be used because it is the most recent report available. Furthermore, the 2015-2016 academic year was the second year using the new PARCC assessment data. Participation rates were low in the first year of the PARCC, so the State Department of Education created an Action Plan to increase participation (see: http://www.nj.gov/education/title1/accountability/progress/15/ActionPlan.pdf). School Performance Reports are created by school districts and sent to the state for public distribution. Thus, the dependent variables of student attendance percentage and student suspension percentage are only as valid as the claims made by the administrators. Similarly, the arts participation percentages for the independent variables are reported by the school districts to the State. Validity of these percentages is dependent on the schools' reporting accuracy.

De-limitations of the Study

This study is being limited to include only data about New Jersey middle schools with the 6th-, 7th-, and 8th- grade configuration. The study is not looking at middle schools from other states, nor is it looking at other grade-level configurations of middle schools in New Jersey. Therefore, statistical analysis and conclusions will only discusses middle schools with sixth, seventh, and eighth grades, not the middle-school population as a whole. As Leedy and Ormand state, "The limits of the problem should be as carefully bounded for a research effort as a parcel of land is for a real estate transfer" (Leedy & Ormand, 2013, p. 43).

Definition of Terms

The following terms will be used throughout the presentation of this study.

Arts— Performance disciplines of Visual Arts, Music, Dance, and Drama, as defined by the NJ Core Curriculum.

The four disciplines of Music, Visual Arts, Dance, and Drama enable students to develop their creative, perceptive, and expressive skills (Eisner, 2002).

CCCS— Core Curriculum Content Standards.

The State Board of Education for NJ established curriculum goals for nine subject areas and adopted them in 1996 as the "Core Curriculum Content Standards, which are revised every five years. These are defined by the NJ Department of Education website as: "the standards described what students should know and be able to do upon completion of a thirteen-year public school education" (retrieved: http://www.nj.gov/education/cccs/)

DFG— District Factor Group.

In 1975, New Jersey established the District Factor Groups to compare student performance with similarly matched school districts based on socioeconomic status. The groupings are supposed to be updated every ten years and are tied to data from the US Census reports. However, the DFG has not been updated as frequently as prescribed.
(http://www.state.nj.us/education/finance/rda/dfg.shtml)

ELA— English Language Arts

English Language Arts is the subject area intended to help students "learn to read, write, speak, listen, and use language effectively," according to the Common Core Standards initiative (http://www.corestandards.org/ELA-Literacy/).

ELL-- English Language Learners

According to the NJ School Performance Reference Guide, "English Language Learners are students identified by the district as being in need of Limited English Proficient services and/or a program, including students being served in a language assistance program" (https://rc.doe.state.nj.us/Documents/ReferenceGuide.html).

ESEA— Elementary and Secondary Education Act

In 1965, President Lyndon Johnson signed this federal law into effect, which significantly increased the role and reach of the government into K-12 education, which is the responsibility of the States. The Title I program enables the federal government to send funds to the States to help economically disadvantaged students. (See: https://www.edweek.org/ew/section/multimedia/the-nations-main-k-12-law-a-timeline.html).

High-stakes Testing—

Assessment that "links the score on one set of standardized tests to grade promotion, high school graduation, and in some cases teacher and principal salaries and tenure decisions" (Orfield & Wald, 2000, p. 38)

IDEA— Individuals with Disabilities Education Act

A federal law that "governs how states and public agencies provide early intervention, special education and related services to more than 6.5 million eligible infants, toddlers, children and youth with disabilities" (See: https://idea.ed.gov/). The law was originally named the "Education for all Handicapped Children Act" and was in effect under that name from 1975-1990. The goal of the law is to ensure that disabled children have the same educational opportunities as typically developing students.

NCLB— No Child Left Behind

A federal law enacted by the Bush administration in 2002 as a major restructuring of the Elementary and Secondary Schools Act from 1965. It increased the federal role in K-12 education throughout the country, most notably by increasing the importance of standardized testing by tying funding allocations to test score results. (See:

https://www.edweek.org/ew/section/multimedia/no-child-left-behind-overview-definition-summary.html?cmp=cpc-goog-ew-dynamic+ads&ccid=dynamic+ads&ccag=nclb+summary+dynamic&cckw=&cccv=dynamic+ad&gclid=EAIaIQobChMI_9q54Kv-2QIVC4_ICh1J5AbdEAAYASAAEgL8VvD_BwE)

PARCC— Partnership for Assessment of Readiness for College & Careers

The standardized test created to assess the Common Core State Standards. The test is designed to assess student mastery of "rigorous academic content at each grade level, think critically and apply knowledge to solve problems, and conduct research to develop and communicate a point of view" (See: https://parcc-assessment.org/about/).

SES— Socioeconomic status

A description of the social condition of individuals and groups that are tied to financial well-being. According to the American Psychological Association, "Poverty, specifically, is not a single factor but rather is characterized by multiple physical and psychosocial stressors" (See: http://www.apa.org/pi/ses/resources/publications/education.aspx). The financial status of students and school districts has been shown to be a major contributing factor to student/school performance.

Organization of the Dissertation

Chapter I provides a brief overview of the current climate of arts education in the United States and the State of New Jersey. It states the key research problem discussed in this dissertation, namely, the lack of research into the transferable benefits of arts education into other academic areas in students from a high socioeconomic background.

Chapter II presents both a historical and theoretical look at arts education in the United States. It provides rationale for arts education being a core curricular subject area. Finally, it provides the research rational for the use of the various dependent and independent variables used in the study.

Chapter III explains the design and methodology of the study, which is non-experimental and uses data compiled at the level of the "school," not that of the individual student. It deals with the raw data was collected and compiled. Finally, it describes the types of analysis run using the data.

Chapter IV presents the collected data and explains and interprets the statistical analysis into results.

Finally, Chapter V discusses the results reported in Chapter IV and draws conclusions based on these results. Additionally, in Chapter V, the dissertation concludes by explaining the policy and practical implications to which the statistics point, along with recommendations for future research.

CHAPTER II: REVIEW OF THE LITERATURE

Introduction

"In speaking of this question of waste in education, I desire to call your attention to the isolation of the various parts of the school system, to the lack of unity in the aims of education, to the lack of coherence in studies and methods" (Dewey, 2010, p.39). This was the concern of John Dewey (1956) in his book, *The School and Society and The Child and the Curriculum*, and in many ways the education community still shares his concern. The arts are often a part of the school system that is isolated from other subjects, and often the public and those in education alike do not see the connection of the arts to "the aims of education." The purpose of this literature review is to show the connection of arts education (as particularly evidenced through research on music education as a representative discipline of the arts) in a school setting to the overall educational aims of a school.

This chapter analyzes many studies that connect various types of music and arts education to overall student achievement. This chapter also highlights certain areas that are lacking in the body of literature on music and arts education and their connection to student outcomes. The chapter particularly highlights the limited amount of studies regarding any value-added academic benefits that arts education may provide for students when controlling for socioeconomic status. Finally, literature is discussed regarding the different independent and dependent variables which are statistically analyzed in this study.

Purpose of the Literature Review

This literature review serves to document the vast amount of research that has been done regarding the connection between arts education and student achievement. The literature points to the fact that "student achievement" is most often measured by standardized test scores,

particularly in the Language Arts and Mathematics subject areas (Elpus, 2013; see also Babo, 2004; Baker, 2011; Johnson & Memmott, 2006). The literature also points to the fact that the arts are often used as a means to improve academic performance in low-income students (Catterall, 2009; Stoelinga et al., 2015). Finally, research from various academic fields is presented to justify the inclusion of the variables that are statistically analyzed by this study, namely, socioeconomic status, student attendance, and student discipline reports.

Literature Review Procedures

The research procedure for the review of the literature about the connection between music education and overall student achievement was varied. First, an online search was conducted for scholarly articles using terms such as: Music Education, Arts Education, Student Achievement, Student Outcomes, Standardized Test Scores, Low Socioeconomic Status, and High Socioeconomic Status. Additionally, in 2002, the Arts Education Partnership association from Washington, DC, created an edited compendium of arts related research studies entitled, *Critical Links: Learning in the Arts and Student Academic and Social Development*. This document proved to be a very useful guide to find quantitative studies related to arts education and its effects on overall student achievement. One study listed in the compendium was actually published as a book by James Catterall (2009), *Doing Well and Doing Good by Doing Art,* which was a great resource for this study. Similarly, Catterall (2015) collected much of his own research into the arts; he likewise created tests and surveys to assess arts education, into another book entitled, *The Creativity Playbook.* Next, both federal and New Jersey State government reports were used to review arts and music education policy and funding initiatives. Finally, full books related to the topic of music education and its history in education were used for background reference.

Certain restrictions were applied to the collection of research literature for this study. First was a restriction of the age of the studies going back no farther than the year 2000. While the longitudinal study, *Doing Good by Doing Art,* by James Catterall began in the late 1990's, it was not published until 2009 and thus was included in the study. Secondly, the majority of my scholarly journal articles were restricted to the topic of "Music Education" as a representative discipline of "Arts Education". Most of the government documents refer to "arts" education in general, but where possible the focus of this inquiry was on music education specifically. Additionally, the search for empirical studies was limited to predominantly American schools.

There are numerous theoretical frameworks that could have been applied to this study on the effects of arts education on overall student achievement. However, this research was limited to Elliot Eisner and John Dewey and their complementary philosophies on arts education in the curriculum. Dewey's believed that educating the whole child—academically, socially, morally, and physically— should be the aim of a school education. John Dewey (1934) wrote: "Art is the most effective mode of communication that exists," and this study is an attempt to discover if a connection exists between teaching the arts and the subsequent learning obtained by students.

Organization

This chapter begins with a brief discussion of the theoretical framework and purpose of the inclusion of arts education in the general school curriculum. A brief discussion of the history of arts education in the United States, with a particular emphasis on music education as a representative discipline, is presented. Next, federal and New Jersey State legislation will regarding music and arts education is discussed. A presentation of empirical studies highlighting the transferable benefits of music and arts education on student outcomes is reviewed. Next, empirical studies show that music and arts education is often used as a "treatment" to help

improve academic performance in low-income, under-performing schools, and it is noted that there is a lack of studies regarding the effects of arts education on high SES schools. Finally, research discussing the rational for the inclusion of particular variables for statistical analysis is presented.

Theoretical Framework

The progressive lens of John Dewey's educational philosophy guided the work of Elliot Eisner, and it is the theoretical framework of this literature review. Dewey hypothesized, "I wish to suggest that really the only way to unite the parts of the system is to unite each to life. We can get only an artificial unity so long as we confine our gaze to the school system itself. We must look at it as part of the larger whole of social life" (Dewey, 2010, p. 44). Both Dewey (1934) and Eisner postulated that arts have their own "distinctive contributions to make" (Eisner, 2002, p. xii). They wrote to argue this point to critics who only looked at the carry-over benefits that arts may hold for subjects such as language arts, mathematics, and science. Eisner pointed out that, "in school children learn how to think about the world in new ways" (Eisner, 2002, p. 9). The imaginative, experiential way of thinking that arts disciplines teach have their own intrinsic value.

As discussed in Chapter 1, Eisner presented eight potential curricular goal for the inclusion of arts in the general academic curriculum. However, he went on to explain that the arts could actually *teach* or improve the other academic areas of the curriculum, thereby creating the holistic unity for which Dewey advocated in education. Elliot suggested several "lessons" that the arts could inform the general academic curriculum: (1) there is more than one solution to a problem; (2) the *way* something is formed matters; (3) imagination is important; (4) relationships matter, namely, the relationship between an artist and his/her work; (5) intrinsic satisfaction

matters; (6) human understanding is not made solely based on literal language and quantification, but also in other non-discursive forms; (7) flexibility is important; and, finally (8) that it is important to take time to relish life experiences (Eisner, 2002, pp. 196-208). Thus, Dewey and Eisner both advocated for the inclusion of arts education in the general curriculum for more than the value that they add to other curricular areas.

History of Arts Education in America

In Massachusetts, laws were passed in the mid-1600's requiring children to attend school (Mark, 2008). These early schools required not only that children study reading and arithmetic, but also religion—which included music lessons to teach children to sing the psalms for church. Pennsylvania was also early to establish schools, with the creation of the Friends "Public School" in 1697. It was not actually free, however, as parents had to pay tuition to educate their children at this school. Other religious sects formed schools after a grant from William Penn in 1712, most of which incorporated musical training as part of their curricula as a means to promote their religion (Mark, 2008). In the southern American colonies, education was even more privately held due to the agrarian nature of the communities. Most children were privately educated at home, and there was not the same legislation requiring schools as existed in the northern colonies (Mark, 2008).

After the American Revolution, many states began to mandate public schools as part of their original state constitutions and legislation. Early American States often based their education models on those that existed in Europe at the time, which included requirements for arts, particularly music education. For example, in the 1830's "the German State of Prussia established the first national system of music education based on the Pestalozzian [Swiss education reformer's] principles" (Mark, 2008, p. 32). Similarly, "on August 28,1838, the

Boston School Committee approved a motion to allow the Committee on Music to employ a teacher of vocal music in the public schools of Boston. Music was approved for the first time in the United States as a subject of the public school curriculum, equal to other subjects, and supported with public funds" (Mark, 2008, p. 48). After this, other large cities across America began to incorporate music education in their curricula as part of the standard body of subjects for public schools. However, as a recent NEA document points out, "There have been earnest debates about the value of the arts in education throughout our history, and the rationale for their inclusion in the curriculum has rarely been based on the value of learning the arts themselves. Rather, it has focused on their value in achieving other broadly accepted goals of public education" (Rabkin & Hedberg, 2011, p. 41).

Public education began to be organized and standardized similar to the present school systems at the rise of the Industrial Revolution in the late 1800's and early 1900's in Europe and America. Industrialization led to the focus on "science" and "scientific methods" being used in the social sciences, business, and education. Frederick Taylor was an American engineer who wrote the *Principles of Scientific Management* in 1911. He advocated for rigid management systems in factories, which increased worker productivity and decreased production costs for management and business owners. In addition to writing about his management theories, he worked at several major East-coast factories and traveled as a management consultant to other companies at the turn of the 20th century. Taylor's top-down "efficiency model" was largely incorporated into all areas of production in America during the preparation for and the early years after World War I. According to the prominent education policy writer and professor Julian Vasquez Heilig, "administrative reformers argued that the primary goal of schooling was a

uniform structure in the mold of Frederick Taylor industrialism that solely prepared individuals for an efficient placement in the workforce and factories" (Heilig, 2013).

However, at the same time there was a significant movement among educational psychologists, philosophers, and practitioners to make the American education system more "child-centered". A major voice for this progressive movement in education was John Dewey. He wrote forty books on education, psychology, philosophy and politics, including his influential book *Democracy and Education*. According to the PBS series, Schoolhouse Pioneers, "Dewey argued that curriculum should be relevant to students' lives. He saw learning by doing and development of practical life skills as crucial to children's education" (PBS, Retrieved 2015L http://www.pbs.org/onlyateacher/john.html). As such, Dewey and his followers were major proponents of the arts in education. In his important work, *Art as Experience*, Dewey wrote: "Every art communicates because it expresses. It enables us to share vividly and deeply in meanings… For communication is not announcing things… Communication is the process of creating participation, of making common what had been isolated and singular" (Dewey, 1934).

Horace Mann was another educational leader in establishing tax-funded public schools in New England prior to the Industrial Revolution in America. Had he not labored in this effort, it is possible that the American public school system would not have evolved as it did. In his fight to establish the first publicly funded schools in America, Mann fought for a "curriculum that fostered a well-rounded person—prepared for the world that would be, not focused solely on the world the way it is now. Thus, Mann fought for the inclusion of music, physical education, and the study of social issues; subjects that help to develop creative thinking and innovation" (Tienken & Orlich, 2013, p. 3). In the present " Taylor factory model" of the education climate,

those who follow in the footsteps of Horace Mann and John Dewey are often considered revolutionaries, or progressive, when really they are just trying to live out the first vision that was heralded for the American public education system.

Federal and NJ State Legislation about Arts Education

Some present federal education reform legislation requires arts education to be part of the criteria for states to obtain federal education funding. The January 2002 executive summary of President Bush's *No Child Left Behind* Act does not mention music or arts education at all (US Dept. Ed, 2002). However, in an open letter to all superintendents in the U.S., the federal Secretary of Education, Rod Paige, wrote the following in July 2004: "The arts are a core academic subject under the No Child Left Behind Act." (Retrieved: http://www2.ed.gov/policy/elsec/guid/secletter/040701.html) Similarly, the November 2009 executive summary of President Obama's *Race to the Top Initiative*, which also launched the creation and implementation of the Common Core State Standards, did not expressly mention music or arts education in the document (US Dept. Ed, 2009). However, one of the four main tenets of the initiative is "turning around our nation's lowest performing schools" (US Dept. Ed, 2009, p. 2). As a result of that directive, states were able to apply for three-year federal "School Improvement Grants", and to follow one of the four suggested, prescriptive intervention models. The "Turnaround Arts" program was one of the possible choices. "The program focuses on improving school climate and culture, deepening instruction, and increasing student and parent engagement, as a pathway to improved academic achievement" (Stoelinga et al., 2015, p. v).

Through the National Center for Education Statistics, the federal government conducts national surveys and research studies, which it then uses to report statistics to Congress. One such federal report showed that in "the 2009–10 school year, music education was almost

universally available in the nation's public elementary schools, with 94 percent of schools offering instruction that was designated specifically for music" (Parsad & Spiegelmann, 2012, p. 5). Additionally, the report stated that: "Fifty-seven percent of public secondary schools indicated that coursework in the arts was a specific requirement for graduation in the 2009–10 school year" (Parsad & Spiegelmann, 2012, p. 11).

The State of New Jersey mandates that arts (music, visual art, drama and dance) be part of the core curriculum for all public schools (NJ Administrative Code 6A 8-1.1), making it a leading state for such a requirement. In 2011, the New Jersey Arts Education Partnership published a document entitled, *NJ Arts Census Project: Keeping the Promise.* It detailed the progress that the NJ State Department of Education and its partners had made in promoting quality arts education for all students enrolled in public schools. Highlights of the report found that music and visual arts courses were almost universally available in New Jersey schools taught by certified arts specialist teachers (NJ Arts Census, 2011, p. 1). Furthermore, 97% of all New Jersey school arts programs comply with the 2009 NJ Arts Core Curriculum Content Standards, and 97% of all NJ high schools require at least one year of study in one arts discipline in order to graduate (NJ Arts Census, 2011, p. 8).

However, despite the well documented improvements that have been made in arts education in NJ public schools, there are several serious areas of concern, one of which is the limited state and district level funding of arts education programs. According to the 2011 Arts Education Census Project, "one-quarter of all New Jersey schools report that they use outside funding to offset budget decreases. This outside funding supports direct instruction, not optional activities" (NJ Arts Census, 2011, p.14). This is a problem because the report also showed that "per-pupil arts spending is a direct indicator of higher or lower levels of arts education" (NJ Arts

Census, 2011, p.14). Furthermore, "more than one-third of New Jersey schools receive funding from non-district sources, such as Parent/Teacher groups and district foundations" (NJ Arts Census, 2011, p.14).

Statistics like these point to the fragility and potential inequality of the level of arts education currently in place in NJ public schools. Wealthier school districts with access to greater parental financial resources and other private funding sources could have a greater likelihood of more comprehensive arts programs for students in those schools. In fact, the Arts Education Census Project found that "in 2011, schools in more affluent districts had higher index scores. Those in less affluent districts had lower index scores. This relationship did not exist in 2006" (NJ Arts Census, 2011, p. 18). According to the Census document, an "index score" comprises 24 different variables of arts education. Similarly, public schools that lack external private funding to sustain and supplement their arts programs are at risk of not having the necessary financial support to keep their current programs. While the State mandates that arts education be included as a core subject, it does not specifically ear-mark funding for arts education (or any specific programs) in the annual amounts that it sends to districts (as learned from a phone conversation with a State Aid Research and Data analyst: http://www.state.nj.us/education/finance/about.shtml).

Transferable Benefits of Arts Education on Academic Achievement

So why does it matter that music and arts education be legislated "core subjects" in the public education curriculum? Why does it matter that tax dollars fund arts education? Educational theorist Howard Gardner famously stated in 1983 that musical intelligence is a stand-alone intelligence, counted among other individual intelligences that he named: Linguistic;

Logical/Mathematical; Spatial; Bodily/Kinesthetic; and Personal Intelligences (Gardner, 1983, 1993). He, along with Eisner, argued that schools should foster learning in all areas of intelligence. Many empirical studies support the inclusion of arts education in the curriculum as a means to bolster other academic areas and outcomes.

A major, 12-year longitudinal study begun in 1998 by James Catterall initially tracked students from 8th grade to 12th grade, but was later expanded to follow them into early adulthood. The study of the 25,000 adolescent students was originally published as *Involvement in the Arts and Success in Secondary School* in 1998. The follow-up report was published as a book, *Doing Well and Doing Good by Doing Art,* in 2009 and comprised the results of both the early study and the later follow-up study. James Catterall answers the following main questions with his research: "Do the arts matter? Just how? and for Whom?" His reports "focus on children from low-income families, but report average outcomes for all students, as well as similar outcomes for children from high-income families" (Catterall, 2009, p. i). He summarizes his 1999 *Champions of Change Report* as follows:

> 1). Children engaged in the arts show positive academic developments at each step in the research. 2). Students who report consistent high levels of involvement in instrumental music over middle and high school years show significantly higher levels of mathematics proficiency by grade twelve. 3). Sustained involvement in theatre arts associates with a variety of developments for youth: gains in reading proficiency, gains in self-concept, and higher levels of empathy for others…analyses of theater arts were undertaken for low-SES youth only (Catterall, 2009, p. 2).

The data analyzed in Catterall's study was collected from the National Education Longitudinal Survey (NELS:88), which came out of the National Center for Education Statistics in the 1990's. Socioeconomic status was factored into many of their analyses, beginning with the probability of High v. Low Arts involvement. According to Catterall, "we used 8th grade data for more than 25,000 students to gather measures of SES and arts involvement" (Catterall, 2009, p. 10). The study found that the highest SES quartile had a probability of .320 of high involvement in the arts, but the lowest SES quartile only had a .178 probability of high-arts involvement. The opposite was found with *low arts* involvement. The lowest SES quartile of students had a .385 probability of low-arts involvement, versus the highest SES quartile with a probability of only .197 of *low*-arts involvement (Catterall, 2009, p. 10).

From this NELS:88 Data, Catterall was able to "present a 12-year study developmental arc and permit an unprecedented assessment of arts-rich schools" (Catterall, 2009, p. 108). "Arts Richness" was defined as "availability of various arts programs, whether or not a school requires music or art for graduation, whether the school has a formal department of art and/or music, and the number of arts and music faculty" (Catterall, 2009, p. 109). Catterall summed up his longitudinal study of students in arts-rich schools, including those of low-SES, as follows:

> Students attending schools we identified as arts-rich do better on some important outcomes, especially by the time they reach age 26. And even though all of our arts-rich students hail from the lowest income group, they occasionally match the 'all-student' population on important outcomes. In the annals of education research, it is hard to find average performance or outcome statistics reported for low-SES students that exceed such measures for the entire population. This would tend to indicate that the low-income group

> received some sort of advantage as they progressed on their goals. (Catterall, 2009, p. 115)

For example, of the low-income students (N=12441), only 10.4% had earned a B.A. degree by age 26, whereas 17.7% of low-income students from the "High-Arts" involvement group (N=341) had earned their BA degree by age 26 (Catterall, 2009, p. 69). Similarly, 69.4% of the students from the all low-income group were found to be working full-time jobs in the year 2000, whereas 75.1% of the "high-arts" involvement students had full-time jobs by the year 2000 (Catterall, 2009, p. 69).

Eugenia Costa-Giomi from the University of Texas conducted a three-year study in Montreal, Canada, on the effects of piano instruction on 117 low-SES students beginning in their fourth-grade year. The children were divided into an experimental group (N=67) and a control group (N=50). The children in the experimental group were each given an acoustic piano for their home, and weekly private piano lessons for three years. The students in the control group received nothing. Both groups were given a series of tests prior to the start of private piano lessons, including language arts and mathematics aptitude tests, musical aptitude tests, self-esteem inventories, and tests for fine-motor ability. The children were re-tested at the end of the first, second, and third years. Finally, all children had their report cards analyzed starting with third grade and concluding with sixth grade. At the end of the three-year study, an ANOVA was run to compare the total *self-esteem* scores of the experimental and control groups. "The analysis of simple effects showed that the scores of the experimental group increased significantly during the three years of the study ($F [3,234] = 11.16$, $p < .01$) but those of the control group did not" (Costa-Giomi, 2004, p. 144). However, the "*academic performance* of children in the experimental and control groups was analyzed through ANOVAs with repeated measures (Year:

Pretest, Year 1, Year 3) on children's total language scores and total math scores in the CAT2. The results did not show any significant effects" (Costa-Giomi, 2004, p.145). Thus, in this study, music education proved to be more beneficial to the social-emotional development of the students than to the academic areas.

Another study was conducted specifically focusing on the effects of formal instrumental music instruction on New Jersey eighth-grade middle school students' academic performance. In 2001, Gerard Babo ran an ANOVA to compare the scores of the CAT-NCE Mathematics Achievement test between eighth-grade instrumental music students and non-instrumental music students. He found that the ANOVA "indicates that students with three years of instrumental music experience achieve higher CAT-NCE mathematics scores with a mean difference of 8.99, significant at $p < .007$" (Babo, 2001, p. 98). However, Babo's study also found that "students with a high I.Q. achieve higher mathematics scores with very little or no impact from instrumental music [participation] status" (Babo, 2001, p. 117). Therefore, other models were run to control for IQ. It was found that "between 21% and 26% of the effect on mathematics achievement can be contributed mostly to IMUSIC [instrumental music] and SES when IQ is excluded from the regression model" (Babo, 2001, p. 130).

Similarly, Johnny Kurt studied the effects of SES and instrumental music participation on eighth-grade literacy achievement for his 2010 University of Nebraska dissertation. He found that was a significant positive relationship between instrumental music participation and language arts achievement. "The statistically significant main effect for time indicated that eighth graders who participated in the instrumental music program since sixth grade significantly improved on the ITBS Reading Vocabulary Subtest from the pretest ($M = 228.84$, $SD = 27.11$) to the posttest ($M = 256.95$, $SD = 23.79$), regardless of their instrument section" (Kurt, 2010, p.

98). It is important to note that in this study, the majority of the students had high SES status, "for a total of 60.5% high SES as defined in this study. The socioeconomic status (SES) of the study participants was congruent with the research school district SES demographics for eighth grade students" (Kurt, 2010, p. 70).

Interestingly, in 2004 Glenn Schellenberg conducted experimental research with children to test the hypothesis that music lessons increase children's IQ score. A total of 144 six-year-old children were randomly assigned to one of four different groups. Twelve children quit during the year-long experiment, so the sample size for reported statistics was N=132. Students were assigned to either a piano lesson group, a Kolday voice lesson group, a drama group, or a no-lesson group (who upon completion of the one-year study were given lessons the following year). In the summer prior to the commencement of lessons the children were tested using: the WISC-III IQ test; the Kaufman Test of Educational Achievement; and the Parent Rating Scale of the Behavioral Assessment System for Children (Schellenberg, 2004, p. 512). After 36 weeks of lessons at the Royal Conservatory of Music in Toronto, the students were re-tested the following summer. The study found that "All four groups had significant increases in IQ, $p < .005$. This finding is most easily attributed to the increase in IQ that is known to be a usual consequence of entering grade school (as cited in Ceci & Williams, 1997)" (Schellenberg, 2004, p. 512). Notably, the study found that:

> Compared with the control groups, the music groups had reliably larger increases in full-scale IQ, t(130) 51.99, p < .05. The size of the effect (d=.35) was midway between effects considered small (0.2) and medium (0.5) by Cohen (1988). Children in the control groups had an average increase in IQ of 4.3 points (SD57.3), whereas the music groups had an average increase of 7.0 points (SD58.6) (Schellenberg, 2004, p. 513).

Similarly, another study was done by Vaughn and Winner (2000) in which the SAT scores of students were analyzed using the level of arts involvement that they self-reported on the "Student Descriptive Questionnaire" which they completed during the test registration process. The researchers were quick to point out in their final analysis of all of the tests and data that, although their results clearly showed that students who participate in the arts do score higher on the SAT, their study did not explain exactly why. Other factors such as family background, the tendency for high-achieving students to self-select arts participation, and/or the types of schools that the students attended could all have helped explain why arts students scored higher on the SAT. Finally, the researchers stated that "although the link between SAT scores and the study of the arts is positive, an even stronger link exists between SAT scores and study of academic subjects" (Vaughn & Winner, 2000, p. 87).

In fact, this "tendency for high-achieving students to self-select arts participation" was empirically tested by Kenneth Elpus in 2013. He found that there was no statistical difference on SAT scores nor standardized math scores between music and non-music students in the 2004 U.S. high school graduating class. He discovered this by controlling for several variables including: socioeconomic status, race, IEP status, prior academic achievement, school attitudes, number of years involved in music study, and the type of music studied (instrumental v. vocal). Elpus found that "the most robust predictors of SAT score remain SES, prior academic achievement, and IEP status" (Elpus, 2013, p. 11). The study concludes by suggesting that students who are already pre-disposed to do well academically self-select to participate in music courses. Finally, a Miksza meta-analysis of the 1988 National Educational Longitudinal Study (NELS:88) looked at the interaction between music study and socioeconomic status. His study

also found that SES was a predictive indicator of initial status in music participation (Miksza, 2007, p. 55).

Arts education as a means of academic improvement for low-SES schools

However, some schools and school districts have chosen to use music and the arts as interventions to improve the overall academic performance of failing and/or economically disadvantaged schools. In January 2015, the President's Committee on Arts and Humanities produced the final report and analysis about one such arts-based intervention for failing schools, entitled, "Turnaround: Arts." There were eight pilot schools in this program that were all awarded a three-year federal "School Improvement Grant", which was one aspect of the Obama administration's "Race to the Top" education initiative. Schools in this program enacted the following interventions as a means of improving student and school achievement:

> 1) principal leadership; 2) strategic use of arts specialists; 3) non-arts classroom teachers integrating arts into core content; 4) use of teaching artists and community organizations; 5) engagement of district, parents, and community; 6) strategic arts planning; 7) professional development; and 8) improvements to the school environment (Stoelinga et al., 2015, p. vi).

During two years of summative and evaluative research onsite at these eight schools, data was selected and analyzed in the following categories: Administrator interviews and teacher focus groups; classroom observations; essential surveys; administrator and teacher questionnaires; teacher logs; attendance data; discipline data; and student achievement (standardized test) data. The report indicates that the arts intervention was successful in raising all the schools' performance rates in English Language Art and/or Math from failing to at least

average during the grant period. The school with the most improvement was Savoy Elementary School in Washington, DC, which not only showed the best improvement among its eight "Turnaround Arts" peers, but also out-performed the other schools in Washington, DC, which had received other forms of the three-year federal School Improvement Grants (SIG). "Savoy improved its math proficiency rates by 120.53% between 2011 and 2014, and reading proficiency rates by 52.22%" (Stoelinga et al., 2015, p. 46). In general, the study found that "Turnaround Arts" intervention improved school performance better than all the other schools which had received different interventions as part of their federal SIG. "Turnaround Arts schools improved math proficiency by 22.55%, which is 6.35 points higher than the comparable SIG schools improvement rate; and Turnaround Arts schools improved reading proficiency by 12.62%, which is 7.04 points higher than the comparable SIG schools improvement rate" (Stoelinga et al., 2015, p. 49). Other indicators that arts intervention improved these schools include: four out of eight schools improved their attendance record; five out of eight schools recorded improvement in discipline issues; and "70-100% of educators responded that the arts had helped increase parent, student, and teacher engagement in the school" (Stoelinga et al., 2015, p. 51). This federal report on the success of arts intervention in improving failing schools did not specifically target music education and/or its specific contribution to academic achievement. Rather, it looked at the contribution of all, and any form, of art on student achievement, including visual arts, drama, and dance, as well as music.

However, in 2008, Daryl Kinney of Ohio State University conducted empirical research to determine if instrumental music participation improved the academic achievement of students in two urban middle schools that had been labeled as "needing improvement" by their state governments for failing to show adequate progress on standardized tests for two years in a row.

He also chose those particular schools because they had similar demographics and musical course offerings. According to his demographics table, School A had 649 students in 6th to 8th grades, with 70% being economically disadvantaged; and School B had 679 students in 6th to 8th grades, with 76% being economically disadvantaged (Kinney, 2008, p. 148). Due to state testing years, only students in 6th and 8th grades were analyzed, so that their academic achievement could be measured both *before* participation and *during* participation in a school-based musical performance ensemble. Kinney further controlled for mobility, which has been shown to have a negative impact on student achievement (Ingersoll et al., 1989; Kerbow, 1996; Rumberger, 2003; Schuler, 1990), by eliminating students from the study whose 4th grade test scores could not be recovered from the "feeder" elementary schools to the middle schools which were the subject of the study. Thus, the study included 273 6th-grade students and 215 8th-grade students, and test scores were analyzed from their 4th-grade year and their 6th- or 8th- grade year, respectively.

Kinney's study found that students in the higher SES group (not on Free Lunch) performed better on academic achievement tests. He also found that, similar to results of other studies, including the Babo 2004, and Kurt in 2010 studies mentioned earlier, students in instrumental music out-performed their non-musical peers. "In the 6th-grade cohort, band students scored significantly higher than nonparticipants on all subtests of the 6th-grade proficiency. Likewise, band participants in the 8th-grade cohort scored significantly higher than nonparticipants in all subtests except Social Studies" (Kinney, 2008, p. 154). However, he notes that these band students had significantly higher scores in most subject areas in 4th grade *prior to* beginning their instrumental music studies. Kinney concludes:

> The significant differences found for academic achievement between band participants and nonparticipants before enrollment in an instrumental music program are consistent

> with findings of Fitzpatrick (2006) and Klinedinst (1990) and support Young's (1971) assertion that higher achieving students may be more attracted to instrumental music instruction from the outset (Kinney, 2008, p. 157).

Interestingly, choir students did not receive the same academic benefit as the band students in this study. Kinney points out that SES status was evenly distributed throughout his study, so that it is reasonable to say that a similar percentage of low-SES students participated in both band and chorus. He finds that "in the case of choir participants, it is clear from these data that choir students were not higher achievers from the outset, as was the case for band students, and that their test scores also remained relatively stable over time" (Kinney, 2008, p.157). Finally, this study controlled for "home environment" and found no significant difference in academic performance between students from single-parent households and students from two-parent households.

Finally, charter schools are often considered an "intervention" for communities who have failing schools. Parents can elect to place their children in publicly funded charter schools rather than the traditional neighborhood public schools, which are intended to afford students with better academic offerings to increase student success. In 2016, Kelley and Demorest did a comparative study of public charter and traditional schools in Chicago to analyze both the music curricular offerings and the overall academic achievement of students in the two types of schools. The study begins by stating that "there is little or no information on charter schools' commitment to arts education and even less on how they compare to traditional public schools in curricular offerings in music and the arts" (Kelley & Demorest, 2016, p. 90). Similar to the Turnaround Arts program of the federal government, these researchers hypothesize that "it is possible that students in lower SES settings, where charter schools are often located, may benefit academically or socially from increased access to music instruction" (Kelley & Demorest, 2016,

p. 91). The study explains that as of 2013, every elementary student receives an average of 99 minutes per week of arts instruction in Chicago public schools, but it could be in any art (visual, music, dance, theater). The type and method of art education in each school is left to the sole discretion of the building administrator, so that there is considerable disparity in the level of arts education across the City of Chicago.

The study analyzed 45 public charter schools and 53 traditional public schools in close proximity to each of the selected charter schools, all of which taught the K-5 elementary grade levels. The survey found that 69% of charter schools and 49% of traditional schools offered music instruction during the school day. When comparing these results to national statistics of similar low-SES schools (Parsad & Speigelman, 2012), "the results indicate that our sample was significantly different in the incidence of music programs found in schools ($\chi 2 = 95.19$, df = 1, $p < .001$)," in that Chicago schools had significantly less music education than the national average (Kelley & Demorest, 2016, p. 96). The survey found that 100% of charter schools that offered music had a full-time music teacher, whereas only 89% of the traditional schools with music classes had a full-time music teacher. Furthermore, there was no significant difference found between the offerings of extra-curricular music programs between the charter and traditional schools. The study found that schools which offered music education reported higher ISAT scores than the schools with no music education, and this significant difference was found in both charter and traditional schools. Finally, both charter and traditional schools that offered music education had significantly higher attendance rates than schools that did not offer music (Kelley & Demorest, 2016, p. 99).

Variables for Analysis in this Study

Socioeconomic Status

Research by Elpus (2013), Kinney (2008), Miksza (2007), and Babo (2004) began to control for variables which indicated that outside factors caused students to self-select music participation to begin with and to stick with it through their K-12 years. The concept of "cultural capital" maybe one such reason why students (and their parents) from high socioeconomic backgrounds self-select music and arts participation. French sociologists Bourdieu and Passeron (1977, 1990) proposed that the dominant social class uses institutionalized education to "reproduce its culture" and thereby remain in power (Bourdieu & Passeron, 1990, p 5-6). Empirically, cultural capital has been measured by quantifying children and family attendance at music concerts, going to museums and taking visual arts classes (DiMaggio, 1982). These measurements were later expanded to include: educational resources in the home (Roscigno & Ainsworth-Darnell, 1999); extra-curricular activities (Covay & Carbonara; 2010); and parental communication with their children about cultural/political issues (Downey, 1995). A 2011 Danish study took the theory of cultural capital one step further to research whether or not cultural capital actually *causes* educational success. Mads Jaeger analyzed six typical indicators of cultural capital and their causal effect on student performance on the Peabody Individual Assessment Test. He found that "cultural participation (going to museums or concerts) has a statistically significant and positive effect on academic achievement in high SES environments (defined by higher values on father's education, family income, and mother's AFQT score) but no effect in low SES environments" (Jaegar, 2011, p. 294). This finding is important to this study because it is specifically looking to discover a similar causal effect,

namely, does increased participation in the arts improve academic achievement for middle schools, when controlling for SES?

Data supports that schools, as "gatekeeprs" to culture (Bourdieu, 1977), have various levels of access to arts education based on socioeconomic status. The US Department of Education conducted a nationwide survey in 2009-2010 and found that 97% of elementary schools offered designated music instruction each week when the rate of students receiving free or reduced lunch was less than 25% of the school population (standard error = 1.3), compared to only 89% of elementary schools receiving music instruction when 76% or more of the school population are receiving free or reduced lunch (standard error= 2.0) (Parsad & Spiegelman, 2012, p. 121). Similar numbers exist for course offerings in the visual arts. The survey found that 92% of public elementary students received designated visual art instruction when 25% or less of the school population received free or reduced lunch, compared to only 82% of school offering visual arts courses when 76% or more of the school population received free or reduced lunch (Parsad & Spiegelman, 2012, p. 123).

However, limited research has been conducted on the relationship between students from high socioeconomic backgrounds and the possibility that arts education provides transferable academic benefits for them. In 2006, Daniel Albert published an article summarizing the major research conducted to that date to address the title question: *Socioeconomic Status and Instrumental Music: What Does the Research Say about the Relationship and Its Implications?* His goal for this research compendium article can be found in his conclusion that "with awareness and understanding of possible implications of [socio-economic] influences on instrumental music, music educators have a better chance to make an instrumental music education possible for all children" (Albert, 2006). He began by pointing to studies (Kozol,

1991) that discussed the cost-prohibitive nature of instrumental music study for low-SES students. He followed by pointing to a 1980 study by McCarthy, that found that even if students from low-SES families were able to start an instrumental music program, they were significantly more likely to drop out of the program than students from higher SES families. He then pointed to a 1991 Klinedinst study of an upper-middle class school district, and once again, "SES was found to be a valid and significant predictor of student retention and a better predictor of retention than measures of academic competency or musical aptitude" (Klinedinst, 1991, p. 238). These studies, among others, point to the fact that students from higher SES backgrounds can afford to begin instrumental music study and to sustain it over an extended period of time, whereas low SES students may not be able to afford such programs. Furthermore, the socioeconomic status of communities can also determine access to instrumental music education, as was indicated by the Kelley & Demorest Chicago public school study and the Turnaround Arts initiative. As these and other studies noted earlier in this chapter detailed, it was instrumental music study over an extended period of years that provided students with the most overall academic benefits. Children from high socioeconomic backgrounds have a financial advantage to sustain a multi-year study of instrumental music in order to gain the transferable academic advantage.

Student Attendance

Student attendance is an important indicator for academic achievement (Romero & Lee, 2008). In fact, NJ law requires students between the ages of 6-16 to attend school (N.J.S.A. 18A:38-28 through 31). Student achievement is negatively effected by frequent absenteeism (Dekalb, 1999). Furthermore, attendance can have a significant, positive affect on student achievement (Roby, D. 2004, p. 10). Douglas Ready (2010) found that students from

economically disadvantaged backgrounds improved their literacy skills with good attendance. Studies have shown that arts programs specifically motivate students, increase school attendance, and decrease drop-out rates (Heath, 1998; McLaughlin, 2000). Finally, in arts intervention programs, increased attendance is seen as a positive outcome of the program (Stoelinga et al., 2015).

School Climate and Student Discipline

"There is a body of evidence demonstrating that school disorder impairs learning and achievement" (Cornell & Mayer, 2010, p. 8). A 2014 study, comparing the suspension rates and conditions for student suspension between Washington State (USA) and Victoria State (Australia), found that both student level *and* school level factors contributed to high suspension rates. "At the school level, aggregate classroom scores on low school commitment, as well as school SES were related to school suspension. School SES itself explained over 35.5% of the variance when added to the model" (Hemphill, et al., 2014, p. 191). However, research has been done that shows that the arts and an "arts rich" (Catterall, 2009) environment improves school climate and student behavior. Furthermore, students in arts-integrated programs experience increased academic motivation and confidence (Hetland & Winner, 2001). Finally, a recent qualitative study involving elementary school students and families from Hawaii found that "non-cognitive factors play a powerful role in preparing children for later success in higher education, jobs, and in society. Models involving whole school arts integration may very well set that success into motion" (Steele, J., 2016, p. 27).

Research points to the fact that arts programs have a positive impact on the culture and climate of a school (Ingram & Reidell, 2003; McCarthy, Ondaatje, Zakaras & Brooks, 2004; Israel, 2009). Eisner describes the positive impact arts have in the "implicit curriculum" (Eisner,

2002, p.158). However, Eisner also discusses a concept called the "null curriculum," meaning, "what is absent from the school program, what students in schools never have the opportunity to learn" (Eisner, 2002, p.159). He suggests that students "pay a price" when arts are absent from the curriculum, and that price often comes in the form of school climate and culture. Often that "price" is increased disciplinary problems. This study specifically looks at the school level participation percentages in the arts and their impact on student behavior as measured by school reported suspensions.

Conclusion

In all of the studies described in this literature review, as well as the studies referred to by the research presented here, arts education (and music specifically) is discussed with relation to its benefit to overall academic performance. This research could also be described as a search for the "transferability" of arts learning to other academic areas. This is in line with the philosophy of John Dewey and his description of an ideal school.

> The drawing and music, or the graphic and auditory arts, represent the culmination, the idealization, the highest point of refinement of all of the work carried on…The school should observe this relationship. The merely artisan side is narrow… I do not mean of course, that all art work must be correlated in detail to the other work of the school, but simply that a spirit of union gives vitality to the art, and depth and richness to the other work. (Dewey, 2010, p. 53)

Thus, as seen in the federal Turnaround Arts program, when arts are interwoven into the curriculum and life of schools, there can be statistically significant improvements across all academic areas. Similarly, many studies point to both the academic and social benefits that students in "arts-rich" schools gain, even when controlling for low socio-economic status.

A thorough review of the body of research regarding the transferable benefits of music (and arts) education to overall student achievement has been presented here. The disadvantage that low-SES students often have in accessing the benefits of music education in public schools has also been presented within this body of research. However, as mentioned above, there is a paucity of empirical studies regarding any potential academic gains that students from high-SES backgrounds may achieve as a result of arts education. Students from high socio-economic backgrounds already have a strong likelihood of academic success based on their rich access to additional resources and experiences from outside school (Bornstein & Bradley, 2003; see also Luo, Wang, Zhang,& Chen, 2016; Venkatesh, 2002; Wiggan, 2011). Studies also show that students from families with high parental involvement in music and also with higher SES have both increased musical and academic success (Zdzinski, et al., 2015). The high amount of "cultural capital" that children from high-SES homes have often equates to academic success (Bourdieu & Passeron 1977, 1990). Furthermore, Kinney recommended that "future studies may consider the demographic variables associated with participation in music courses more thoroughly" (Kinney, 2008, p. 157).

Based on this review of the literature, the present study is necessary to build the body of empirical data regarding the transferable benefits that arts education may or may not provide to overall student academic achievement. The literature review has returned us to the initial research questions of this dissertation. Is there a significant difference in arts participation percentages between low-SES and high-SES in NJ middle-school districts? Does an increased percentage of arts-related courses/activities in 6^{th}-, 7^{th}-, and 8^{th}- grade middle schools have a value-added effect on the school's academic performance, as measured by PARCC Language Arts and Mathematics scores? Does an increased percentage of arts related courses/activities in

6th-, 7th-, and 8th- grade middle-schools have a value-added effect on a school's rate of attendance? Does an increased percentage of arts related courses/activities in 6th-, 7th-, and 8th-grade middle-schools have a value-added effect on student behavior as measured by the school's suspension rate?

CHAPTER III: RESEARCH DESIGN & METHODOLOGY

Introduction

This study is a correlational, non-experimental quantitative design that aims to discover the relationship between arts participation and student achievement as measured by PARCC scores, student attendance, and student-suspension rate. A hierarchical multiple regression is used to test the predictive strength of each independent variable as it is entered into each model. The dependent variables for this study are PARCC English Language Arts and Math scores for the 2015-2016 school year for middle-school students in grades 6, 7, & 8. In a separate regression, the dependent variable is student attendance, and in a third regression, the dependent variable is student-suspension rates. In all regressions, the independent variables are socioeconomic status and arts participation percentages. Additionally, an ANOVA will be run to determine whether or not there is a significant difference in arts participation rates among the different socioeconomic groups as determined by the ten income ranges established by the US Census. The aggregate arts participation rate at the school level as classified by median household income is compared by using an ANOVA.

This study is a non-experimental, quantitative design: "The measures must usually be constructed before the study begins, such studies typically validate one or more hypotheses that specify variables of interest and the relationship between them" (Krathwohl, 1993, p. 30). The purpose of the study is to determine what influence arts education has on student outcomes in 6th, 7th & 8th grade middle schools when controlling for socioeconomic status, as defined by median household income.

This chapter begins with a restatement of the research questions and hypotheses. Secondly, the rationale for the design is discussed. Next is a description of the data source, data restrictions,

and data collection process for this study. Also discussed is the type of quantitative analysis equations used, and how there is a clear link between the research questions and hypothesis, and the choice of this data analysis method. Then follows an explanation of the instrumentation used to measure academic achievement. Finally discussed are the validity and reliability of the PARCC test and its scores, as it is the primary source of data for measuring student achievement.

Research Questions

1. On average, does student participation in middle-school arts programs/classes differ significantly based on the school district's socioeconomic status, as defined by median household income?

2. What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education and their academic performance in ELA, as measured by PARCC, when controlling for overall school level variables and the school district's median household income?

3. What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education and their academic performance in math, as measured by PARCC, when controlling for overall school level variables and the school district's median household income?

4. What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education and the school's rate of student attendance, and can that relationship be classified as "value-added"?

5. What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education, and the school's student suspension rate and can that relationship be classified as "value-added"?

Hypothesis

Null Hypothesis 1: There is no statistically significant difference in the percentage of students who participate in the arts at the middle school level based on a school district's socioeconomic status.

Null Hypothesis 2: There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and language arts performance as measured by the 2015-2016 PARCC assessment.

Null Hypothesis 3: There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and mathematics performance as measured by the 2015-2016 PARCC assessment.

Null Hypotheses 4: There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and a middle school's attendance rates.

Null Hypothesis 5: There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and student discipline as measured by middle school suspension rates.

Design

"The purpose of quantitative research is to gather numerical data on observed behavior with a view to subjecting the findings to statistical analysis" (Wiseman, 1999, p. 5). A hierarchical linear regression analysis is performed to determine the percentage of variability that each predictor variable brings to the model to determine which variables are strongest in determining the effect of student achievement as measured by: PARCC language arts and mathematics for 6^{th}-, 7^{th}-, and 8^{th}- grade students; student attendance; and student suspension

rates. A separate hierarchical regression was run for each of the dependent variables. This type of "multiple linear regression yields an equation in which two or more independent variables are used to predict the dependent variable" (Leedy & Ormrod, 2013, p. 301). The study is descriptive in nature because it uses historical test results and census data. Furthermore, the study is relational, because it is looking at the relationship between arts participation and student outcomes, and it analyzes the strength of those relationships. However, Leedy and Ormrod caution, "we can never infer a cause-and-effect relationship on the basis of correlation alone" (Leedy & Ormrod, 2013, p. 187).

In this study, the dependent variable was the schoolwide percentage of students meeting or exceeding the NJ Standard Score, and also the schoolwide mean scores for each grade level as determined by the 2015-2016 PARCC assessment. Other dependent variables were student attendance and student suspension rates as reported by the school. The independent variables were: arts participation percentages (music, visual arts, dance, and drama combined in the aggregate) and school socioeconomic status as stated by the median household income for the district reported by the 2015 American Community Survey. The equation used to determine the amount of variability that the independent variables predict on the dependent variable was:

$$Y' = a + b_1X_1 + b_2X_2 + b_3X_3.$$

The level of significance of the variability of each model was then tested to determine if the contribution of each independent variable was statistically significant or not.

Determining the strength of the relationship between arts participation rates on student outcomes is the purpose of this study. The study restricts the dependent variables to middle schools with the 6^{th}-, 7^{th}-, and 8^{th}- grade configurations because typically students at this level have choices in their arts participation. Additionally, all students in schools with this

configuration take the PARCC exam, and all of these students are reflected in the schoolwide percentages of arts participation, attendance, and suspension rates. Thus, looking at this type of middle school configuration is a clear reflection of the relationship between school level independent variables (arts participation percentage and socioeconomic status) and school level outcomes (test scores, attendance, and suspension rates).

Additionally, an ANOVA was run to determine whether or not there is a significant difference in the total percentages of students' arts participation rate based on socioeconomic status, as defined by median household income.

Data source, restrictions, & collection

In this study the majority of the data collected came from the New Jersey Department of Education "School Performance Report", with a specific focus on the test scores, attendance records, reported suspension rates, and reported percentage of arts participation (music, visual arts, dance and drama) for 6th-, 7th-, and 8th- grade middle schools for the academic year 2015-2016. This data was collected directly from the NJ Department of Education website (https://rc.doe.state.nj.us/SearchForSchool.aspx). Each school district has an individual report for every school in its district.

The dependent variables were all retrieved from the School Performance Reports. Each report documents "Student Achievement" as a percentage of students meeting or exceeding the state standard score for the PARCC ELA and Math tests for the entire school, and these were the dependent variables for the first set of regression analyses. "Absenteeism" was reported as a percentage of students absent 1-5 days in the school year as another dependent variable, as was the school-wide percentage of "chronic absenteeism". Finally, another regression analysis was run with the percentage of students suspended in the school being used as a dependent variable.

The research being conducted with this historical data is *ex post facto* because "variables are studied in retrospect in search of possible relationships and effects" (Weirsma & Jurs, 2005, p. 156).

The independent variable of interest for each multiple linear regression was the schoolwide percentage of participation in each of the arts categories: music, visual arts, dance, and drama. Each art discipline was added to the model as a separate percentage. It is important to note that the majority of schools did not offer "dance" as a specific course, and therefore the participation rate for this category is often "0%". The other independent variable of interest was school district socioeconomic status. This was recorded as the "Median Household Income" for the year 2015 as reported for the school district by the US Census report. This research design decision is in line with "purposive sampling" techniques (Leedy & Ormrod, 2013). Therefore, secondary data acquired from the 2015 "American Community Survey" as reported by factfinder.census.gov was collected for the school districts to organize further the schools by wealth. The districts were restricted to only "Borough" or "Township" school districts. "Regional" schools, which may have a sending-receiving relationship with several townships, were not selected from the data source. This was strategically done so that the sampled school districts would more closely match the 2015 American Community Survey records for the townships, so that the "median household income" for the township and the district matched.

The data was hand-collected by the researcher. A detailed Excel spreadsheet was created for each school in the study that included the following elements:

- State designated code
- District name
- School name

- Schoolwide percentage meeting/exceeding state expectations for ELA
- Schoolwide percentage meeting/exceeding state expectations for math
- Schoolwide percentage of students absent 1-5 days
- Schoolwide percentage of "chronic absenteeism"
- Schoolwide percentage participation for each arts discipline: music, visual arts, drama and dance
- District median household income, as reported by the 2015 US Census
- District household income poverty range (from 1-10), as designated by the 2015 US Census.

This data was then subjected to statistical analysis using the SPSS software package. Each null hypothesis was tested using a separate SPSS model so that only one dependent variable (test scores, attendance, and suspensions) was analyzed for variability in relation to the same independent variables, household wealth, music and art participation.

Instrumentation

The PARCC exam was created in conjunction with "Race to the Top" grant-funding from the federal government in 2009, as a way of implementing and measuring the success of the new Common Core State Standards (Phillips, G., 2016, p. 3). New Jersey was initially one of twenty-six states which had agreed to use the PARCC exam to test English Language Arts and Math. However, in the spring of 2015, only twelve states, including New Jersey, administered the test (Batel, S. & Sargrad, S., 2016, p. 3).

Researchers at the Center for American Progress examined the PARCC test and found that it "designed questions and tasks using multiple means of representation, such as graphics and charts, to accommodate students' varied learning styles and disabilities" (Batel, S. &

Sargrad, S., 2016, p. 7). This organization deemed the test more conducive to the needs of English Language Learners and students with disabilities than earlier forms of standardized tests. However, the report found that test-takers across student demographics, not only students with learning disabilities, had difficulty taking the PARCC because it is computer-based (Batel & Sargrad, 2016, p. 14).

The PARCC was designed to assess if students would succeed in college. A recent study that used PARCC scores as a predictor of college success found that "students who are deemed college-ready in ELA earn a 2.76 GPA in first-year college courses in English, and students deemed college-ready in math earn a 2.81 GPA in first-year college courses in math" (Dillon, et al., 2015, p. 2). These results actually out-pace the PARCC's own goal that students who do well on PARCC should earn a 2.0 GPA in college (Dillon, et al., 2015, p. 2).

Finally, a recent study by the Montgomery County School District in Maryland ran a correlation study between its own "Measure of Academic Progress" assessment and the PARCC. They found that success on the MAP exam was a positive predictor of success on the PARCC exam. Thus, "the strong positive correlation between the spring MAP and PARCC provided concurrent validity evidence" (Addison, Wang & Zhao, 2016, p. iv).

Validity and Reliability

The validity of this study is subject in part to the validity of the PARCC assessment, as a means of reporting academic achievement for Language Arts and Mathematics. "Measurement instruments provide a basis on which the entire research effort rests" (Leedy & Ormrod, 2013, p. 81). According to a research study conducted through Race to the Top funding, the PARCC assessment has been deemed valid and reliable by multiple standards (Hong & Lissitz, 2015

eBook, p. 271-311). Furthermore, a 2016 NJ Department of Education memorandum stated that studies found that "PARCC is especially strong in the content and depth of the ELA and math assessments in grades 5 and 8" (Retrieved: http://www.nj.gov/education/assessment/parcc/resources/ResearchStudies.pdf).

Finally, validity and reliability were promoted by making sure there was enough power in the sample size of the study group. "The power of a statistical test is defined as the probability of declaring that the experimental and control group means differ significantly if the population means that they represent are not equal" (Wiersma & Jurs, 2005, p. 309).

There were a total of 209middle schools with the 6^{th}-, 7^{th}-, and 8^{th}- grade configuration that were purposely selected for this study because they only contain those three grade levels. This sample size meets the criteria established by Samuel Green "$N \geq 104 + k$" (Green, S.B., 1991, p. 508). In his formula "k" equals the number of independent variables in the regression analysis. In this case there are five variables: median household income, music participation, visual arts participation, drama participation, and dance participation. Thus, the minimum number of schools that needed for this study was 109, however, that number was almost double with 209 schools. Therefore, with this larger sample size, it was possible to determine if there was statistical significance in the regression. (Wiersma & Jurs, 2005; see also Witte & Witte, 2015; Morgan, et al., 2011).

Conclusion

By using a separate multiple regression model for each of the four null hypothesis statements, it was possible to determine the statistical significance of the relationship between school district level socioeconomic status and student achievement. Student achievement was measured by the PARCC Exam instrument for Language Arts and Mathematics for students in

the middle school grades 6, 7, and 8. Student achievement was further measured by the schools' reports of student attendance percentages and student suspension percentages. An ANOVA was run to determine whether or not there is a statistical difference in the arts participation rates of schools, based on their district's median household income range. The coefficients table reported the level of significance in each model for the five independent variables: school district median household income and school level percentage participation in music, visual arts, drama, and dance courses. Furthermore, the reliability of this significance was reported by the F statistic, which helped to determine whether or not to reject each null hypothesis. I Chapter 4 reports the results of the statistical analyses previously mentioned in this chapter, while Chapter 5 will presents these results and draws conclusions.

Chapter IV

Introduction

There is little quantifiable evidence to show whether or not arts education can have a significant positive impact on the overall academic performance of students from across the spectrum of socioeconomic backgrounds and in particular, from a high or affluent socioeconomic background. The purpose of this study is to determine if arts education adds any significant value to public school student efficacy for those in middle school, when controlling for school level variables and the school district's median household income.

Research Questions

1. On average, does student participation in middle school arts programs/classes differ significantly based on the school district's socioeconomic status, as defined by median household income?

2. What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education and their academic performance in ELA as measured by PARCC, when controlling for overall school level variables and the school district's median household income?

3. What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education and their academic performance in math as measured by PARCC, when controlling for overall school level variables and the school district's median household income?

4. What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education and the school's rate of student attendance, and can that relationship be classified as "value-added"?

5. What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education, and the school's student suspension rate and can that relationship be classified as "value-added"?

Hypotheses

Null Hypothesis 1: There is no statistically significant difference in the percentage of students who participate in the arts at the middle school level based on a school district's socioeconomic status.

Null Hypothesis 2: There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and language arts performance, as measured by the 2015-2016 PARCC assessment.

Null Hypothesis 3: There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and mathematics performance, as measured by the 2015-2016 PARCC assessment.

Null Hypotheses 4: There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and a middle school's attendance rates.

Null Hypothesis 5: There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and student discipline, as measured by middle school suspension rates.

Organization

The manner in which the data was harvested is explained at the beginning of this chapter. Next, the descriptive statistics of this data is discussed. A complete analysis of each research question in numerical order, along with methodology of that analysis, follows. Finally, each

research question is answered as a result of the data analysis. The chapter ends with a brief discussion of the conclusions that can be drawn from the answers to the research questions that were discovered in the data analysis.

Data Collection

The data for this study was collected from the New Jersey Department of Education website "Data" pages. Further data was collected from the U.S. Federal Government Census Bureau "American Fact Finder" website. Information regarding school level data was collected from the NJ Department of Education 2015-2016 "School Performance Report" for each of the 209 schools that met the criteria for this study. The following data points were harvested from those reports:

1. School demographic data: student enrollment; percentage of special education students; percentage of students classified as English Language Learners (E.L.L.)
2. Total percentage of students in the school meeting or exceeding exceptions for ELA
3. Total percentage of students in the school meeting or exceeding exceptions for math
4. Grade 6 ELA and math mean scores for the school
5. Grade 7 ELA and math mean scores for the school
6. Grade 8 ELA and math mean scores for the school
7. Percentage of students absent 1-5 days for the school
8. Percentage of students chronically absent in the school
9. Percentage of students suspended.
10. The faculty attendance rate for the school
11. Total percentage of students in the school participating in any arts classes/courses.
12. Total percentage of students in the school participating in music

13. Total percentage of students in the school participating in visual arts
14. Total percentage of students in the school participating in drama
15. Total percentage of students in the school participating in dance

It is important to note that a few schools did not report on arts participation, chronic absenteeism, or faculty attendance. Those were left blank in the data field and were not given a "value" of zero. Also, certain schools suppressed their math and/or ELA mean score for one or more grade levels. The NJ Department of Education published detailed "Suppression Rules" specifically for the 2015-2016 PARCC Test, see: (https://rc.doe.state.nj.us/SuppressionRules/SuppressionRules.pdf). If at the school or sub-group grade level the rate of participation was fewer than 30 students, the academic achievement scores were suppressed. Another cause for suppression was when 10% or fewer students had met or exceeded expectations in the school or grade level subgroup. Finally, chronic absenteeism percentages above 90% or at 0% were also suppressed on the Performance Reports.

The socioeconomic data for the school district was harvested from the "American Fact Finder" website, using the district's borough or township name as the search criteria to find the "Median Household Income" for that district, as reported by the Census Bureau in 2015. This income data was then used to organize the economic data into the "Federal Income and Benefits Range" based on the U.S. Census Bureau's "Income and Benefits Table", which outlines a range of ten (10) income levels from < $10,000 per year median household income, to > $200,000 per year. (See: https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_DP03&src=pt). In the 209 school districts used in this study, the lowest income group was level 4 on the federal range, with a median household income between $25,000 and $34,999. The

highest income in this study was level 9, with a median household income range of $150,000 to $199,999.

Descriptive Statistics

There are a total of 209 NJ public schools that fit the criteria for this study. The criteria require that the schools can only contain students in grades 6, 7, and 8, and they must be in a school district with a matched geographic territory as identified by the U.S. Federal Census Bureau. Schools that combine two or more separate townships or boroughs into one district are not included. Charter schools that enroll students from multiple townships or boroughs are also not included, because the charter schools' funding is not necessarily tied to one geographic region with a unique "median household income," as defined by the U.S. Census Bureau.

Table 4.1 below shows descriptive statistics for all the variables in the study. The total number of schools in the study along with the Mean, Median, and Standard Deviation of all of the demographic categories are at the beginning of the table. Next, the "Percentage of Students Meeting or Exceeding Expectations" for both ELA and Math are stated.

All 209 schools in the study report the total percentage of students in the school who meet or exceed PARCC exceptions, which is a score of 750 or higher on both the ELA and math sections. The scores are evenly distributed, with a median percentage of students meeting expectations for ELA of 57.3%. The math scores for students meeting expectations run lower than ELA among all schools, which is reflected in the median score of 44.9%. Similarly, the actual median PARCC scores for ELA and Math for each grade level (6, 7, and 8) are analyzed. The median scores for ELA are higher than math in each grade level. As discussed above, the math scores are more frequently suppressed than ELA scores in certain schools due to either low scores or low participation rates in accordance with the 2015-2016 suppression rules.

The table also shows school climate data such as student absenteeism, student suspension, and faculty attendance. Only one school did not report student chronic absenteeism. All schools reported the percentage of students absent 1-5 days, and the data is evenly distributed. The data also show that the majority of schools reported a faculty attendance rate of 97%. There is much variation in the data regarding student suspension. The mean rate of suspensions for schools in this study is 7.8%, but the median percentage was 4.8%, and the standard deviation is 9.9%.

Table 4.1 also shows a total of 206 schools reported on their arts participation percentages. The mean percentage of students participating in any arts courses in this study is 91.3%, and the median reflects 100% arts participation. The mean percentage of students participating in music courses is 68.6%. The mean percentage of students in schools for this study participating in visual arts courses is 72.6%. Drama and dance have low amounts of student participation for schools in this study, with only 4.3% of students doing drama and 1.9% of students doing dance.

"Median Household Incomes" for the geographic locations of the schools reside, as well as the Federal Income and Benefits Ranges, are reported with their mean, median, and standard deviation. The median of all of the "Median Household Incomes" for this study is $86,471.00, showing that the data is evenly distributed in a bell-curve shape. The Median Federal Income and Benefits Range for the schools in this study is seven (7), which is a median household income range of $75,000 to $99,000. The six different Federal Income and Benefits Ranges represented by schools in this study shows that the data is normally distributed. The majority of school districts in this study represent income ranges: 6 ($50,000-$74,999); 7 ($75,000-$99,000); and 8 ($100,000-$149,999).

Table 4.1

	N	Mean	Median	Standard Deviation
Enrollment	209	690.36	654.0	311.02
% Spec. Ed	209	16.7	17.0	4.08
% E.L.L.	209	56.38	57.3	18.88
Total % ELA	209	56.377	57.3	18.878
Total % Math	209	45.753	44.9	18.293
Grade 6 Mean ELA	204	751.544	751	14.413
Grade 6 Mean Math	201	745.562	745	12.826
Grade 7 Mean ELA	209	754.828	755	18.191
Grade 7 Mean Math	201	743.224	744	12.139
Grade 8 Mean ELA	207	754.657	754	17.177
Grade 8 Mean Math	174	730.006	728	10.696
% Absent 1-5 Days	209	41.019	41	7.522
% Chronic Absenteeism	208	7.727	6.6	5.500
% Students Suspended	206	7.803	4.8	9.913
% Faculty Attendance	206	96.369	97	1.96
% Total Arts Participation	206	91.301	100	15.572
% Music Participation	206	68.626	74	27.082
% Visual Arts participation	206	72.578	77	27.931
% Drama Participation	206	4.257	0	10.891
% Dance Participation	206	1.859	0	10.063
District Median Household Income	209	$88,955.47	$86,471.00	$32,755.57
Income & Benefit Range	209	6.837	7	1.2099

When the PARCC scores are separated out by the six Federal Income and Benefits Ranges represented in this study, differences in academic performance and school climate emerge in the data. Individual descriptive statistics tables for each of the six economic groups are found in the appendix of this dissertation. There are nine schools in Federal Income Level 4 ($25,000-$34,999). This group has the weakest academic performance, with a mean of students meeting or exceeding expectations for ELA at only 18.9% and 11.4% for math. The level of "total arts" participation drops to 83.1% compared to the study as a whole. Chronic absenteeism is 18.2% for this economic group, and the student suspension rate for this group is 31.2%. There are 17 schools in the second economically disadvantaged group, Federal Income Level 5 ($35,000-$49,999). The academic performance is improved compared to Income Level 4, with total percentage of students meeting or exceeding expectations at 33.1% for ELA and 23.2% for math. The total arts participation rate for this economic group is almost identical to the study as a whole, with 91.3% of students participating in some form of arts. Chronic absenteeism and student suspension are both high, compared to the study as a whole, with absenteeism at 14.4% and student suspension at 18.2%.

Moving toward the center of the bell curve, there are 55 schools in the Federal Income Level 6 ($50,000-$74,999). Students in these schools perform similar to the Income Level 5 schools, with 46.1% of students meeting or exceeding ELA expectations, and 34.5% meeting expectations in math. Total arts participation rates are lower for students in Income Level 6 than for that of Income Level 5, with only 88.7% of students participating in some form of arts. The chronic absenteeism rate for students in this economic range is 9%, and the student suspension rate for this group is 9.5%. The center of the bell curve is Income Level 7 ($75,000-$99,999), and students in this group perform slightly better than the numbers represented by the study as a

whole. A total of 59.4% of students meet or exceed exceptions in ELA for this group, and 48.5% of students meet expectations in math. Total arts participation for students in Income Level 7 are also a little higher than the study as a whole, with a 92.3% participation rate. The school climate factors are also slightly better for this group than the study as a whole, with chronic absenteeism at 6.3%, and student suspension rate at 6.3%.

Conversely, there are twelve schools in the highest income range for this study, Federal Income Level 9 ($150,000-$199,999), and their academic performance is considerably higher than the study as a whole. The mean of students meeting or exceeding expectations in ELA for this group is 79.8%, and 72.4% for math. The total arts participation for this group is 95.6%. School climate indicators are improved comparatively, with chronic absenteeism at 4.4% and student suspension at only 1.7%. The second highest income group, Federal Income Level 8 ($100,000-$149,000), is one of the largest population samples, with 58 schools represented. Students in this group perform in remarkably similar ways to the highest economic group (Level 9). Schools in income Level 8 have 70.9% of students meeting or exceeding exceptions in ELA, and 60.1% meeting expectations in math. This group has slightly higher arts participation rates than the study as a whole, with 93.1% of students participating in some sort of arts courses. The chronic absentee rate is low at 4.9%, and the student suspension rate is also low at 2.2%.

Therefore, the economic groups' data performance is typical for normally distributed data. When separated out, students in the highest three socio-economic income ranges perform better academically than the study as a whole, when all six income ranges are calculated together. Conversely, the lower three economic groups under-perform academically in comparison to the study as a whole. Similarly, students in the lower three economic groups have lower arts participation rates than the study as a whole, as well as lower arts participation than the three

upper income groups. Finally, school climate factors such as Chronic absenteeism and Student suspension are higher (meaning a less than favorable school climate) for students in the lower three economic groups, as compared with the study as a whole, and compared with the three upper income groups.

Research Question No.1

1. On average, does student participation in middle school arts programs/classes differ significantly based on the school district's socioeconomic status, as defined by median household income?

Data from Table 4.2 shows the descriptive statistics used for this one-way ANOVA. The sample population (N) and means for "any arts participation" percentages are shown for each of the six Federal Income and Benefits ranges that are represented in this study. The mean arts participation percentages range from 83.11% for the lowest income group, to 95.75% for the highest income group, with a mean of 91.30% for all 206 schools represented in the study.

Table 4.2

Descriptives

% of Any arts participation

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
25,000 - 34,999	9	83.1111	18.86428	6.28809	68.6107	97.6115	54.00	
35,000-49,999	16	91.2500	13.17321	3.29330	84.2305	98.2695	57.00	100.00
50,000-74,999	55	88.6909	20.14473	2.71631	83.2450	94.1368	10.00	100.00
75,000-99,999	56	92.3393	9.84291	1.31531	89.7033	94.9752	61.00	100.00
100,000-149,999	58	93.1379	16.04538	2.10686	88.9190	97.3568	31.00	100.00
150,000-199,999	12	95.7500	8.89458	2.56765	90.0987	101.4013	72.00	100.00
Total	206	91.3010	15.57192	1.08495	89.1619	93.4401	10.00	100.00

A one-way ANOVA (see Table 4.3) was run between the "sample means, one corresponding to each population mean…for any statistically significant differences between them" (Wiersma & Jurs, 2005, p. 385). Six levels of the Federal Income and Benefits Ranges are represented in this study, and the mean percentages of the "any arts participation" for the schools at each level are compared with this ANOVA. The ANOVA (See Table 4.3) found that there are no statistically significant differences between the mean participation percentages among any of the Federal Income Ranges (F (5,200)= 1.221; p= .301).

Table 4.3

ANOVA

% of Any arts participation

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1472.005	5	294.401	1.221	.301
Within Groups	48237.334	200	241.187		
Total	49709.340	205			

Null Hypothesis No. 1

Based on the previous reported results we fail to reject and subsequently retain the null hypothesis for Research Question No.1: There is no statistically significant difference in the percentage of students who participate in the arts at the middle school level based on a school district's socioeconomic status.

Research Question No.2

What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education and their academic performance in ELA as measured by PARCC, when controlling for overall school level variables, and the school district's median household income?

A simultaneous multiple regression was run to determine the predictive strength that several of the study's variables have on middle school ELA performance as measured by the 2015-2016 PARCC exam. The dependent or outcome variable that is measured by this question is the total percentage of students meeting or exceeding PARCC expectations in the 6th-, 7th-, and 8th- grade public middle schools of New Jersey. Table 4.4 shows the mean percentage of students meeting expectations at 56.43%. The independent or predictor variables used in this regression include school demographic variables (enrollment, special education percentage, and ELL percentages), along with school climate variables (chronic absenteeism and student suspension rates), the variable of median household income, and the variable of interest, which this research question specifically targets, the percentage of arts participation.

Table 4.4

Descriptive Statistics

	Mean	Std. Deviation	N
Total % ELA	56.427	18.9160	204
Enrollment	697.98	310.070	204
% Sp.Ed.	16.61	4.059	204
% E.L.L.	2.86	4.462	204
% Chronic	7.738	5.3960	204
% Suspend	7.582	9.8179	204
% Fac. Attend.	94.97	11.792	204
% Any Arts	91.22	15.627	204
District Median Income	89171.53	32861.218	204

The Adjusted R-Square value of the model summary (see Table 4.5) shows that 72.3% of the variability of student ELA performance can be explained by this model. The Durbin-Watson value of the model is within a normal parameter of 2.017, which means that the residuals are not correlated. The ANOVA table 4.6 shows that the variables combine significantly to predict ELA achievement ($F(8, 195) = 67.35$; $p < .001$).

Table 4.5

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.857[a]	.734	.723	9.9492	.734	67.349	8	195

Model Summary[b]

Model	Change Statistics	
	Sig. F Change	Durbin-Watson
1	.000	2.017

a. Predictors: (Constant), District Median Income, % Fac. Attend., Enrollment, % Any Arts, % Sp.Ed., % E.L.L., % Chronic, % Suspend
b. Dependent Variable: Total % ELA

Table 4.6

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	53333.768	8	6666.721	67.349	.000[b]
	Residual	19302.478	195	98.987		
	Total	72636.246	203			

a. Dependent Variable: Total % ELA
b. Predictors: (Constant), District Median Income, % Fac. Attend., Enrollment, % Any Arts, % Sp. Ed., % E.L.L., % Chronic, % Suspend

The coefficients table (see Table 4.7) shows which of the model variables are significant contributors. The percentage of students who are classified as special education is significant at (t=-1.996; p < .047), and it contributes 0.76% of the variability to the model (β = -.087). The standardized beta for this variable is negative, which means that schools having a higher percentage of students receiving special

education services have a lower percentage of students meeting PARCC expectations. Similarly, the percentage of students classified ELL is significant at (t= -3.736; p < .001), and contributes 2.56% of the variability (β = -.160). This standardized beta is also negative, meaning that schools that have a higher percentage of students classified as E.L.L. have fewer students meeting PARCC expectations. Chronic absenteeism is also significant at (t= -4.387; p < .001), contributing 4.5% of the variability (β = -.213), and this standardized beta is also negative. The higher the percentage of chronically absent students, the fewer students who are successful on the PARCC exam. Student suspension is also significant at (t= -3.790; p < .001), contributing 3.39% of the variability (β = -.184), with a negative standardized beta. Again, the greater the percentage of students suspended yields a lower percentage of students meeting PARCC expectations. The strongest predictor variable is District Median Household income at (t= 9.957; p< .001), contributing 23.81% of the variability to the model (β = .488). The standardized beta for median household income is positive, such that the higher the district's household income, the higher the percentage of students meeting PARCC expectations. Faculty attendance and student enrollment are not statistically significant. Finally, the percentage of students participating in any arts courses, the variable of interest, is *not* statistically significant (t = -1.632; p = .104). By squaring the standardized beta in the coefficients table (β = -.064), we see that arts participation only contributes 0.41% of the variability to the overall model. Lastly, multicollinearity was not an issue since all values for the Variance Inflation Factors (VIF) were less than 2 (Field, 2013).

Table 4.7

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial
1	(Constant)	52.842	8.536		6.191	.000		
	Enrollment	.001	.002	.011	.263	.793	.095	.019
	% Sp.Ed.	-.404	.202	-.087	-1.996	.047	-.328	-.142
	% E.L.L.	-.677	.181	-.160	-3.736	.000	-.489	-.258
	% Chronic	-.746	.170	-.213	-4.387	.000	-.631	-.300
	% Suspend	-.355	.094	-.184	-3.790	.000	-.640	-.262
	% Fac. Attend.	.024	.060	.015	.402	.688	.012	.029
	% Any Arts	-.077	.047	-.064	-1.632	.104	.090	-.116
	District Median Income	.000	.000	.488	9.957	.000	.779	.581

Coefficients[a]

Model		Correlations	Collinearity Statistics	
		Part	Tolerance	VIF
1	(Constant)			
	Enrollment	.010	.848	1.179
	% Sp.Ed.	-.074	.724	1.382
	% E.L.L.	-.138	.746	1.341
	% Chronic	-.162	.579	1.728
	% Suspend	-.140	.575	1.738
	% Fac. Attend.	.015	.975	1.026
	% Any Arts	-.060	.887	1.127
	District Median Income	.368	.568	1.759

a. Dependent Variable: Total % ELA

Null Hypothesis No. 2

There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and language arts performance as measured by the 2015-2016 PARCC assessment.

The simultaneous multiple regression that was run dictates that we must fail to reject, or retain, the null hypothesis. While all of the variables combined are significant predictors of language arts success as measured by PARCC, the variable of arts participation does not contribute significantly to the overall model. The model shows that 23.81% of predictive strength can be attributed to median household income, whereas art participation, which is not significant, only contributes 0.41% variability. However, the overall model does contribute 73.4% of the total variance in PARCC ELA performance at the school level.

Research Question No.3

What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education and their academic performance in Math as measured by PARCC, when controlling for overall school level variables and the school district's median household income?

A simultaneous, multiple regression was run to determine the predictive strength that several of the study's variables have on middle school math performance, as measured by the 2015-2016 PARCC exam. The dependent or outcome variable that is measured by this question is the total percentage of students meeting or exceeding PARCC expectations for math in the 6ht-, 7th-, and 8th- grade middle schools in New Jersey public schools. Table 4.8 shows the mean percentage of students meeting

expectations is 45.79%. The independent, or predictor variables used in this regression include: school demographic variables (Enrollment, Special Education percentage, and ELL percentages), along with school climate variables (Chronic absenteeism and Student Suspension rates), the variable of median household income, and the variable of interest that this research question specifically targets, the percentage of arts participation.

Table 4.8

Descriptive Statistics

	Mean	Std. Deviation	N
Total % Math	45.795	18.2693	204
Enrollment	697.98	310.070	204
% Sp.Ed.	16.61	4.059	204
% E.L.L.	2.86	4.462	204
% Chronic	7.738	5.3960	204
% Suspend	7.582	9.8179	204
% Fac. Attend.	94.97	11.792	204
% Any Arts	91.22	15.627	204
District Median Income	89171.53	32861.218	204

The Adjusted R-Square value of the model summary below (see Table 4.9) shows that 77.43% of the variability of student math performance can be explained by this model. The Durbin-Watson value of the model is within a normal parameter of 2.016, which means that the residuals are not correlated. The ANOVA table shows that the variables combine significantly to predict math achievement ($F (8, 195) = 87.69$; $p < .001$).

Table 4.9

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.885[a]	.783	.774	8.6932	.783	87.694	8	195

Model Summary[b]

Model	Change Statistics	
	Sig. F Change	Durbin-Watson
1	.000	2.016

a. Predictors: (Constant), District Median Income, % Fac. Attend., Enrollment, % Any Arts, % S Suspend

b. Dependent Variable: Total % Math

Table 4.10

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	53017.934	8	6627.242	87.694	.000[b]
	Residual	14736.562	195	75.572		
	Total	67754.495	203			

a. Dependent Variable: Total % Math

b. Predictors: (Constant), District Median Income, % Fac. Attend., Enrollment, % Any Ar % E.L.L., % Chronic, % Suspend

The coefficients table shows which of the model variables are significant contributors. The percentage of students classified as special education is significant at (t= -3.233; p < .001), and contributes 1.6% of the variability to the model (β = -.127). The standardized beta for this variable is negative, which means that schools having a higher percentage of students receiving special education services have a lower

percentage of students meeting PARCC Math expectations. Similarly, the percentage of students classified ELL is significant at (t= -3.621; p < .001) and contributes 1.96% of the variability (β = -.140). This standardized beta is also negative, meaning that schools that have a higher percentage of students classified as E.L.L. have fewer students meeting PARCC expectations. Chronic absenteeism is also significant at (t= -4.830; p < .001), contributing 4.49% of the variability (β = -.212), and this standardized beta is also negative. The higher the percentage of chronically absent students, the fewer students who are successful on the PARCC math exam. The strongest predictor variable is District Median Household income, at (t=13.498; p< .001), contributing 35.76% of the variability to the model (β = .598). The standardized beta for median household income is positive, meaning that higher the district's household income, the higher the percentage of students meeting PARCC expectations. Faculty attendance and student enrollment are not statistically significant. Finally, the percentage of students participating in any arts courses, the variable of interest, is not statistically significant (t= -1.289; p= .199). By squaring the standardized beta in the coefficients table (β = -0.046), we see that arts participation only contributes 0.21% of the variability to the overall model. Arts participation also has a negative beta, so that that the lower the percentage of students participating in arts, the higher the PARCC math success rate is. This negative relationship could be the result of the regression finding that "arts participation" is not statistically significant. Lastly, multicollinearity was not an issue since all values for the Variance Inflation Factors (VIF) were less than 2 (Field, 2013).

Table 4.11

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial
1	(Constant)	38.296	7.458		5.135	.000		
	Enrollment	.000	.002	.003	.090	.928	.084	.006
	% Sp.Ed.	-.571	.177	-.127	-3.233	.001	-.356	-.226
	% E.L.L.	-.573	.158	-.140	-3.621	.000	-.475	-.251
	% Chronic	-.718	.149	-.212	-4.830	.000	-.642	-.327
	% Suspend	-.134	.082	-.072	-1.634	.104	-.596	-.116
	% Fac. Attend.	.003	.052	.002	.059	.953	.003	.004
	% Any Arts	-.053	.041	-.046	-1.289	.199	.107	-.092
	District Median Income	.000	.000	.598	13.498	.000	.830	.695

Coefficients[a]

Model		Correlations	Collinearity Statistics	
		Part	Tolerance	VIF
1	(Constant)			
	Enrollment	.003	.848	1.179
	% Sp.Ed.	-.108	.724	1.382
	% E.L.L.	-.121	.746	1.341
	% Chronic	-.161	.579	1.728
	% Suspend	-.055	.575	1.738
	% Fac. Attend.	.002	.975	1.026
	% Any Arts	-.043	.887	1.127
	District Median Income	.451	.568	1.759

a. Dependent Variable: Total % Math

Null Hypothesis No. 3

There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and math performance as measured by the 2015-2016 PARCC assessment.

The simultaneous multiple regression that was run dictates that we must fail to reject, or retain, the null hypothesis. While all of the variables combined are significant predictors of math success as measured by PARCC, the variable of arts participation does not contribute significantly to the overall model. The model shows that 35.76% of predictive strength can be attributed to median household income, whereas art Participation, which is not significant, only contributes 0.21% variability. However, the overall model does contribute 77.4% of the total variance in PARCC math performance at the school level.

Research Question No.4

What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education and the school's rate of student attendance, and can that relationship be classified as "value-added"?

A hierarchical multiple regression was run to determine if any value is added to the variance in the predictor variable "chronic absenteeism," an indicator of school climate as defined by the NJDOE, by its relationship with the total percentage of students participating in arts courses. According to the NJ School Performance Reference Guide 'Chronic absenteeism' is defined as:

> Chronic absenteeism provides important information about a school's culture and climate. In addition, it is widely acknowledged that students who are in school are likely to be learning more than those who are absent. Chronic absenteeism has been identified by New Jersey as an indicator of school quality and student success for ESSA accountability. Chronic absenteeism is an indicator of whether students are regularly attending school. A student is considered chronically absent if they are not present (referred to as "Cumulative Days Present") for 10% or more of the days in which they are enrolled at a school during the school year. (NJDOE, NJ School Performance Guide, page, 50)

The descriptive statistics for both the predictor variables and the dependent variable, percentage of students Chronically Absent, appear in Table 4.12 below.

Table 4.12

Descriptive Statistics

	Mean	Std. Deviation	N
% Chronic	7.738	5.3960	204
Enrollment	697.98	310.070	204
% Sp.Ed.	16.61	4.059	204
% E.L.L.	2.86	4.462	204
% Fac. Attend.	94.97	11.792	204
% Suspend	7.582	9.8179	204
District Median Income	89171.53	32861.218	204
% Any Arts	91.22	15.627	204

Three different models were built using a stepwise regression for this analysis. The Sig. F Change on the Model Summary below in Table 4.13 shows that each model is statistically significant. Furthermore, the Durbin-Watson value is 1.87, so the residuals are not correlated, thus meeting the assumption for regression analysis. Model 1 includes the following predictor

variables: Student enrollment, percentage of special education students, percentage of ELL students, school faculty attendance rate, and student suspension rate. The ANOVA table shows that Model 1 is statistically significant (F (5, 198) = 22.035; $p < .001$). The Adjusted R-squared value shows that Model 1 contributes 34.1% of variability in predicting chronic absenteeism.

Model 2 adds the variable "district median household income". The ANOVA table shows this model is also statistically significant (F (6,197)= 22.77; $p<.001$). The adjusted R-square value on the model summary shows that Model 2 explains 39.2% of variability for chronic absenteeism.

Finally, Model 3 adds the variable of interest for research question No. 4, the total percentage of arts participation. The ANOVA table shows this model is also statistically significant (F (7,196)= 20.37; $p< .001$). The adjusted R-square value on the model summary shows that Model 3 explains 40.0% of variability for chronic absenteeism. Thus, Model 3 is the best predictor model for chronic absenteeism.

Table 4.13

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.598[a]	.358	.341	4.3794	.358	22.035	5	198
2	.640[b]	.410	.392	4.2089	.052	17.373	1	197
3	.649[c]	.421	.400	4.1781	.012	3.913	1	196

Model Summary[d]

Model	Change Statistics	Durbin-Watson
	Sig. F Change	
1	.000	
2	.000	
3	.049	1.868

a. Predictors: (Constant), % Suspend, % Fac. Attend., Enrollment, % E.L.L., % Sp.Ed.
b. Predictors: (Constant), % Suspend, % Fac. Attend., Enrollment, % E.L.L., % Sp.Ed., District Median Income

c. Predictors: (Constant), % Suspend, % Fac. Attend., Enrollment, % E.L.L., % Sp.Ed., District Median Income, % Any Arts
d. Dependent Variable: % Chronic

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2113.121	5	422.624	22.035	.000[b]
	Residual	3797.518	198	19.179		
	Total	5910.639	203			
2	Regression	2420.873	6	403.479	22.777	.000[c]
	Residual	3489.766	197	17.715		
	Total	5910.639	203			
3	Regression	2489.181	7	355.597	20.371	.000[d]
	Residual	3421.459	196	17.456		
	Total	5910.639	203			

Looking at the coefficients in Table 4.14 for Model 3, we see the individual variables, their level of significance, and the percentage of variability that they contribute to Model 3, which is the best model for this regression. Student enrollment is statistically significant in Model 3 with (t = 1.979*; p*< 0.049), and the squared standardized beta shows that it explains 1.35% of the variability in the model (β = .116). The positive beta indicates that schools with larger enrollments tend to have a larger rate of chronic absenteeism. The percentage of students identified as special education is also significant at (t = 4.409*; p* < .001), and it explains 7.23% of the variability in the model (β = .269). This beta is also positive, meaning that schools with larger numbers of students identified as special education tend to have higher chronic absenteeism. The student suspension rate is also statistically significant in Model 3, with (*t=3.49; p* < .001), and it explains 5.9% of the variability in the model (β = .243). The student suspension rate is also a positive beta, showing that schools with higher suspension rates also tend to have higher levels of chronic absenteeism. As seen in earlier research questions, the

median household income is statistically significant with (t= -3.957; p< .001), and it contributes most of the variability in the model at 7.5% (β = -.274). The negative beta for this variable means that schools with lower median household incomes tend to have higher levels of chronic absenteeism. Finally, the total arts participation rate is also a significant variable in this model, with (t= -.1.978; p < .049), and it contributes 1.3% of the variability to the model (β = -.113). This negative beta means that schools with lower arts participation rates tend to have higher levels of chronic absenteeism. Lastly, multicollinearity was not an issue since all values for the Variance Inflation Factors (VIF) were less than 2 (Field, 2013).

Table 4.14

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial
1	(Constant)	-.348	2.912		-.120	.905		
	Enrollment	.003	.001	.151	2.528	.012	.015	.177
	% Sp.Ed.	.388	.084	.292	4.637	.000	.356	.313
	% E.L.L.	.219	.075	.181	2.900	.004	.306	.202
	% Fac. Attend.	-.025	.026	-.055	-.964	.336	-.011	-.068
	% Suspend	.209	.036	.381	5.806	.000	.513	.381
2	(Constant)	5.183	3.097		1.674	.096		
	Enrollment	.002	.001	.140	2.423	.016	.015	.170
	% Sp.Ed.	.341	.081	.257	4.202	.000	.356	.287
	% E.L.L.	.121	.076	.100	1.589	.114	.306	.112
	% Fac. Attend.	-.021	.025	-.046	-.829	.408	-.011	-.059
	% Suspend	.142	.038	.259	3.718	.000	.513	.256
	District Median Income	-4.753E-5	.000	-.289	-4.168	.000	-.526	-.285
3	(Constant)	8.620	3.531		2.441	.016		
	Enrollment	.002	.001	.116	1.979	.049	.015	.140
	% Sp.Ed.	.357	.081	.269	4.409	.000	.356	.300

	% E.L.L.	.124	.076	.102	1.637	.103	.306	.116
	% Fac. Attend.	-.021	.025	-.046	-.842	.401	-.011	-.060
	% Suspend	.134	.038	.243	3.499	.001	.513	.242
	District Median Income	-4.507E-5	.000	-.274	-3.957	.000	-.526	-.272
	% Any Arts	-.039	.020	-.113	-1.978	.049	-.201	-.140

Coefficients[a]

Model		Correlations Part	Collinearity Statistics Tolerance	VIF
1	(Constant)			
	Enrollment	.144	.906	1.104
	% Sp.Ed.	.264	.819	1.221
	% E.L.L.	.165	.836	1.197
	% Fac. Attend.	-.055	.980	1.020
	% Suspend	.331	.753	1.328
2	(Constant)			
	Enrollment	.133	.904	1.107
	% Sp.Ed.	.230	.803	1.245
	% E.L.L.	.087	.756	1.322
	% Fac. Attend.	-.045	.979	1.022
	% Suspend	.204	.619	1.615
	District Median Income	-.228	.621	1.609
3	(Constant)			
	Enrollment	.108	.865	1.156
	% Sp.Ed.	.240	.795	1.257
	% E.L.L.	.089	.756	1.322
	% Fac. Attend.	-.046	.979	1.022
	% Suspend	.190	.611	1.636
	District Median Income	-.215	.614	1.629
	% Any Arts	-.108	.905	1.105

a. Dependent Variable: % Chronic

Null Hypothesis No. 4

There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and a middle school's attendance rates.

In this hierarchical regression model, we see that the percentage of students who participate in the arts does have a statistically significant relationship to chronic absenteeism. Thus, we can reject null hypothesis No.4. Three different models were analyzed in a step-wise, hierarchical regression. The last model, No. 3, was found to be the strongest predictor of the outcome variable, chronic absenteeism, explaining 40% of the variability. Several variables contributed significantly to the model, including: enrollment, special education percentage, student suspension, median household income, and most notably, arts participation. Median household income was the strongest predictor variable, contributing 7.5% to the overall model. However, arts participation contributed significantly to the model with 1.3% of the overall variability.

Research Question No.5

What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education, and the school's student suspension rate, and can that relationship be classified as "value-added"?

A hierarchical multiple regression was run to determine if any value was added to school climate indicators from the total percentage of students participating in arts courses. Research question No. 5 looks at the school climate indicator of "student suspension" rate. According to the NJ School Performance Reference Guide,

> The "Student Suspension Rates" shows the percentage of students who received one or more in-school suspensions, one or more out-of-school suspensions, and one or more suspension of any type during the school year. The percentages are calculated by dividing

the total number of students with at least one suspension by the total end-of-year enrollment" (NJDOE, NJ School Performance Guide, pp. 54-55).

Table 4.15 below shows the descriptive statistics for the independent variables, as well as the dependent or outcome variable for this question, student suspension rates.

Table 4.15

Descriptive Statistics

	Mean	Std. Deviation	N
% Suspend	7.582	9.8179	204
Enrollment	697.98	310.070	204
% Sp.Ed.	16.61	4.059	204
% E.L.L.	2.86	4.462	204
% Fac. Attend.	94.97	11.792	204
% Chronic	7.738	5.3960	204
District Median Income	89171.53	32861.218	204
% Any Arts	91.22	15.627	204

Three different models were built using a stepwise regression for this analysis. The Sig. F Change on the Model Summary below in Table 4.16 shows that Model 1 and 2 are statistically significant. Furthermore, the Durbin-Watson value is 1.692, so the residuals are not correlated, meeting the assumption for regression analysis. Model 1 includes the following predictor variables: Student enrollment, percentage of special education students, percentage of ELL students, school faculty attendance rate, and chronic absenteeism rate. The ANOVA table shows that Model 1 is statistically significant ($F(5, 198) = 21.919$; $p < .001$). The Adjusted R-squared value shows that Model 1 contributes 34.0% of variability in predicting student suspension.

Model 2 adds the variable "district median household income". The ANOVA table shows this model is also statistically significant ($F(6,197) = 23.919$; $p < .001$). The adjusted R-square

value on the model summary shows that Model 2 explains 40.4% of variability for student suspension.

Finally, Model 3 adds the variable of interest for research question No.5, the total percentage of arts participation. The ANOVA table shows this model is statistically significant (F (7,196)= 20.66; $p < .001$). The adjusted R-square value on the model summary shows that Model 3 explains 40.4% of variability for student suspension. However, the model summary as a whole showed the Sig. F Change statistic for arts participation was not significant at $p < .298$. Thus, Model 2 is the best predictor model for student suspension.

Table 4.16

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.597[a]	.356	.340	7.9758	.356	21.919	5	198
2	.649[b]	.421	.404	7.5805	.065	22.188	1	197
3	.652[c]	.425	.404	7.5789	.003	1.088	1	196

Model Summary[d]

Model	Change Statistics	Durbin-Watson
	Sig. F Change	
1	.000	
2	.000	
3	.298	1.692

a. Predictors: (Constant), % Chronic, % Fac. Attend., Enrollment, % E.L.L., % Sp.Ed.

b. Predictors: (Constant), % Chronic, % Fac. Attend., Enrollment, % E.L.L., % Sp.Ed., District Median Income

c. Predictors: (Constant), % Chronic, % Fac. Attend., Enrollment, % E.L.L., % Sp.Ed., District Median Income, % Any Arts

d. Dependent Variable: % Suspend

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6971.820	5	1394.364	21.919	.000[b]
	Residual	12595.523	198	63.614		
	Total	19567.343	203			
2	Regression	8246.831	6	1374.472	23.919	.000[c]
	Residual	11320.512	197	57.465		
	Total	19567.343	203			
3	Regression	8309.302	7	1187.043	20.666	.000[d]
	Residual	11258.040	196	57.439		
	Total	19567.343	203			

a. Dependent Variable: % Suspend
b. Predictors: (Constant), % Chronic, % Fac. Attend., Enrollment, % E.L.L., % Sp.Ed.
c. Predictors: (Constant), % Chronic, % Fac. Attend., Enrollment, % E.L.L., % Sp.Ed., District Median Income
d. Predictors: (Constant), % Chronic, % Fac. Attend., Enrollment, % E.L.L., % Sp.Ed., District Median Income, % Any Arts

Looking at the coefficients in Table 4.17 for Model 2, we see the individual variables, their level of significance, and the percentage of variability that they contribute to Model 2, which is the best model for this regression. The percentage of students identified as special education is significant at (t = 2.028*; p* < .044), and it explains 1.61% of the variability in the model (β = .127). This beta is positive, meaning that schools with larger numbers of students identified as special education tend to have higher student suspension rates. The percentage of students identified as E.L.L. is also significant in Model 2, with (t= 2.563; p< .011), and it explains 2.5% of the variability in the model (β = .158). The beta is positive, meaning that the greater the percentage of students identified as E.L.L., the greater the student suspension rate tends to be. The chronic absenteeism rate is also statistically significant in Model 2, with (t=3.718; p < .001), and it explains 6.4% of the variability in the model (β = .253). The chronic absenteeism rate is also a positive beta, showing that schools with higher chronic absences also tend to have higher levels of student suspension rates. As seen in earlier research questions, the

median household income is statistically significant with (t= -4.710; p< .001), and it contributes most of the variability in the model at 10.24% (β = -.320). The negative beta for this variable means that schools with lower median household incomes tend to have higher levels of student suspensions.

Finally, the total arts participation rate from Model 3 is *not* significant, with (t= -.1.043; p= .298), and it contributes 0.36% of the variability to the model (β = -.060). This negative beta would mean that schools with lower arts participation rates tend to have higher levels of student suspension, however, this variable is not statistically significant, and thus Model 3 is not the best model. Lastly, multicollinearity was not an issue since all values for the Variance Inflation Factors (VIF) were less than 2 (Field, 2013).

Table 4.17

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations	
		B	Std. Error	Beta	T	Sig.	Zero-order	Partial
1	(Constant)	-8.831	5.265		-1.677	.095		
	Enrollment	-.003	.002	-.110	-1.821	.070	-.137	-.128
	% Sp.Ed.	.375	.158	.155	2.372	.019	.310	.166
	% E.L.L.	.566	.134	.257	4.216	.000	.363	.287
	% Fac. Attend.	.059	.048	.071	1.235	.218	.056	.087
	% Chronic	.695	.120	.382	5.806	.000	.513	.381
2	(Constant)	3.141	5.613		.560	.576		
	Enrollment	-.003	.002	-.098	-1.711	.089	-.137	-.121
	% Sp.Ed.	.306	.151	.127	2.028	.044	.310	.143
	% E.L.L.	.348	.136	.158	2.563	.011	.363	.180
	% Fac. Attend.	.058	.046	.069	1.271	.205	.056	.090
	% Chronic	.461	.124	.253	3.718	.000	.513	.256

	District Median Income	-9.569E-5	.000	-.320	-4.710	.000	-.554	-.318
3	(Constant)	6.531	6.485		1.007	.315		
	Enrollment	-.003	.002	-.109	-1.868	.063	-.137	-.132
	% Sp.Ed.	.327	.152	.135	2.144	.033	.310	.151
	% E.L.L.	.351	.136	.159	2.585	.010	.363	.182
	% Fac. Attend.	.057	.046	.068	1.251	.212	.056	.089
	% Chronic	.440	.126	.242	3.499	.001	.513	.242
	District Median Income	-9.368E-5	.000	-.314	-4.592	.000	-.554	-.312
	% Any Arts	-.038	.036	-.060	-1.043	.298	-.141	-.074

Coefficients[a]

Model		Correlations Part	Collinearity Statistics Tolerance	VIF
1	(Constant)			
	Enrollment	-.104	.892	1.121
	% Sp.Ed.	.135	.760	1.316
	% E.L.L.	.240	.873	1.145
	% Fac. Attend.	.070	.983	1.017
	% Chronic	.331	.752	1.330
2	(Constant)			
	Enrollment	-.093	.890	1.123
	% Sp.Ed.	.110	.753	1.329
	% E.L.L.	.139	.772	1.296
	% Fac. Attend.	.069	.983	1.017
	% Chronic	.201	.632	1.583
	District Median Income	-.255	.635	1.574
3	(Constant)			
	Enrollment	-.101	.863	1.159
	% Sp.Ed.	.116	.741	1.350
	% E.L.L.	.140	.771	1.296
	% Fac. Attend.	.068	.983	1.018
	% Chronic	.190	.615	1.626
	District Median Income	-.249	.630	1.588
	% Any Arts	-.057	.892	1.121

Null Hypothesis No. 5

There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and a middle school's suspension rates.

In this hierarchical regression model, we see that the percentage of students who participate in the arts does *not* have a statistically significant relationship to student suspension rates. Thus, we must fail to reject, or retain, the null hypothesis No.5. Three different models are analyzed in a step-wise, hierarchical regression. The second model, No. 2, was found to be the strongest predictor of the outcome variable, student suspension rates, explaining a combined 40.4% of the variability. Several variables contribute significantly to the model, including: special education percentage, percentage of students identified as E.L.L, chronic absenteeism, and median household income. Most notably, arts participation, which was added in Model No. 3, is *not* significant with $p = .298$. Median household income is the strongest predictor variable, contributing 10.24% to the overall model.

Conclusions

In all but one of the five research questions for this study, we saw that arts participation does not significantly influence student academic performance outcomes and indicators of school climate. In research question 1, an ANOVA found that there is no significant difference between median household income, as measured by the Federal Income & Benefits ranges, and the level of arts participation reported for that school. In research questions 2 and 3, it was determined that the level of arts participation does not significantly affect academic achievement, as defined and measured by PARCC ELA and math performance scores. In research question 4, we found that arts participation does have a significant impact on the school climate variable of chronic

absenteeism, contributing 1.3% variability as a predictor variable. Finally, in research question 5, we found that arts participation does *not* have a significant impact on the school climate variable of student suspension rates. Further conclusions and recommendations based on these results will be made in Chapter V.

Chapter V

Introduction

Arts education, particularly music and visual arts education, have been incorporated as part of a general education curriculum since the early stages of American education (Mark, 2008). In the State of New Jersey, arts education is a required curricular subject throughout the K-8 grade levels, and some form of arts education is required for high school graduation (NJ Administrative Code 6A 8-1.1). The introduction to the NJ 2014 Core Curricular Content Standards explains the necessary place that arts education holds in the curriculum, "As the State of New Jersey works to transform public education to meet the needs of a changing world and the 21st century workforce, capitalizing on the unique ability of the arts to unleash creativity and innovation in our students is critical for success" (NJ DOE, CCCS: Visual & Performing Arts, 2014, p. 1).

The purpose of this study was to determine if arts education adds any significant value to public school student efficacy for students in middle school, when controlling for socioeconomic status and other student and school demographic variables. There is limited evidence to show whether or not arts education has a significant impact on the overall academic performance of students from across the spectrum of socioeconomic backgrounds, and in particular, from affluent socioeconomic backgrounds. The study analyzed the efficacy of arts education using three different statistical methods to answer a total of five research questions. The study found that in four out of five areas measured, the arts did not have a significant impact on student achievement, when controlling for socioeconomic status and other student and school demographic variables. This chapter addresses why this might be, and the implications for future policy, practice, and research.

Organization

This chapter began with a brief introduction and statement of the problem. Next, the chapter reviews the findings in Chapter IV, by stating the research question and null hypotheses, and briefly answering each research question. An explanation of these findings is discussed in light of literature from past research studies. Recommendations for K-12 policy and practice in light of the findings from this present study are also addressed. Next, recommendations are made for future research to help illuminate further questions that arose from this study. Finally, concluding remarks are made regarding the results of the current study.

Research Questions and Answers

Research Question No. 1

On average, does student participation in middle school arts programs/classes differ significantly based on the school district's socioeconomic status, as defined by median household income?

An ANOVA was run to determine if there were statistically significant differences in the percentages of students who participated in "any arts" courses based on the schools' socioeconomic status as categorized by the Federal Income and Benefits Ranges. There were six different Income levels ranging from a median household income of $25,000 per year to $199,999 per year. The mean percentages of student arts participation by school for each of those six income categories ranged from 83.11% to 95.75%. No statistically significant differences in the mean percentages of arts participation by school were found among the six different levels of Federal Income and Benefits Ranges.

Null Hypothesis No.1

Null Hypothesis No.1: There is no statistically significant difference in the percentage of students who participate in the arts at the middle school level based on the school district's socioeconomic status. Based on the results reported in Chapter IV, we fail to reject and subsequently retain the null hypothesis for Research Question No. 1.

Research Question No.2

What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education and their academic performance in ELA as measured by PARCC, when controlling for overall school level variables, and the school district's median household income?

Answer

The model showed that 23.81% of predictive strength could be attributed to median household income alone. Furthermore, arts participation, which was not significant, only contributed 0.41% variability to the model. Other significant predictor variables included the percentage of students who were classified as Special education, which contributed 0.76% of the variability to the model. The standardized beta for this variable was negative, meaning that schools having a higher percentage of students receiving Special education services had a lower percentage of students meeting PARCC expectations. Similarly, the percentage of students who were classified as ELL was significant and contributed 2.56% of the variability. This standardized beta was also negative, meaning that schools that had a higher percentage of students classified as E.L.L. had fewer students meeting PARCC expectations. Chronic absenteeism was also significant contributing 4.5% of the variability, and this standardized beta was also negative. The higher the percentage of chronically absent students, meant that fewer

students were successful on the PARCC exam. Student suspension was also significant and contributed 3.39% of the variability with a negative standardized beta. Again, the greater the percentage of students suspended meant a lower percentage of students meeting PARCC expectations.

Null Hypothesis No.2:

Null Hypothesis 2: There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and language arts performance as measured by the 2015-2016 PARCC assessment. The simultaneous multiple regression that was run dictated that we must fail to reject, or retain, the null hypothesis. While all of the variables combined were significant predictors of language arts success as measured by PARCC, the variable of Arts participation did not contribute significantly to the overall model.

Research Question No.3

What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education and their academic performance in math as measured by PARCC, when controlling for overall school level variables and the school district's median household income?

Answer

The predictive strength of socioeconomic status was seen to be even stronger in math PARCC performance. The model showed that 35.76% of predictive strength could be attributed to median household income, over 10% more variability than was seen in ELA performance. Whereas art participation, which was not significant, only contributed 0.21% variability, which was less of a contribution than was seen in ELA. Other significant contributing variables included the percentage of students who were classified as special education, which contributed

1.6% of the variability. It was a negative relationship, which meant that schools that had a higher percentage of students receiving special education services had a lower percentage of students meeting PARCC math expectations. Similarly, the percentage of students who were classified ELL contributed a negative 1.96% of the variability, meaning that schools that had a higher percentage of students classified as E.L.L. had fewer students meeting PARCC expectations. Chronic absenteeism was also significant and contributed 4.49% of the variability. It was also a negative variable, meaning the higher the percentage of chronically absent students, the fewer students who were successful on the PARCC math exam.

Null Hypothesis No. 3

Null Hypothesis 3: There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and mathematics performance as measured by the 2015-2016 PARCC assessment. The simultaneous multiple regression that was run dictated that we must fail to reject, or retain, the null hypothesis. While all of the variables combined were significant predictors of math success as measured by PARCC, the variable of arts participation did not contribute significantly to the overall model.

Research Question No. 4

What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education and the school's rate of student attendance, and can that relationship be classified as "value-added"?

Answer

Three different models were analyzed in a step-wise, hierarchical regression. The last model, No. 3, was found to be the strongest predictor of the outcome variable, chronic absenteeism, explaining 40% of the variability. Several variables contributed significantly to the model. Student enrollment is statistically significant in Model 3 and explained 1.35% of the variability. The positive beta indicated that schools with larger enrollments tended to have a larger rate of chronic absenteeism. The percentage of students identified as special education was also significant and explained 7.23% of the variability in the model. Special education was also a positive beta, meaning that schools with larger numbers of students identified as special education tended to have higher chronic absenteeism. The student suspension rate was also statistically significant in Model 3 and explained 5.9% of the variability with a positive beta, showing that schools with higher suspension rates also had higher levels of chronic absenteeism. Median household income was the strongest predictor variable, contributing 7.5% to the overall model. However, arts participation contributed significantly to the model with 1.3% of the overall variability. Since arts participation was added into the hierarchical regression model in the last step, and the change from Model 2 to Model 3 was found to be statistically significant, one can conclude that arts participation was a "value added" variable to the overall regression model. These findings are in line with earlier studies that showed while arts education did not improve academic performance, it did improve social-emotional outcomes (Costa-Giomi, 2004). More will be discussed on this in the sections to follow.

Null Hypothesis No. 4

Null Hypothesis 4: There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and a middle school's attendance

rates. In this hierarchical regression model, we see that the percentage of students who participate in the arts does have a statistically significant relationship to chronic absenteeism. Thus, we can reject Null Hypothesis No. 4.

Research Question No.5

What is the nature of the relationship between the total percentage of a middle school's student population who participate in arts education, and the school's student suspension rate, and can that relationship be classified as "value-added"?

Answer

Again, three different models were analyzed in a step-wise, hierarchical regression. The second model, No. 2, was found to be the strongest predictor of the outcome variable, student suspension rates, explaining a combined 40.4% of the variability. As in the other questions, median household income was the strongest predictor variable, contributing 10.24% to the overall model. The percentage of students identified as special education was also significant and it explained 1.61% of the variability in the model with a positive beta, meaning that schools with larger numbers of students identified as special education tended to have higher student suspension rates. The percentage of students identified as E.L.L. was also significant in Model 2, and explained 2.5% of the variability in the model. The standardized beta was positive, meaning that the greater the percentage of students identified as E.L.L., the greater the student suspension rate. The chronic absenteeism rate was also statistically significant in Model 2, and explained 6.4% of the variability in the model with a positive beta, showing that schools with higher chronic absences also tended to have higher levels of student suspensions. Arts participation was added as the variable of interest to Model 3. The change from Model 2 to Model 3 was not significant, so arts participation was not seen to be "value added" based on the results of the

hierarchical regression analysis. Furthermore, arts participation only contributed 0.36% variability to model 3 overall.

Null Hypothesis No. 5

Null Hypothesis No. 5: There is no statistically significant relationship between the percentage of students who participate in the arts at the middle school level and a middle school's suspension rates. In this hierarchical regression model, we see that the percentage of students who participate in the arts does not have a statistically significant relationship to student suspension rates. Thus, we must fail to reject, or retain, the null hypothesis No. 5.

Conclusions and Discussion

"There have been earnest debates about the value of the arts in education throughout our history, and the rationale for their inclusion in the curriculum has rarely been based on the value of learning the arts themselves. Rather, it has focused on their value in achieving other broadly accepted goals of public education" (Rabkin & Hedberg, 2011, p.41). This study looked at the merits of including arts education in the NJ public middle school purely for their ability to add value to other areas of the school. The study analyzed whether or not a meaningful relationship existed between arts education and student ELA and math performance as measured by PARCC. The data analysis indicated that arts education does not significantly influence middle school ELA and Math performance when controlling for socioeconomic status and other student and school demographic variables.

Next, the study looked at culture and climate issues such as chronic absenteeism and student suspension rates, and the results were mixed. Arts education did positively relate to student attendance at the middle school level, meaning that schools with high levels of arts participation tended to have lower levels of chronic absenteeism. The fact that arts education

added significant value to the school climate variable of chronic absenteeism is supported by other studies that show arts education improves students social-emotional development (Costa-Giomi, 2004; Catterall, 2009; Stoelinga et al., 2015). The Catterall (2009) study found that low-income students who had graduated from high schools with high arts involvement were more likely to graduate college with a B.A. degree and to have full-time jobs by age 26 than their peers who had low arts involvement. In the Costa-Giomi (2004) study, after three years of private piano study, elementary school children in the "experimental" group showed significantly improved "self-esteem" scores, compared to the students in the "control" group without piano lessons.

The results of this study indicated that the most powerful predictor variable for chronic absenteeism was socioeconomic status. The outcome variable of student suspension was not significantly influenced by arts participation. Like so many studies before it, this study showed that the strongest predictor of both student academic achievement and positive school climate was socioeconomic status (Coleman, 1966; White, 1982; Rosigno & Ainsworth-Darnell, 1999; Bornstein & Bradley, 2003).

This study also looked at whether or not there was a significant difference in the levels of arts participation among the various socioeconomic ranges represented in the study. While descriptive statistics showed that some differences in arts participation levels did exist, those differences were not statistically significant. This finding was in contrast to earlier studies which found that arts programs were significantly influenced by socioeconomic factors, most typically in the form of reduced access to arts education for low-income students (Fitzpatrick, 2006; Miksza, 2007; Catterall, 2009; Kurt, 2010). For example, the US Department of Education conducted a nationwide survey in 2009-2010, and found that 97% of elementary schools offered

designated music instruction each week when the rate of students receiving free or reduced lunch was less than 25% of the school population, compared to only 89% of elementary schools receiving music instruction when 76% or more of the school population is receiving free or reduced lunch" (Parsad & Spiegelman, 2012, p. 121). Another study looked at students already engaged in an instrumental music program and stated that "SES was found to be a valid and significant predictor of student retention, and a better predictor of retention than measures of academic competency or musical aptitude" (Klinedinst, 1991, p. 238). The study found that while instrumental music study was available in the school, students lacking in (parental) financial support were not able to participate in the program.

Finally, several studies found that while music students did perform better academically than non-music students, those music students self-selected to participate in music as a possible result of other factors, such as IQ and SES (Babo, 2004; Albert, 2006; Kinney, 2008; Elpus 2013). Thus, the predictive strength of the music participation itself could be diminished when taking other variables into consideration, specifically variables that could be identified as confounding. In this study, socioeconomic status, special education status, and English Language Learner status were seen to be significant predictor variables on student outcomes in several forms of analysis, whereas arts participation only contributed significantly once.

Policy and Practice Implications

The literature points to the fact that the arts are often used as a means to improve academic performance in low-income students (McLaughlin, 2000; Catterall, 2009; Stoelinga et al.,2015). The State of New Jersey legislates that arts education be a core subject and is required for graduation (NJ Administrative Code 6A 8-1.1). Music and visual arts courses are almost universally available in New Jersey schools, taught by certified arts specialist teachers (NJ Arts

Census, 2011, p. 1). This present study confirms that statement by finding that 206 out of 209 schools report at least music and visual arts education available for students, which means 98.5% of the schools in this study provide some form of arts education. However, the most powerful predictor variable for all five research questions in this study was socioeconomic status as measured by school district median household income. What does that mean for education policy and practice?

Schools in districts with high median household incomes performed well on both the academic indicators of ELA and math PARCC scores, and school climate indicators of student attendance and suspension rates (See Appendix A Tables, p. 114-119), and arts education did not impact that success in 4 out of 5 analytical measures. Conversely, in this study of NJ public middle schools, arts did not significantly contribute to improving failing schools, either. Access to arts education for low-income students is seen to be statistically similar to the access enjoyed by higher income students. However, the cross-over benefits of arts participation did not have a statistical impact on student outcomes for lower-income students in this study.

Findings for this study also connect with earlier research and theories regarding the concept of cultural capital (Bourdieu & Passeron, 1977, 1990), namely, that children from high socioeconomic backgrounds have access to arts and cultural activities outside of school, through their home life, that then give them an advantage in school (Bourdieu & Passeron, 1977, 1990). Cultural capital has been described and measured with criteria such as: attendance at music concerts, going to museums, and taking visual arts classes (DiMaggio, 1982); educational resources in the home (Roscigno & Ainsworth-Darnell, 1999); extra-curricular activities (Covey & Carbonara, 2010); and parental communication with their children about cultural/political issues (Downey, 1995). A Danish study found that "cultural participation (going to museums or

concerts) has a statistically significant and positive effect on academic achievement in high SES environments...but no effect in low-SES environments" (Jaegar, 2011, p. 294). This present study found that 23.81% of achievement on PARCC ELA tests, and 35.76% of achievement on PARCC math tests could be predicted by socioeconomic status. Arts participation in the school was *not* a significant predictor of academic achievement. This research, in light of the cultural capital studies mentioned above, impells schools to close the gap by providing greater access to arts and cultural opportunities to children in the school day.

Arts should remain a core subject in NJ public schools. However, this study has implications for education policy and practice that go beyond its scope. Research-based books have been written by authors such as Jonathan Kozol and Sudhir Venkatesh about the inequality and achievement gaps that exist throughout American education because school funding is tied to local tax levies, and the schools are negatively affected by impoverished communities. More must be done to combat the inequality that exists between wealthy school districts and poor school districts. When the strongest predictor for student achievement is socioeconomic status, no "one thing" can combat that large of an issue.

Arts education has been found to be beneficial to students and schools beyond simple test score measurements. Arts *help* students to tap into creativity and imagination, and to develop empathy (Bellisario & Donovan, 2012). Arts activities are innately collaborative and *help* students develop stronger social skills (Catterall, 2015). Arts *help* students tap into their other intelligences and modes of communication (Gardner, 1983; Robinson, 2011). Arts activities *help* encourage inner-city students to graduate (Israel, 2009). The arts *help* students grow into adults who participate in cultural and civic activities (Catterall, 2009). Finally, arts-based businesses

and cultural "development" districts are being fostered in cities and towns across the country as a means to improve the economy (Dwyer, 2011).

As discussed at the beginning of this dissertation, the late Eisner of Stanford University taught that there are myriad reasons to include arts education as a core curricular subject. Including: (1) discipline-based arts education that develops imagination needed for high-quality art performance; (2) visual cultural understanding that help students develop the language necessary to discuss the art they see and hear; (3) creative problem-solving skills that address challenges such as those experienced in the field of design; (4) creative self-expression that is central to human development; (5) preparation for the world of work, where the arts are used to develop broad skill-sets that can be used for productive work; (6) cognitive development, where the arts foster complex forms of thinking; (7) using arts to boost other areas of academic performance; and (8) integrating arts as a way to explain and teach other subject areas (Eisner, 2002).

Furthermore, the Center for Education Policy presented a paper in 2007 that gave four curricular suggestions in light of the modern emphasis on standardized tests to measure school achievement. These recommendations were: "1)Stagger testing requirements to include tests in other academic subjects; 2) Encourage states to give adequate emphasis to art and music.; 3) Require states to arrange for an independent review, at least once every three years, of their standards and assessments to ensure that they are of high quality and rigor; and 4) Provide federal funds for research to determine the best ways to incorporate the teaching of reading and math skills into social studies and science" (McMurrer, 2007, p. 2).

Although the findings from this study can only substantiate a significant relationship between arts participation and student attendance, the overall benefits of arts education cannot be

overlooked if public schools are to maintain the philosophy of educating the whole child (Dewey,1934; Eisner, 2002; Robinson, 2011). In light of earlier arts education theories and previous research, the following policy and practice recommendations seem to be in order:

- Provide access to high-activity arts experiences that are imbedded throughout the curriculum, not only in the designated arts classes. For example, teach select social studies and/or ELA lessons using relevant songs, acting, painting, etc.
- Fund the arts curriculum in such a way that it provides high-creativity, project-based opportunities for all students, not only those with the means to do the "extra" programs. For example, school bands and orchestra programs (which by design are high-activity and project-based) typically require parents to rent or purchase instruments for student use in school.
- Provide and fund arts-based, after-school programs on campus to augment the school-day learning in low-SES districts, because research shows that after-school programs improve student outcomes. They serve to provide the types of activities and experiences for low-income students in the after-school program, who may not have access to that cultural capital at home (McMurrer, 2007; Jaegar, 2011).

Recommendations for Future Research

Research needs to be done with large sample sizes, with robust representation across all federal income levels to see if any differences exist in the amount of access and impact of arts education on the various groups. Eisner points out that arts education for the sake of arts education is reason enough to ensure that they remain a part of the curriculum (Eisner, 2002), for it allows all students to be cognitively engaged in more diverse ways; research should be done to

ensure adequate and high-quality access to arts education is in place for all socioeconomic groups.

The primary purpose of this study was to explore the relationship between student efficacy and the percentage of students that participate in the arts at the school level. However, through a case-study design methodology, researchers might want to look in more depth at the time and curriculum given to students for arts education in each of the Federal Income categories. Using a case study design, more than just standardized test scores could be analyzed to see the impact of arts education across the school curriculum, culture, and climate. Researchers could look to see which, if any, of Eisner's eight curricular goals for arts education are implemented in these schools and what impact they have on student achievement, social-emotional well-being, and school climate.

In addition, this study could be repeated again using the same parameters and criteria, but rather than look at the relationship between student outcomes and "total arts participation," it could separate out each of the individual arts categories. There is more variability in the percentages of student participation at the school level for music, visual arts, and drama and dance than in the combination of "total arts". If a study were done to investigate the relationship between student efficacy and the percentage of students that participate in music, there may be statistically significant results that differ from this study. Similarly, a study could be done using the same parameters and criteria which looks at the relationship between student efficacy and visual arts. Finally, because the participation levels are so low for drama and dance participation, a study could combine those two art forms to see what influence, if any, they have on student efficacy.

Moreover, this study did not investigate exactly what constituted "arts participation" as self-reported by the schools on the NJ Performance Report for the 2015-2016 school year. A study could be designed to investigate how the arts curriculum is implemented in the schools. What does 100% "Any Visual and Performing Arts" really look like in a school? This investigation could look at arts instructional time, curriculum implementation, imbedded arts instruction in other subject areas, and extra-curricular arts activities, and the influence, if any, these variables have on student outcomes.

Another potential area of research might be to repeat this study in Catholic schools or private, independent schools in New Jersey or other states. Catholic schools and independent schools are private, meaning that they are not funded by government entities, but by the sponsoring institutions and parents. Furthermore, curriculum is chosen freely by each independent or parochial school, including whether or not to include arts education and how much of a role the arts play in the schools. Thus, in Catholic and independent schools there may be greater variability in the arts participation rates but in the independent school, less variability in socioeconomic status. As a result of differences in these variables, arts education may have more or less statistically significant influence on student efficacy.

Charter schools are another interesting area where this study could be re-created. Charter schools are publicly funded, similar to other public schools. However, students in these schools must apply and attend by choice. Therefore, looking at the influence of arts education on student efficacy in these schools may yield different results, due to the additional element of parental/student choice for the students to attend the charter school.

This present study was delimited to only middle schools in New Jersey with the 6^{th}-, 7^{th}-, and 8^{th} grade configuration. Another area of study would be to recreate this study in other states

that report the same school level variable data with the same school configurations. In New Jersey, a follow-up study could repeat this study, but delimit it to Grades 3-5 elementary grades that test for PARCC. Finally, a new study could recreate these questions at the high school level in New Jersey.

Finally, this study did not look at funding sources or amounts allocated in financing arts education for schools in this study. According to the 2011 Arts Education Census Project, "one-quarter of all New Jersey schools report that they use outside funding to offset budget decreases. This outside funding supports direct instruction, not optional activities" (NJ Arts Census, 2011, p. 14). Furthermore, "more than one-third of New Jersey schools receive funding from non-district sources, such as Parent/Teacher groups and district foundations" (NJ Arts Census, 2011, p. 14). Inequality in arts education funding sources and amounts in per pupil arts spending could have a statistically significant impact on the level of arts engagement that students receive in schools across the socioeconomic strata. This inequality could then have an impact on the efficacy of arts education to influence student outcomes in a positive way. Questions regarding arts education funding could be an excellent area for research to be conducted, either quantitatively or qualitatively.

Concluding Remarks

Plato wrote in the *Republic*, "education should be the art of orientation…It should not be the art of implanting sight in the organ, but should proceed on the understanding that the organ already has the capacity" (Plato, 380 BC). Humans are innately creative, and the role of educators is to help children uncover and express their own creative spirit and intelligence. Schools need to provide time, materials, and curricular importance for arts education to help foster the "capacity" of each student to learn across the curriculum. Putting greater emphasis on

one form of learning and expression, simply because it is tested by a "standardized" instrument, does a disservice to all children who are capable of learning and expressing that knowledge in many ways and media. "In speaking of this question of waste in education, I desire to call your attention to the isolation of the various parts of the school system, to the lack of unity in the aims of education, to the lack of coherence in studies and methods" (Dewey, 2010, p. 39). This study quantifies Dewey's warning because we see that isolating arts education from the curricular areas of language arts and mathematics does not enable the benefits of arts education to be seen throughout all curricular and social areas.

As a life-long musician and former music teacher, I know the impact that arts education had on me personally. When I was in middle school, I discovered that I had tremendous musical talent and was fortunate enough to have teachers and parents who encouraged me to develop those talents. I am "that student" who was on "free and reduced lunch," for whom arts education helped lift out of poverty to an upper-middle class lifestyle in adulthood. Was it just the music? The quantitative researcher in me knows that IQ and environment also had a positive impacted my achievement. However, I also know that the availability of high-quality and high-time allotments of arts education in my school were significant contributing factors.

As a professional music educator in international and private schools around the world and throughout the U.S., I also saw first-hand the positive impact that arts education had on my students. In international schools, students come from across the globe and speak various languages at home. However, one main common denominator for the students in these schools is the very high median income that they have as their economic background. In my experience as a teacher, the arts were significant contributors to student well-being and in their ability to acquire English-language skills. Music, visual arts, and drama in these schools helped students

learn to express themselves and find friends among strangers, when most of the other school subjects often created barriers due to language.

Both of these personal testaments to the impact of arts education do not involve standardized test scores. As educators, we are teaching the whole person in each of our students and preparing them to be productive adults in an ever-changing world. While this study did not reveal much, if any, statistically significant impact of arts education on student outcomes in NJ middle schools, we cannot rule out the personal impact that the arts may be providing for certain students across all socioeconomic spectrums in our State. Knowing that arts education can benefit even a few students in any type of school is a strong enough reason for me to remain an arts advocate.

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Appendix A: Federal Income Level 4 Descriptive Table

	N	Mean	Median	Standard Deviation
Enrollment	9	504.00	457.00	230.740
% Spec. Ed	9	19.78	21.00	4.024
% E.L.L.	9	9.71	9.00	8.112
Total % ELA	9	18.9	19.9	6.144
Total % Math	9	11.4	12.0	6.638
Grade 6 Mean ELA	6	719.667	721.5	4.885
Grade 6 Mean Math	4	723.5	723.5	2.887
Grade 7 Mean ELA	9	719.777	720.0	5.62
Grade 7 Mean Math	5	721.2	721.0	5.933
Grade 8 Mean ELA	8	722.875	721.5	6.707
Grade 8 Mean Math	3	718.333	718.0	7.506
% Absent 1-5 Days	9	32.888	33	12.908
% Chronic Absenteeism	9	18.2	16.0	13.311
% Students Suspended	9	31.156	21.4	23.134
% Faculty Attendance	9	94.0	94.0	2.0
% Total Arts Participation	9	83.111	82.0	18.864
% Music Participation	9	56.667	38.0	31.325
% Visual Arts participation	9	61.889	45.0	35.642
% Drama Participation	9	0	0	0
% Dance Participation	9	0	0	0
District Median Household Income	9	$33,466.33	$34,412.00	2021.246

Federal Income Level 5 Descriptive Table

	N	Mean	Median	Standard Deviation
Enrollment	17	737.24	664.00	330.680
% Spec. Ed	17	19.24	19.00	5.826
% E.L.L.	17	7.33	7.00	6.485
Total % ELA	17	33.0767	32.1	10.728
Total % Math	17	23.2	23.4	8.914
Grade 6 Mean ELA	16	732.438	732.5	9.5
Grade 6 Mean Math	16	727.563	729.0	8.278
Grade 7 Mean ELA	17	733.411	731.0	11.051
Grade 7 Mean Math	15	726.133	725.0	6.599
Grade 8 Mean ELA	17	732.88	730.0	8.971
Grade 8 Mean Math	11	723.273	720.0	9.85
% Absent 1-5 Days	17	37.235	37.0	6.437
% Chronic Absenteeism	17	14.447	13.4	5.037
% Students Suspended	17	18.212	15.6	13.001
% Faculty Attendance	17	95.823	96.0	1.237
% Total Arts Participation	16	91.25	99.0	13.173
% Music Participation	16	64.688	71.5	32.949
% Visual Arts participation	16	79.125	87.0	23.119
% Drama Participation	16	3.813	0	8.765
% Dance Participation	16	2.625	0	6.692
District Median Household Income	17	$44.588.71	$44,660.0	4244.38

Federal Income Level 6 Descriptive Table

	N	Mean	Median	Standard Deviation
Enrollment	54	684.37	617.00	386.943
% Spec. Ed	55	17.35	18.00	4.019
% E.L.L.	55	3.58	2.00	5.261
Total % ELA	55	46.095	45.5	14.604
Total % Math	55	34.531	35.0	12.34
Grade 6 Mean ELA	55	744.51	744.0	10.56
Grade 6 Mean Math	54	737.704	738.0	9.402
Grade 7 Mean ELA	55	744.71	743.0	13.175
Grade 7 Mean Math	53	735.132	735.0	7.98
Grade 8 Mean ELA	54	746.592	746.0	12.172
Grade 8 Mean Math	43	724.79	724.0	8.073
% Absent 1-5 Days	55	38.2	37.0	6.86
% Chronic Absenteeism	55	9.046	8.5	4.391
% Students Suspended	54	9.49	8.45	6.247
% Faculty Attendance	54	95.74	96.0	1.78
% Total Arts Participation	55	88.69	100	20.145
% Music Participation	55	60.38	58.0	31.591
% Visual Arts participation	55	70.164	73.0	30.642
% Drama Participation	55	2.127	0.00	7.876
% Dance Participation	55	2.982	0.00	14.827
District Median Household Income	55	$66,108.42	$66,221.00	6251.46

Federal Income Level 7 Descriptive Table

	N	Mean	Median	Standard Deviation
Enrollment	58	736.55	716.00	279.237
% Spec. Ed	58	15.47	15.50	4.143
% E.L.L.	58	1.70	1.00	1.879
Total % ELA	58	59.36	59.4	11.802
Total % Math	58	48.45	47.5	11.314
Grade 6 Mean ELA	57	753.473	754.0	10.655
Grade 6 Mean Math	57	746.14	746.0	9.176
Grade 7 Mean ELA	58	757.913	756.5	12.43
Grade 7 Mean Math	58	745.31	744.5	8.255
Grade 8 Mean ELA	58	756.172	753.5	12.82
Grade 8 Mean Math	55	729.036	728.0	9.35
% Absent 1-5 Days	58	42.33	41.0	6.26
% Chronic Absenteeism	58	6.27	6.4	3.24
% Students Suspended	58	6.256	5.15	5.3
% Faculty Attendance	58	96.78	97.0	1.78
% Total Arts Participation	56	92.34	96.5	9.842
% Music Participation	56	74.29	74.0	20.7
% Visual Arts participation	56	68.16	72.0	28.611
% Drama Participation	56	3.89	0.00	9.68
% Dance Participation	56	0.00	0.00	0.00
District Median Household Income	58	$87,101.12	$86,907.00	5509.61

Federal Income Level 8 Descriptive Table

	N	Mean	Median	Standard Deviation
Enrollment	58	680.88	668.50	254.634
% Spec. Ed	58	16.19	16.00	2.964
% E.L.L.	58	1.15	1.00	1.242
Total % ELA	58	70.94	73.9	9.277
Total % Math	58	60.134	60.8	9.31
Grade 6 Mean ELA	58	761.5	763.0	8.178
Grade 6 Mean Math	58	755.43	756.0	7.071
Grade 7 Mean ELA	58	768.55	770.0	10.056
Grade 7 Mean Math	58	751.22	752.0	7.4
Grade 8 Mean ELA	58	766.66	766.0	10.63
Grade 8 Mean Math	53	735.698	737.0	9.99
% Absent 1-5 Days	58	43.81	43.5	6.411
% Chronic Absenteeism	57	4.977	4.6	1.99
% Students Suspended	56	2.188	1.45	1.95
% Faculty Attendance	56	96.8	97.0	2.066
% Total Arts Participation	58	93.14	100.0	16.045
% Music Participation	58	71.655	79.0	24.88
% Visual Arts participation	58	76.36	82.5	25.54
% Drama Participation	58	6.93	0.0	14.354
% Dance Participation	58	2.31	0.0	10.406
District Median Household Income	58	$119,192.38	$116,214.50	14634.88

Federal Income Level 9 Descriptive Table

	N	Mean	Median	Standard Deviation
Enrollment	12	645.33	516.50	332.481
% Spec. Ed	12	16.33	17.00	3.200
% E.L.L.	12	1.28	1.00	.820
Total % ELA	12	79.8	79.7	6.92
Total % Math	12	72.38	73.65	6.09
Grade 6 Mean ELA	12	767.92	768.0	7.79
Grade 6 Mean Math	12	761.83	761.0	5.113
Grade 7 Mean ELA	12	776.58	777.5	9.737
Grade 7 Mean Math	12	760.75	762.5	6.54
Grade 8 Mean ELA	12	777.67	775.0	9.67
Grade 8 Mean Math	9	739.44	737.0	13.305
% Absent 1-5 Days	12	45.58	45.5	7.242
% Chronic Absenteeism	12	4.44	4.3	1.91
% Students Suspended	12	1.66	1.45	1.34
% Faculty Attendance	12	97.75	98.0	1.54
% Total Arts Participation	12	95.75	100	8.89
% Music Participation	12	79.58	84.0	20.075
% Visual Arts participation	12	85.25	91.0	16.38
% Drama Participation	12	6.58	0.0	13.55
% Dance Participation	12	3.58	0.0	12.413
District Median Household Income	12	$160,958.50	$159,623.50	11,579.7