Fall 11-2016

Fine Arts Coursework and Student Achievement Among African-American Students in a Midwest Setting

Douglas Erwin
Lindenwood University

Fine Arts Coursework and Student Achievement Among African-American Students in a Midwest Setting

by

Douglas Erwin

A dissertation submitted to the Education Faculty of Lindenwood University

in partial fulfillment of the requirements for the degree of

Doctor of Education

School of Education

Fine Arts Coursework and Student Achievement

Among African-American Students

in a Midwest Setting

by

Douglas Erwin

This dissertation has been approved in partial fulfillment of the requirements for the degree of

Doctor of Education

at Lindenwood University by the School of Education

Dr. Lynda Leavitt, Dissertation Chair	11/4/2016 Date
Dr. Susan Isenberg, Committee Member	11/4/16 Date
Dr. Sherrie Wisdom, Committee Member	11/4/16 Date

Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work here at Lindenwood University and that I have not submitted it for any other college or university course or degree here or elsewhere.

Full Legal Name: Douglas Edward Erwin

Signature: Douglas Edward Erwin Date: 11/4/16

Acknowledgments

Thank you to members of my committee for their expertise, time, wisdom, and patience throughout this process. This dissertation in its final form would not have been possible without my Chair, Dr. Lynda Leavitt, who provided feedback, encouragement, suggestions, and deadlines to help me in every aspect of this study. I would also like to thank my committee members, Dr. Sherrie Wisdom and Dr. Susan Isenberg, for assistance in creating valid, reliable, and easily understandable statistics, and for feedback and edits. Thanks also to Dr. William Emrick for his encouragement and to the Arts and Education Council and Missouri Alliance for Arts Education for their reminders of the importance of this research and their desire to publish the results to improve the arts education of Missouri students.

Thank you to the District Twelve School District (pseudonym) and their research and evaluation department for supporting this study and providing resources and data.

Thank you to my sons, Kyle, Sean, and Rhys, for allowing me the time to write, not pushing the delete button on the computer, and making each day a joy. Most importantly, my utmost thanks to my wife, Abby Erwin. She has been beyond supportive and encouraging throughout this process. I appreciate her love, support, and encouragement, and I am lucky to have her.

This dissertation would not have been possible without the guidance, support, and encouragement of these amazing people.

Abstract

The researcher designed this study to investigate a possible correlation between the number of years of fine arts coursework and achievement on the American College Test (ACT). The district studied was predominantly African American; therefore, similar schools may use the results to plan strategies to reduce the achievement gap. Results included a mild positive correlation between student ACT achievement and coursework in visual arts, and a moderate correlation between ACT achievement and performing arts. The more fine arts coursework a student received, the higher his or her ACT score. The researcher conducted a *z*-test for difference in means to compare the ACT scores of students with two or more years of fine arts to the district population's average ACT score. The researcher found significant statistical difference in ACT scores. Finally, the researcher conducted a *z*-test for difference in means to see if number of years of fine arts coursework correlated to student achievement on each of the ACT sub tests: English, Math, Reading, and Science. The researcher found students with two or more years of arts coursework scored higher on each sub test than students who only took one required year of fine arts. The researcher noted this study could be important to curricular programming and increased student achievement in the future.

Table of Contents

List of Tables

List of Figures

List of Abbreviations

A4A	Americans for the Arts
CCSS	Common Core State Standards
ECS	Education Council of the States
MSIP 5	Missouri School Improvement Plan: Cycle 5
NAEP	National Assessment of Educational Progress
NASAA	National Assembly of States Arts Agencies
NAS	National Arts Standards
NCAS	National Core Arts Standards
NCLB	No Child Left Behind Act of 2001
NEA	National Endowment for the Arts
SAT	Scholastic Aptitude Test
STEAM	Science, technology, engineering, fine arts, and math
STEM	Science, technology, engineering, and math

Chapter One: Introduction

Overview

At the time of this writing, fine arts coursework and the possible relationship with student achievement was the focus of research since 1995 (McNeal, 1995). With the economic climate during the years of this study and the adoption of the Common Core State Standards (CCSS), renamed to Missouri Learning Standards in 2015, some Missouri school districts opted to reduce arts instruction or reduce the number of arts courses (Missouri Alliance for Arts Education, 2015**).** Previous research revealed arts enrollment and arts education were positively correlated with student achievement, particularly on standardized assessments. Catterall's (1998, 2009) 12-year longitudinal study, as well as research by the College Board for the Scholastic Aptitude Test (Scholastic Aptitude Test [SAT], 2010), also noted arts enrollment resulted in improvement on standardized test scores among high school students.

During the time period of this study, the ACT served as the predominant assessment tool for college admission in Midwest area high schools. In 2014, the state of Missouri adopted the ACT as the measure of high school achievement under the Missouri School Improvement Plan: Cycle 5 (MSIP 5) (MODESE, 2014c). However, the researcher was unable to find studies recent to this writing measuring the correlation between arts education and achievement on the ACT. This study examined that possible correlation.

In 2013, the National Coalition of Core Arts Standards (NCAS), renamed National Arts Standards [NAS] in 2014) defined all art education as having three elements: process (or rehearsal), product (or performance), and evaluation (National Core

Arts Standards [NCAS], 2014a.). Theatre and dance included an additional element of interrelation (renamed 'connection' in 2015) to other disciplines as they integrated other fine arts into their essence (NCAS, 2014e; NCAS, 2014i). The cooperative learning elements of arts education, defined as a Best Practice in Education (Marzano 2005, 2015) and listed as an essential element of fine arts instruction, varied greatly depending on the specific arts discipline (Arts and Education Council, 2015). In the researcher's experience, the two visual arts, visual art and architecture, required individual and solitary work and offered opportunities for a student to personally reflect. In contrast, the three performing arts, music, dance, and theatre, required collaboration and immediacy.

According to the NAS (2014), all fine arts shared specific commonalities known as the '11 anchor standards.' These standards repeated at each grade level and within each arts discipline, with higher levels of complexity that defined fine arts as a spiral curriculum, similar to English/Language Arts, rather than as a linear one, such as mathematics (NAS, 2014). Tobias (2015) defined spiral curricula as the same essential concepts repeated at each grade level at an increasingly higher level of complexity and sophistication.

Some arts education teachers also observed a link between increased arts education in schools and improved school climate, culture, and test scores. In an article recent to this writing, a principal in Roxbury, Massachusetts, terminated all security guards in a lower-income middle school and replaced these individuals with fine arts teachers (Turr, 2013). After this action, the school noted an increase in attendance, student morale, and assignment completion, with an increase in student test scores by the end of the year. In a separate study, Catterall (2002a, 2002b) found students enrolled in

high school fine arts classes contributed to a higher collegiate completion rate and had a higher college grade point average than students not enrolled in fine arts courses in high school. Catterall (2002a, 2002b) further observed those students had a higher job retention rate in the 10 years following collegiate graduation. After adding fine arts teachers to the staff, the city of New York observed increased attendance, along with an improvement in school climate and morale (Israel, 2009). Other studies found the arts integral to teacher attitude and retention. One study found that English and math teachers, who used fine arts to aid in content area instruction, yielded higher retention rates and reported better job satisfaction than those teachers who did not (Arts Education Partnership, 2009).

Background of Study

The U.S. Department of Education (USDOE) and the No Child Left Behind (NCLB) Act (2003) defined the fine arts as a core content area, reaffirmed by the USDOE in 2015. NCLB (2003) further stated the traditional core subjects of language arts, mathematics, social studies, and science had embedded content within the curriculum of fine arts classes. However, examination of the relationship of the arts to other disciplines in a modern (recent to this writing) educational system was absent. Nor did the researcher find previous studies completed on the use of the arts to lower the achievement gap.

The State of Missouri Department of Elementary and Secondary Education (MODESE, 2015c) MSIP 5 required a minimum amount of fine arts instruction to achieve best practices. In the economic situation leading up to 2015, many school districts reduced arts classes to a minimum to meet the state requirement, rather than

using arts courses to enhance holistic student achievement ("Impact of the Arts," 2015). An extensive review of the then-current literature, conducted by the researcher, found the content area of the arts were non-tested and little data existed to determine the relevance or significance of participation in the arts in a K–12 educational environment.

During the years of the study, 2008 to 2013, the researcher worked with approximately 100 students annually in a classroom setting and 150 students annually in an after-school setting instructing theatre arts. Additionally, during the beginning of the study, the researcher supervised 98 fine arts teachers, who instructed approximately 11,000 students in visual art, vocal music, instrumental music, theatre, and dance (Missouri Department of Elementary and Secondary Education [MODESE], 2008). At the conclusion of the study, the number of arts teachers was reduced to 78, although the number of students in elective arts courses had increased (MODESE, 2015b). During the time of the study, the researcher was responsible for overseeing the arts curriculum for the district, as well as providing professional development for teachers.

Researched Context

The district studied was located in a lower middle-class urban area in Missouri, serving primarily African American students. The district demographics at the conclusion of the study were 88% African American, 10% Caucasian, and 2% Other (predominantly Hispanic and Middle Eastern) (MODESE, 2013b). At the conclusion of the study, the district was at 78% free and reduced lunch and 27% Special Education students (MODESE, 2013b). During the time of the study, through MSIP 4, the researched district was the only primarily African American district fully accredited by the State of Missouri (MODESE, 2015c). During the final year of the study, the district

admitted approximately 500 transfer students from unaccredited districts, with approximately 190 of those students at the high school level (District Twelve, 2014.)

This researcher investigated a possible relationship between enrollment in courses in fine arts and student achievement in core subject areas, as measured by a national standardized assessment used as a measure of college preparedness. The goal of this study was to examine the purpose of fine arts coursework in relation to holistic learning and to ascertain whether specific methods of the arts disciplines resulted in higher achievement. The researcher conducted a quantitative study among high school students in a predominantly lower-socioeconomic African American, Midwestern school district.

Independent Variable

The independent variables were the number of years of arts coursework each student completed and the specific arts discipline that each student chose to study.

Dependent Variables

The dependent variable was the score each student achieved on the ACT.

Hypotheses

H_a1:(Alternate)There is a relationship between high school student ACT scores and the number of years the students enrolled in fine arts coursework.

H_a2 (Alternate): There is a difference between the average high school student ACT composite score when compared to students who enrolled in multiple years of fine arts coursework to the average ACT composite score for the district population 2008–2013.

H_a3 (Alternate): There is a difference between the average high school student ACT composite score and average ACT sub score in English, math, reading, and

science when compared to students who enrolled in multiple years of fine arts coursework and average ACT sub score in English, math, reading, writing, and science of students who have enrolled in only the one required year of fine arts 2008–2013.

Significance of the Study

In the years of the study, the ACT was one of two major assessments used to gauge college readiness and acceptance into institutions of higher education in American Colleges and Universities (American College Test, Inc. [ACT, Inc.], 2015); the other major assessment was the Scholastic Aptitude Test (SAT). The SAT contained two assessed areas, verbal and quantitative, and was the predominant measure used by colleges and universities on both the East and West coasts of the United States to assess high school students for college readiness (Scholastic Aptitude Test [SAT], 2013). In contrast, the ACT was more common in the rest of the United States, particularly in the Midwest, and measured student achievement in five areas: English (grammar and sentence usage), mathematics, reading, and science, with the optional test of Plus Writing (ACT, Inc., 2013). In contrast, the SAT conducted studies on high school preparation and achievement on the test itself. In studies conducted in 2005 and 2010, research showed that for each year of fine arts a high school student completed, he or she could expect to score 11% to 13% higher on the SAT test than a student who had not taken fine arts coursework (SAT, 2010).

In contrast, the only study found in the then-current literature regarding fine arts and ACT scores was among students who declared fine arts as the major area of study in college. ACT, Inc. (2011), found students who declared a major in fine arts tended to

score, on average, one point higher on the ACT than the national average of 21. The researcher found no study that examined the academic outcome of multiple years of high school fine arts compared to the results on the ACT. Furthermore, no examination of specific arts disciplines and the academic outcomes on ACT achievement existed, to the extent of the researcher's search. This study added to the then-current literature on arts education and research by examining fine arts instruction and student ACT scores.

Limitations

There were several limitations to the study, including the structure of the ACT itself. A student may have taken the ACT multiple times and only his or her highest score was reported; therefore, the researcher was unable to measure if a student had previously participated in the ACT. This potentially skewed data as a positive correlation, due to reduction of test anxiety, rather than fine arts courses. Additionally, many schools (including the district studied) offered ACT Prep courses, and the researcher was unable to assess whether a student completed an ACT Prep course; and thus, altered his or her finalized test score.

Not all student ACT scores may have transferred to the researched district's records, due to some students being transfer students, and arts instruction in the district from which the students originated differed greatly from the art offerings at the district studied. Additionally, due to the structure of the researched district's extracurricular programs, the researcher was unable to track if a student was involved in an extracurricular arts program. Students may also have taken arts instruction through community programs, which were not reported to the school.

A relatively large percentage of the district population (10%) identified as homeless at the time of this study, and 20% of the researched district was considered transient (District Twelve, 2015). Both factors could have altered course enrollment and student stability, as well as a student's ability to register for the ACT or complete arts coursework.

During the years of the study, the ACT allowed students to take the test an unlimited number of times, which resulted in the highest score overriding any previous lower score. As a result, there was no way to determine how many times a student took the test, since ACT, Inc., reported the highest score a graduate earned (District Twelve, 2016). From 2008 to 2013, the ACT was offered nationally four times per year, in October, December, February, and June, with school districts able to petition to offer the test two additional times in September and April. This meant a student could have potentially taken the test 24 times, with only the top score reported. There was also no record of how many times a student took the ACT test. This allowed for some margin of error in the research results, as there was no way to measure if the results were from repetitive exposure to the test or from the arts instruction.

Data used in this study covered a five-year period only, and those five years could be atypical for the researched district. The district scores may also be considered outliers when compared to the national population taking the ACT test. The writing subsection within the ACT was also optional and not offered continually throughout the time period of the study. One other major limitation for Hypothesis 2 was that state-reported scores were only reported for graduates. There was no average ACT score for the district reported by ACT, Inc., unless the student taking the ACT graduated during the same

calendar year. This meant the district data could contain ACT scores from students who took the test in eighth grade and had scores reported five years later. In this study, the scores used to distinguish fine arts courses were from all students in grades nine through twelve. The researched district offered arts instruction in visual art, theatre, and music (both instrumental and vocal), and not dance or architecture, which might also have influenced the results.

An additional limitation was test result reporting. The researcher planned to disaggregate the English and Plus Writing scores of the ACT, as the writing test was an optional test. The researcher believed this might shed insight on possible correlations between arts classes and composition. Unfortunately, the secondary data was reported by ACT, Inc., to the district with the English and Plus Writing scores averaged together, the same as it was reported to colleges. Upon further investigation, the researcher found that while a student received a separate English and writing score, the scores disaggregated to educational institutions only upon student request, usually if the college or university required a writing component as part of the admissions process.

There was also no record of a student's Plus Writing score if a student retook the ACT and did not complete the optional Plus Writing section on a retake of the ACT. For example, a student could have taken the Plus Writing test on the first ACT attempt and had it averaged with his or her English score, but then elected not to take the Plus Writing test the second time he or she took the ACT. In the event a student declined to take the optional Plus Writing test and then scored higher on the English subsection and the composite ACT, the original scores on the Plus Writing subsection were eliminated

completely and replaced with the higher English score. This created some possible margin of error in the English subsection of the ACT.

The recording of ACT scores for the state of Missouri created an additional limitation. Rather than scores reported by calendar year (January–December), the state required districts to disaggregate ACT scores by scholastic calendar year (July–June). This meant all data reported covered a span of dates from July of the previous calendar year through June of the following year. For the purposes of this study, ACT scores from September through June of a scholastic year were considered a full year's worth of data. As a result, the period of the study ran from September of 2008 through June of 2013.

Another limitation to the study was the atypically high number of transfer students (MODESE, 2015b). Due to a Missouri Supreme Court ruling in 2013 (since overturned), students from an unaccredited school district were able to attend any accredited district provided the new district was able to accept them (MODESE, 2016c). The district studied accepted over 500 students from two unaccredited school districts in the final year of the study. Almost 200 of those students were at the high school level (District Twelve, 2013); however, those students had ACT scores still housed at the original districts for one of the scholastic years studied. This allowed for a possibly inaccurate sample set.

The issue of transfer students further compounded because arts programming was different in the two unaccredited districts supplying transfer students to the district studied (MODESE, 2015b). The districts where students transferred from did not offer orchestra instruction, began band instruction in seventh grade rather than fourth grade (as

the subject district did), did not offer a full four years of theatre instruction (instead offered semester theatre courses), and had limited vocal music and visual art offerings. However, the studied district attempted to place students in parallel arts courses (personal communication, M. Motil, art department chair, October 24, 2014). Those differences in arts programming could have influenced the results of the study.

The structure of visual art classes further complicated the study. For the researched district, all visual art courses were one semester long, and all students enrolled in Art Basics prior to enrollment in another visual arts course. The only visual arts courses with more than one semester prerequisite were Painting (which required both Art Basics and Drawing), Drawing 2, Airbrush 2, Ceramics 2, Graphic Design 2, Jewelry 2, Sculpture 2, Advanced Art Studio, and Advanced Placement Art History. To insure all students enrolled in more than the one required year of fine arts, only the courses mentioned above, which required an additional art course besides Art Basics, were used for the study. However, it was possible several students enrolled in more than one year of visual art instruction by choosing several visual arts electives. The district's MODESE reporting instrument had no way to track this. For example, a student could have taken Art Basics, Graphic Design 1, and Sculpture 1 and not identified as being an intermediate-level visual art student.

Additionally, class sizes varied widely among the three high schools. According to visual arts teachers, many of the visual art classes were used to fill a student's schedule and not selected as electives by the students who were enrolled in the course (personal communication, M. Motil, art department chair, October 24, 2014). This allowed for the statistical irregularity of choice-of-course as opposed to assignment-to-a-course.

One other limitation was extracurricular involvement. Many of the fine arts studied had an extracurricular aspect, and there was no way to track student involvement in after-school plays and musicals, choirs, art club, marching band, or string-quartet work, and isolate it from the scholastic aspect. Many community offerings also existed in these areas through churches, Boys & Girls clubs, community theatre, and orchestras. The schools researched did not distinguish students who participated in an extracurricular event for a class versus those who only participated in the extracurricular. Therefore, a student could have possibly benefitted from fine arts, yet not enrolled in the course. In addition, the band program specifically required students to be involved in extracurricular marching band, and the theatre program required outside involvement in plays and musicals. Extracurricular involvement could have led to a possible difference in student attendance and achievement. The inability to track this area was a limitation.

Another limitation was the recording of student performance. Since student data was reported in a district spreadsheet, students who failed the fine arts courses in which they were then-currently enrolled were still included in the base data. This meant any positive correlation between arts instruction and student achievement on the ACT could be skewed low, due to failure rates.

The final limitation was the student population. Since 20% of the student population was considered transient, there was no way to separate whether fine arts instruction or consistency of instruction was the major element in any change in achievement (District Twelve, 2013). Additionally, 10% of the population was considered homeless (MODESE, 2015b), which could have altered the ability to participate or be involved in the extracurricular aspects of the selected fine art.

Definition of Terms

ACT: A nationally-normed, standardized assessment given as a measure of college readiness in the areas of English, math, reading, science, and writing (ACT, Inc., 2013).

Achievement gap: A measurement that separated economically disadvantaged students and students of color from less disadvantaged students and a highly discussed, researched, and controversial concept for nearly 40 years prior to this writing. While the gap narrowed considerably through the late 1980s, particularly between Blacks and Whites, progress was marginal and below par. Achievement of minority students remained one of the most pressing problems in education (Education Council of the States [ECS], 2013).

At-risk: Children who lived in poverty, were disabled, had limited English proficiency, and/or were raised in dysfunctional or abusive homes; these children were at risk of failing in school and beyond (ECS, 2013).

Fine arts*:* Coursework in dance, media arts, music, theatre, and visual arts (National Coalition for Core Arts Standards, 2013).

Language arts: Coursework in reading, writing, speaking, listening, and language (MODESE, 2013a).

Mathematics: Number (which includes whole number, operations, and relations) and geometry, spatial relations, and measurement (MODESE, 2013a).

Music education: Learning that should impart knowledge of both broad and specific skills about music, as well as of how instruction is developed (U.S. Department of Education [USDOE], 2013).

Science: The study of physical sciences, life sciences, earth sciences, and engineering (Next Generation Science Standards, 2013).

Social studies: History, geography, political science, economics, psychology, and sociology and current events (MODESE, 2013a).

Student achievement: The ability of a student to graduate from high school, acquire a college or advanced degree, or earn a middle-class living (ECS, 2013).

Theatre education: Lessons in drama, or practice of drama (Young, Cordes, & Winner, 2014).

Traditional core: Language Arts, mathematics, social studies, and science coursework (ECS, 2013).

Visual art education: Lessons on art or practice of Drawing or painting (Young et al., 2014).

Summary

Arts coursework and instruction were reduced in several geographic areas in the state of Missouri, despite the fact that past research revealed a relationship between the arts and student achievement, as a result of the revision of mandatory arts courses at the elementary level under MSIP 5 (Missouri Alliance for Arts Education, 2015). During the time of this study, the ACT was the predominant assessment used for collegiate acceptance in the Midwest (ACT, Inc., 2015). This research study examined the possible correlation between arts courses and achievement on the ACT in a secondary setting. Additionally, the researcher examined each arts discipline and student achievement, both on the ACT holistically, and on each subsection of the ACT.

Under MSIP 5 (2014) ACT, scores were used as one of the standardized tests that directly determined school district accreditation in Missouri and school ranking (MODESE, 2015b). Beginning in the spring of 2015, all Missouri students ranked as juniors were assessed on the ACT as a part of the accreditation process (MODESE, 2015b). As a result of the change in MSIP 5, the researched district changed status. Under MSIP 4, the district was listed as the only predominantly African American school district fully accredited by the state of Missouri (District Twelve, 2012). Under MSIP 5 the district changed status to that of an at-risk district, or one in danger of changing accreditation status from fully accredited to that of provisionally accredited or unaccredited (MODESE, 2015b). The researcher believed the results of this study could assist other at-risk districts as they selected curriculum that best prepared their students for success on the ACT and could help drive curricular planning to help maintain district accreditation.

Chapter Two includes a review of related literature on arts education, and of literature related to an examination of the history of arts programming, the relationship of the fine arts on brain development, past research on arts education and standardized test achievement and related areas, and the implications of the results of past research. Chapter Three describes the research methodology used in the study. Chapter Four states the statistical results of the study, and Chapter Five provides an analysis of the data and recommendations for future planning.

Chapter Two: The Literature Review

At the time of this writing, arts education research was a focus since the late 1970s (Forseth, 1980). Since that time period, fine arts educators and researchers expressed concerns about continuity and standardization of arts education as a core discipline. Under both the NCLB Act of 2001 (2003) and the multiple acts circulating in the U.S. Congress in 2015, fine arts was listed as a core area of study. One problem, however, existed within local versus national influence, regarding curriculum and instruction (NAS, 2014).

In 2015, the United States had one national standardized test to measure fine arts instruction, the National Assessment of Educational Progress (NAEP). While the NAEP assessed core content areas yearly at grades four, eight, and twelve, due to funding, fine arts was assessed only once every three years at grade eight (Missouri Alliance for Arts Education, 2015). Furthermore, theatre and dance were eliminated from the NAEP assessment in 2012, due to a flaw in obtaining a consistent sample population in eighth grade (Missouri Alliance for Arts Education, 2015). In the NAEP assessment of 2015, only three districts in the state of Missouri were assessed for fine arts (NAEP, 2015).

Inconsistencies in arts education and curricular programming meant some states had no students assessed as part of the national sampling. In 2015, each state tracked longitudinal data in English and math, by comparing their state scores over a 30-year time frame (NAEP, 2015). However, the NAEP (2015) was administered to students at only one grade level for fine arts, as opposed to three for the core areas, and was only assessed once every three years, making it impossible to measure state growth or student

achievement in the arts over a longitudinal period (Missouri Alliance for Arts Education, 2015; NAEP, 2015).

The inconsistency of arts assessment was an area of concern for the Department of Education for many years. In a national address in April 2010, Secretary of Education Duncan spoke about the issues regarding arts education:

> All of you know the history all too well. For decades, arts education has been treated as though it was the novice teacher at school, the last hired and first fired when times get tough. But President Obama, the First Lady, and I reject the notion that the arts, history, foreign languages, geography, and civics are ornamental offerings that can or should be cut from schools during a fiscal crunch. The truth is that, in the information age, a well-rounded curriculum is not a luxury but a necessity. George Washington sat down to write a letter to a bookseller. But Washington did not recount the recent triumph over the British. He asked for books instead, because, he wrote, "to encourage literature and the arts is a duty which every good citizen owes to his country." (as cited by Duncan, 2010, p. 2)

Duncan attempted to be an advocate of arts education in speeches and essays delivered in both 2010 and 2013, while still supporting initiatives such as the CCSS, resulting in the reduction of arts classes (MODESE, 2014a; International Arts Education Standards, 2011).

According to Evans (2008, 2012, 2016) at the University of California, Berkeley, arts programs were reduced as a result of NCLB (2003); and as test scores dropped, time spent in math and ELA classes increased, with a reduction in arts courses. Evans (2008,

2012, 2016) provided a historical overview of the correlation between arts and academic achievement, starting with the Mozart Effect and how those results were misinterpreted. The gains demonstrated, after researchers played music by Mozart for students, only lasted 15 minutes and only impacted college-aged students (Evans, 2008, para. 13). Arts advocates, however, immediately stated that playing Mozart increased test scores.

Evans (2008, 2012, 2016) then reviewed the dominant studies of arts education and achievement, pointing out some contradictions in research; specifically, while studies of arts education resulted in correlations between student enrollment in arts courses and achievement on standardized tests, there was no indicator of arts as a causality of increased academic performance. Evans (2008, 2012, 2016) went on to clarify, by citing past research that examined which academic skills the arts actually taught. Evans (2008, 2012, 2016) restated the work by Davis and Eisner, who found the arts taught the skills of: imagination, which according to Davis, should be inherent within every subject area; visualization of abstract concepts including emotions; perseverance and completion of a task; connectivity with peers and environment; engagement in other academic disciplines; and responsibility. More importantly, Evans (2008, 2012, 2016) and others ("Reinvesting in Arts Education," 2011) observed, since the arts tended to engage students who were not normally engaged in academic pursuits, arts were used extensively to increase test scores among at-risk youth.

The National Endowment for the Arts (NEA, 2012) found "At-risk students who have access to the arts tend to have better academic results, better workforce opportunities, and more civic engagement" (p. 1). However, the primary study of the NEA focused specifically on arts engagement and student participation. In the wake of

the CCSS, fine arts courses were viewed and programmed in a scholastic setting, particularly among the nation's poorest schools (NEA, 2012). According to a study by the Ohio Department of Education (Education Council of the States, 2013) recent to this writing, fine arts offerings dropped from 100% of schools providing arts instruction to only 81% providing arts instruction, between the years of 2001 and 2011, in schools where 76% or more of the students qualified for free and reduced lunch (pp. 11–12). According to the Department of Education (2013), at the secondary level "91% of our schools offer music, 89% offer visual arts, 12% offer dance, and 45% offer theatre" (p. 1). These findings were repeated in studies by the President's Committee on the Arts and Humanities (as cited in "Reinvesting in Arts Education," 2011). According to a study by Arts Education Partnership (2014), variation occurred in the way states addressed arts education and resulted in "twenty-seven states [who] define the arts as a 'core' or 'academic' subject; most definitions refer to the arts in general terms, such as 'the arts,' 'the fine arts' or 'the visual and performing arts" (p. 3) as opposed to listing specific arts disciplines, such as music, visual art, or theatre. This finding was repeated in other studies, as well (Bellisario & Donovan, 2012; Elpus, 2013a).

While past research revealed the value of arts education, then-current reality revealed a difference. According to Ruppert (2006), this especially impacted longitudinal outcomes for students in lower-socioeconomic areas. Ruppert (2006) stated the study of arts was vanishing from schools and that lower-socioeconomic schools had the largest loss of programming. In 2015, only 17 states had some form of state assessment of students in the arts; and from those 17, most did not use the arts assessment as part of the district review (Arts Education Partnership, 2014, p. 3). Kentucky, Oklahoma, and New

Jersey, specifically, required some form of arts program review to be part of the state process for school district accreditation (Arts Education Partnership, 2014; ArtScan, 2014). Missouri was one of few states that required time spent in arts instruction at the elementary level (Arts Education Partnership, 2014; ArtScan, 2014; MODESE, 2013a). However, the researcher found many Missouri schools moved toward eliminating or reducing instruction in fine arts courses, as there was no perceived link between fine arts courses and achievement on standardized tests, despite large amounts of research to the contrary, as synthesized in the literature review in this chapter. Districts in Missouri seemed more willing to eliminate arts instruction, due to the removal of a consequence for lack of fine arts education under MSIP 5 (Arts Education Partnership, 2014; MODESE, 2014a, NAS, 2014).

Under MSIP 5, elementary fine arts education throughout the state downgraded to a Best Practice in Education, rather than a mandatory educational element, as was previously enforced under MSIP 4 (MODESE, 2014a). Missouri elementary schools recommended 50 minutes of music and art instruction per week, and high school students were required to enroll in one credit of fine arts through dance, music, theatre, or visual art, to graduate from high school (MODESE, 2013a, 2015a). Fine arts were considered a 'suggested elective' in middle school and not a required course (MODESE, 2014a). During MSIP 5, the reduction in arts programming also occurred in other states, such as Louisiana and Illinois (USDOE, 2013).

In March of 2014, the state of Nebraska became the first state to offer standardized assessments in fine arts (Arts Education Partnership, 2014). Many other states each required one year of fine arts for high school graduation, but no standardized

testing. In contrast, Iowa was the only state that did not require a fine arts credit for high school graduation; although Iowa did cite the fine arts as part of a college preparatory program (Arts Education Partnership, 2014; NAS, 2014; "Reinvesting in Arts Education," 2011).

Fowler (1996) commented in *Strong Arts, Strong Schools*, public opinion did not always view fine arts the same way as it viewed the core content areas of math, English, science, and social studies. Fowler (1996) found that arts programs were tied to school attendance and academic success. Budgetary reductions often resulted in popular opinion driving curricular programming and oftentimes resulted in the elimination of arts programs (Fowler, 1996). Duncan (2010) described then-current curriculum as "narrowed" (p. 4), leaving students non-engaged. Duncan (2010) stated dropout rates were tied to student engagement and interest in the subject and further posited that fine arts were a way to increase student engagement and stimulate interest in school. These findings were echoed in the research of Duma and Silverstein (2014) when studying arts integration, after a decade of arts integration into core areas.

Fowler stated, as early as 1996, "Arts electives are being replaced by computer science, more math, more English, more history, exactly what economic interests dictate" (p. 9). The adoption of the CCSS, which assessed only English and Math, exemplified this point, according to research. In 2015, Missouri only assessed the areas of English, mathematics, science, and government (MODESE, 2016a). Testing was tied directly to district accreditation. If a subject was not tested, there was not a state mandate requiring that the subject be offered (MODESE, 2015a). This resulted in a reduction of the number

of arts programs offered in many school districts (Missouri Alliance for Arts Education, 2015).

In 2015, teachers often complained that testing drove instruction (personal communication, M. Motil, art department chair, October 24, 2014) and curricular areas were not given focus or funding by school districts. Under the instructional directives provided by the NCLB Act (2003) and the revision of state curriculum to the CCSS, described as the Missouri Learning Standards, statewide tests determined school district accreditation, teacher and administrator jobs, and funding for school districts (NEA, 2015). This proved to be a trend in many states, including Ohio, where high stakes standardized testing affected arts programming (Pistone, 2002).

While arts education appeared to be shrinking in many areas (Missouri Alliance for Arts Education, 2015), there was contradictory data that implied arts programming might have been increasing, albeit in different ways than traditional arts instruction. According to the National Assembly of States Arts Agencies (NASAA, 2006), many states were integrating arts into the curriculum as part of a comprehensive education reform strategy. The study found most Americans perceived arts education as essential to creating a well-rounded and productive high school graduate (NASAA, 2006). Bellisario and Donovan (2012) found this mind-set echoed among teachers.

Since the NASAA report in 2006, however, the educational standards under NCLB (2003) stated arts were an essential content area. The standards under NCLB were originally replaced by the CCSS (MODESE, 2015a) and eventually by the Every Child Achieves Act in 2015. Under the CCSS, 28 states altered their mandatory arts education course programming to a Best Practice, providing no penalty to any district

unable to comply with arts offerings (USDOE, 2013). Based on past research (Catterall 2002a; Missouri Alliance for Arts Education 2015), the reduction of arts education was a sure way to reduce student achievement in almost every other curricular area. Historical research showed that arts education linked to increased achievement in almost every academic area (Arts Education Partnership, 2014; Burton, Horowitz, & Abeles, 2000; Catterall & Waldorf, 1999, 2002; Elpus, 2013a, 2013b; NEA, 2015). Fine arts also augmented programs to enrich or challenge students and to deal with the challenges of instructing gifted students.

Research addressed the perception that most students who excelled in the fine arts became predisposed toward academic giftedness (Elpus, 2013a, 2013b; Goldstein, 2011; Michalos & Kahlke, 2008; Stornelli, Flett, & Hewitt, 2009). Research indicated that although many arts programs screened for giftedness, students in an arts magnet program were not more academically inclined than those in the general population (Imms, Jeanneret, & Stevens-Ballenger, 2011; Stornelli et al., 2009). Students in arts programs also tended to show the least aptitude in mathematics and to show the greatest signs of stress regarding that discipline (Imms et al., 2011; Stornelli et al. 2009).

Unlike Stornelli et al.'s (2009) study of arts and mathematics, arts education linked to higher student achievement in literacy in many past studies. Researchers hypothesized that the analysis of artwork in visual art aided in the decoding of text (Catterall, 2009; Joseph, 2014; Mastrorilli, Harnett, & Zhu, 2014). Likewise, the reading and analysis of music and script analysis in theatre also added to the ability to decode text in English Language Arts (Inoa, Weltsek, & Tabone, 2014; Jensen, 2005; Joseph, 2014; Nelson, 2011).

Catterall (1998, 2002a, 2002b, 2009) found increased links to literacy and arts education in multiple studies. He found

> the arts pay off most expansively in basic reading skills, language development, and writing skills. Increases in general academic skills also show up and appear to reinforce these specific literacy-related developments. These skills emphasize focus and concentration, skills in expression, persistence, imagination, creativity, and inclinations to tackle problems. In addition, a wide range of social skills accompanies learning in the arts and engagement in arts activities. (Catterall, 2009, p. 24)

Most research regarding the arts and literacy pertained to the elementary level and that of emergent readers learning the skills of decoding and interpreting text (D'Agrosa, 2008; Dege & Schwarzer, 2011; St. Clair, 2014). Elementary students with additional exposure to the arts were more likely to develop literacy skills at an earlier age (Darrow, 2008). These differences were especially pronounced among lower-socioeconomic students (Duma & Silverstein, 2014; Register, Darrow, Standley, & Swedberg, 2007).

Considerable research occurred regarding the benefits of arts education at the high school level regarding literacy (Arts Education Partnership, 2014; NCAS, 2014a, 2014b; Respress & Lutfi, 2006). Studies found that students who participated in an increased number of arts courses at the secondary level had an easier time decoding information, interpreting author intent, and analyzing literary terms. Students were also found to have an increased ability to summarize text.

Several studies, recent to this writing, showed significant statistical results. In a 12-year longitudinal study of high school students, in attendance and post-graduation

(Catterall, 1998, 2002a, 2009), found the following: “Intensive involvement in the arts during middle and high school associates with higher levels of achievement and college attainment, and also with many indications of prosocial behavior such as voluntarism and political participation” (Catterall, 2009, p. 3). These findings were repeated in the work of Eason and Johnson (2013), Elpus (2013a, 2013b), Mastrorilli et al. (2014), and Moody and Phinney (2012). Catterall (2009) and Eason and Johnson (2013) also tracked students following graduation and found that students who participated in fine arts were twice as likely to complete a bachelor’s degree, as those who did not (p. 76). He found that arts classrooms tended to be “academically rich” (p. 3) and provided a climate conducive to academic success. Catterall’s (1998, 2002a, 2002b, 2009) studies were significant, as they were not designed to track achievement in the arts. Instead, he set out to find the causality behind achievement in English and which factors contributed to success in literacy over a longitudinal time period. All of Catterall’s studies (1998, 2002a, 2002b, 2009) found that exposure to an arts-rich curriculum was the factor that influenced literacy, as well as mathematics success. This research was repeated by Eason and Johnson (2013), Moreno et al. (2011), and Roden, Kreutz, and Bongard (2012). Secretary of Education Duncan (2010) spoke of other advantages, stating that while the core academic areas of math, reading, writing, and science were essential, the strongest academic success came from a well-rounded education including the arts. Duncan (2010) stated that a curriculum rich with the arts had a greater impact on whether a student would graduate from a four-year college. Duncan (2010) also stated that low-income students were less likely to have access to the depth of education in the arts than their higher socioeconomic peers might; and this may be a reason for the achievement gap.

In 2014, researchers found links in Nashville Schools between music and academic performance (Eason & Johnson, 2013; Johnson & Memmot, 2006). The results showed that students engaged in music programs in Nashville Metro Area schools achieved at a higher rate than their peers on every indicator: grade point average, graduation rate, ACT scores, attendance, and discipline. The research, conducted by an independent research team through the University of Kansas (Johnson & Memmot, 2006), covered four years of data. Significantly, this was the first research study to show and state causality between enrollment in fine arts courses and beneficial student outcomes. This study was based on the work of Moreno et al. (2011). Similar findings were established in Mississippi by Phillips, Harper, Lee, and Boone (2014).

Rome and McClanahan (2015) discussed the repeal of NCLB and how it impacted arts education. Americans for the Arts (A4A) approached Congress in 2015 with a petition of 20,000 signatures requesting a more well-rounded education for American students and the insistence that the fine arts remain a core subject area, as it had been declared under NCLB. Congress eliminated specific definitions of subject areas and instead mentioned some of the content areas that constituted a well-rounded education, including fine arts. Congress also maintained a separate grant for fine arts. A4A (2015) cited research stating, "Young people with high arts involvement were four times as likely to be recognized for academic achievement and participate in a science fair, and three times more likely to win an award for attendance or run for school office" (Rome & McClanahan, 2015, p. 3). A4A (2015) then challenged Congress to help eliminate the achievement gap by making sure that students had similar access to arts education through science, technology, engineering, fine arts, and math (STEAM) education

initiatives or by continuing to fund 21st-Century Community Learning Centers. A4A (2015) then challenged Congress to allow states to adopt the NAS as their curricular model for fine arts (Rome & McClanahan, 2015; NEA, 2015; STEM to STEAM, 2014, 2015).

A review of the historical literature showed specific achievement in individual arts disciplines, as well as socioeconomic influences. This researcher reviewed arts studies in the areas of dance, music, theatre, visual art, socioeconomic status, scholastic achievement, school attendance, achievement on standardized tests, and economics. Pink (2006) stated in his work that arts create marketable job skills through the instruction of the 21st-century skills of design, story, symphony, empathy, play, and meaning. Pink further stated that right-brained thinking was necessary in order to compete with the global market and foreign competition. Arts courses integrated these right-brained skills better than the traditional core classes (Fine Arts Regional Consortium, 2015; Missouri Alliance for Arts Education, 2015; Pink, 2006).

Dance

During the years of this study, 2008 through 2013, dance was found to be the fine art taught least often in a scholastic setting (NAS, 2014; NCAS, 2014g; Ruppert, 2006). This was possibly due to a lack of certified dance teachers or it could have also stemmed from issues distinguishing dance as a fine art, rather than classifying it as physical education (Fine Arts Regional Consortium, 2015). However, elementary schools found that arts involvement could benefit students in both literacy and mathematics. According to Ruppert (2006), “Certain forms of arts instruction enhance and complement basic

reading skills, language development and writing skills. For example, dance has been employed to develop reading readiness in very young children" (p. 11).

Studies of fluency found that high school students who studied dance scored higher than non-dancers in the areas of creative thinking, originality, fluency, and abstraction (Minton, 2002). Additionally, dance helped with spatial relationships and achievement in Geometry (Catterall, 2002a, 2002b). Dance changed the way at-risk youth viewed scholastic experiences and brought about measurable gains in confidence, tolerance, and persistence. This was measured by researchers using both attendance data and student surveys of both pre- and post-exposure to the art of dance (Crawford-Barniskis, 2012; Elpus, 2013a; Ross, 2002).

Music

As mentioned earlier, music improved literacy, as recorded in past studies (D'Agrosa, 2008; Darrow, 2008; Elpus, 2013a, 2013b; Register et al., 2007). Researchers speculated that the improve literacy was related with the rhythmic nature of language, as well as the decoding of symbols as the brain reads music. In several studies, elementary students exposed to music scored higher on tests of language and developed both literacy and pre-literacy skills at a higher rate (Slater, Tierney, & Kraus, 2013; Strait, Parberry-Clark, O'Connell, & Kraus, 2013). A study in the Kirkwood School District in St. Louis, Missouri, (St. Clair, 2014), found that kindergarteners exposed to texts set to music began showing signs of reading readiness at an earlier rate than those who were not. Students in the test group read at an earlier rate and more fluently than their peers in the control group. The only change in the study was the addition of text-decoding skills set to music (St. Clair, 2014). There may also be scientific support for

use of music instruction to aid in literacy. Studies found that the brain's exposure to the multisensory creation of music stimulated the areas of the brain that affected speech and language. One study concluded, "Musical training could help children develop literary skills and combat literary disorders" (Kraus, 2007, p. 12; Tierney, Krizman, Skoe, Johnston, & Kraus, 2013; Winsler, Ducenne, & Koury, 2011).

In past studies, a link between skills in mathematics and exposure to the arts was demonstrated, with music the most obvious tie for researchers. Students from low-income schools, who were involved in instrumental music during their middle and high school years, scored twice as high on math assessments in grade 12 as their peers who were not enrolled in music classes (Catterall, 2002a; Duncan, 2010; Mastrorilli et al., 2014; Moreno et al., 2011). Multiple studies found that students who took music classes in high school were more likely to score higher on mathematics tests (Vaughn, 2002). Students in band and orchestra in grade 12 consistently performed better in senior level math courses (Catterall, 2009; Elpus, 2013a, 2013b; Ingram, Pruitt, & Weiss, 2014).

Three studies in music and the arts contained the only dissenting opinions the researcher could locate, regarding the correlation between arts and achievement on standardized tests. According to Winner and Cooper (2000), standardized test achievement only increased if a student studied instrumental music. This was echoed in the work of Elpus (2013a, 2013b). Winner and Cooper (2000) also questioned the validity of achievement in the other arts areas. This was echoed in studies by Vaughn and Winner (2000, 2010), who discredited the SAT achievement correlation for all arts disciplines, except instrumental music. Vaughn (2002) questioned math achievement and suggested that students who were naturally more academically gifted gravitated toward

instrumental music. In Vaughn's (2002) study, students in music showed higher gains on statistical correlations between music instruction and math achievement.

Despite these three dissenting opinions, the predominant amount of the literature and research completed on music education pointed toward gains in student achievement in language arts. Many research studies showed gains in literacy and achievement on standardized tests at all grade levels. Students showed higher proficiency in both reading and writing (Paquette & Rieg, 2008; St. Clair, 2014; Telesco, 2010; Tsang & Conrad, 2011). Mathematics studies echoed the studies in literacy. Students scored higher on standardized tests of math. Students demonstrated stronger gains in inductive and deductive reasoning (Ahmed-Ullah, 2012a; NEA, 2012; Scheuler, 2010).

Research by Batcheldor (2015) at Vanderbilt University found a link between grammar and rhythm in music. Based on research findings, studies determined there was a link between the learning of grammar and the rhythm of music among children with language disorders. Research determined that further study was necessary to determine if a student with poor rhythm would benefit the most from additional help, or if a child who had good rhythm would benefit the most (Batcheldor, 2015). This repeated the findings of Roden et al. (2012) and Slater et al. (2013). Research in 2015 (Evans, 2016) showed causality between the learning of music and learning motor tasks. Brain research (Evans, 2016; Mohan, 2015) at the University of California, Santa Barbara, examined scans of the brains of volunteers learning music. The researchers found that motor and visual modules of the brain started building up connections. Eventually, subjects were able to play music without conscious thought, much like an athlete playing a sport. The implication was that this disconnect showed why children learned faster than adults and

enabled researchers to find what form of learning environment would allow adults to learn faster (Mohan, 2015).

Theatre

Studies showed, when elementary students used theatre skills to approach reading, they improved engagement. The elements of dramatic play helped motivate students to learn (Goodman, 2002; Nelson, 2011; Stevenson, 2011). Dramatic enactment also had the greatest effect out of any reading strategy on comprehension for first graders who were reading below grade level (Page, 2002). Theatre also improved narrative writing ability (Joseph, 2014; Moore & Caldwell, 2002; Nelson, 2011; Walker, Tabone, & Weltsek, 2011).

The primary research in theatre found a strong link between improved literacy and participation in theatre at an early age (Goodman, 2002; Joseph, 2014; Moore & Caldwell, 2002; Nelson, 2011; Page, 2002; Walker et al., 2011). Elementary participation in theatre improved both reading and writing. Researchers also found correlations between improved writing when theatre instruction included script composition. Research in theatre showed improved cognitive engagement in other subjects, following participation in theatre instruction. Researchers hypothesized that this was due to the global nature of theatre studies, which usually drew on information from multiple content areas. The ability to synthesize that information was also a hypothesis for motivation of the increased engagement (De la Cruz, 1995; Goldstein, 2011; Horn, 1992; Joseph, 2014; Parks & Rose, 1997). A study conducted in 2010 at the Francis Howell School District in St. Charles, Missouri, found that middle school students (grades six to eight) involved in theatre coursework scored higher on assessments in

English Language Arts than those who did not participate in theatre coursework. The study compared the test scores of students prior to taking the theatre course and tracked them over a three-year period of theatre study. Student achievement scores on the Missouri Assessment Program (MAP) test were examined over a three-year period and compared with a sample group of students who were not enrolled in theatre courses. Students participating in theatre showed significant statistical gains for every year they participated in theatre, with students electing for three years of study showing the highest gain (Heastrup, 2010).

Research also found that students in theatre were more engaged in core classes. They tended to participate in active learning and were more invested in their own learning. They also demonstrated higher levels of self-discipline than their peers, who did not participate in theatre (Cawthon, Dawson, & Ihom, 2011; Goldstein & Winner, 2012).

Visual Art

The bulk of visual art research demonstrated the same findings as dance, music, and theatre, regarding participation corresponding to higher test scores. When project-based learning was implemented in a research study using visual art as the scenario, there was a significant rise in achievement among eighth-grade students (Kalyoncu & Tepecik, 2010; Scripp & Paradis, 2014; Stevenson, 2011). Children trained to discuss works of art and draw inferences were also shown to transfer that skill to scientific reasoning (Tishman, MacGillivray, & Palmer, 2002; Phillips et al., 2014); thus achieving higher science scores. A study of seventh-grade boys in special education showed that visual art exposure helped them become more fluent readers (Mastrorilli et al., 2014; Wilhelm,

2002). Researchers found that visualization produced significant increases in reading ability and comprehension. Visualization was the idea that students could create mental pictures of what they read. This was a skill supported when students drew or painted pictures of what they imagined in a story (Ingram et al., 2014; Malin, 2012; Shanahan, Callison, & Carriere, 2010).

Most past research in visual art dealt with the relationship to reading readiness ("Art Teachers Nurture 6 Senses," 2014; "Reinvesting in Arts Education," 2011; "Visual Literacy," 2006). Research suggested the ability to learn visual media helped students with decoding and reading readiness (" Visual Literacy," 2006). The ability to interpret visual media was also believed to help with the ability to interpret the signs and symbols that made up written language ("Art Teachers Nurture 6 Senses," 2014; “Visual Literacy," 2006).

The other area of past-research focus was the scientific method and science achievement, as it pertained to 21st century skills (Kalyoncu & Tepecik, 2010; NAS, 2014; NCAS, 2014j). In these studies, students who studied visual arts showed a gain in cross-curricular applications of subjects. Students were able to use visual arts abilities to demonstrate improvement in observational skills.

While the specific arts disciplines of dance, music, theatre, and visual art were the topic of many past-research studies, several other areas of arts focus were also the topic of research. The areas of socioeconomic status and the impact of arts on achievement, attendance, and standardized test scores was also an area of study. Finally, the impact of the arts and arts education on the economy demonstrated some of the long-term impacts of arts education.

Socioeconomic Status and Achievement

The use of arts education with at-risk students and low socioeconomic students showed significant impact on student achievement in several studies (Jensen, 2002; Banks, 2010; NEA, 2012; Mastrorilli et al., 2014; Nelson, 2011). The definition of achievement, however, varied widely from study-to-study. Some studies defined it as graduation rate (Banks, 2010; Nelson, 2011); in others, it was finding a job or lack of incarceration 10 years after high school graduation (NEA, 2012; Phillips et al., 2014).

An article in the *Chicago Tribune* (Ahmed-Ullah, 2012b) cited a report by Loyola University showing a rise in achievement by three lower-performing Chicago area schools, after there was an increase in arts programming. Teachers in the school called for an increase in music and visual arts classes during the regular school day. The schools involved in the study were lower income Hispanic and African American schools, and all three saw a rise in test scores. "Fourth graders who started with the arts education program in 2009 saw an 11.5 percentage point gain in composite test scores meeting or exceeding state standards by the time they finished the arts program in sixth grade in 2011" Ahmed-Ullah, 2012a, p. 7). This repeated the research regarding increased arts programming found by Imms et al. (2011), Korn, (2012), and Stevenson (2011).

The arts were also seen as a possible way to eliminate the socioeconomic achievement gap. Citing evidence from national studies, Ruppert (2009) found that failure to graduate high school began in middle school, and the solution was enhanced arts offerings for middle school students. Ruppert (2009) stated:

> Eighth graders who were highly involved in the arts with those who had little or no involvement and found consistently better outcomes for the highly involved students: better grades, less likelihood of dropping out by grade 10, and more positive attitudes about school. (p. 2)

Ruppert (2009) further added, "High levels of arts participation can make more of a difference for economically disadvantaged students" (p. 2). Exposure to the arts showed reduction of the achievement gap in holistic assessments. Results from the Sternberg Triarchic Abilities test revealed smaller variation in the achievement gap when abilities traditionally associated with fine arts, such as creativity, teamwork, and problem-solving were included in the holistic evaluation (Elpus, 2013a; Imms et al., 2011; Marcotte & Hansen, 2010; Michalos & Kahlke, 2008). Following the Arts Education Partnerships' study in 2011 (as cited in Ruppert, 2009), themes emerged of inconsistency of application of arts programs and how arts education was distributed to students (Barry's Blog, 2011). The overarching result of the study was a need for arts integration, "The arts are a tool — a wrench — that can help students succeed, enhance teacher effectiveness, transform schools and strengthen communities" (Barry's Blog, 2011, p. 95).

A study in the state of New York in 2012 found a discrepancy between exposure to arts education between wealthier and lower-socioeconomic students. Lower-socioeconomic students were far less likely to have access to arts programming. However, even in wealthier schools with limited arts programming, students who did not have access to the arts had a higher chance of dropping out of school. Students enrolled in arts classes in New York scored higher on the SAT, and had a better chance of attending college (Elpus, 2013; US Department of Education, 2013). In 2013, the

Jennings School District in the St. Louis Metropolitan area augmented their then-current programming with additional fine arts coursework and found their test scores increased (Crouch, 2013). Jennings reinstated an orchestra program, a theatre program, and added vocal music at the middle school. That year the district's test scores were nearly double the scores of its neighboring districts (Normandy, 11; School District of Riverview Gardens, 32; and St. Louis Public Schools, 24) (Crouch, 2013, p. 1). These findings were identical to those found by the state of Mississippi in 2014 by Phillips et al.

Northwestern University examined the impact of music education on at-risk students' nervous systems and determined that music lessons could possibly help with language and reading skills (as cited by "Neuroeducation from the Lab," 2014). The study provided free music lessons to low-income students aged six to nine and monitored them during the lessons through a neural probe. After two years of formal music training, students had increased brain activity in the areas of the brain used for reading and decoding language. One school participating found that 90% of their high school seniors then went on to college, and that test scores began to match those of affluent districts, after two years of instruction. Researchers found that one year of instruction was not enough to change the chemistry of the brain. The hypothesis was based on research that music education could be used to eliminate the achievement gap ("Neuroeducation from the Lab," 2014). Moreno et al. (2011) also found that the arts could be used to lower the achievement gap. Studies conducted in 2015 showed that 90% of preschool children showed increased verbal abilities after only 20 days of arts training (p. 2). They also found that in Los Angeles schools, first and second-graders without arts education had reduced reading scores, while those with arts education saw no decline

(Moreno et al., 2011). Mastrorilli et al. (2014) found that an increase in abilities could occur in as little as one year.

Arts and Attendance

A large amount of the research completed regarding the arts and student achievement and attendance at the secondary level focused on arts-based schools or arts magnet schools, such as the Creative Arts High School in Camden, New Jersey (Marcotte & Hansen, 2010), or in elementary schools that were restructured to provide an arts focus for the students (Spencer, 2000). The research done on student achievement in the arts focused on students' perceived achievement in classes, or how the students felt that fine arts classes impacted them (Allen, 2006; Korn, 2012; Moody & Phinney, 2012; NEA, 2012).

A study conducted by the Missouri Alliance for Arts Education (2015) found that arts participation in Missouri schools led to improvement in discipline, improved high school graduation rates, and higher standardized test scores in both math and communication arts (Scheuler, 2010). This study by Missouri Alliance for Arts Education (2015) was repeated with the same results. A previous research study by the Government Access Organization (2009) and other researchers (Boske, 2012; Scripp & Paradis, 2014) found similar results.

Past-research found that students in arts-based schools had higher attendance rates than students enrolled in non-arts-based schools (Boske, 2012; Scripp & Paradis, 2014). However, none of the past studies compared student attendance in an arts-based magnet school with those of students in magnet schools with a differentiating focus. This led to concerns of data accuracy regarding whether the positive data was based on the

inherencies within the courses themselves or if the attendance leap was based on the fact the school was a magnet school and students chose to attend the school (Marcotte & Hansen, 2010).

Research showed that other advantages existed for high school students enrolled in arts courses. According to a 2009 study of New York High Schools, arts instruction was directly tied to attendance rates. According to Israel (2009), "The failure of public high schools to graduate students in four years has been a persistent problem in New York City and is a central concern for educators and policymakers across the nation" (p. 2). In several national studies over the decade previous to this writing, students at risk of dropping out cited participation in the arts as their reason for staying in school (Cawthon et al., 2011; Crawford-Barniskis, 2012; Israel, 2009; Missouri Alliance for Arts Education, 2015). Israel (2009) also found that in New York City schools with dedicated arts classrooms and highly qualified arts teachers, the schools scored higher in climate surveys and had the top third of overall graduation rates. Those schools had a 40% lower arts teacher-to-student ratio, or approximately one extra fine arts teacher per school; and also showed almost 40% more physical space directly dedicated to fine arts (Israel, 2009, pp. 12–17). Israel's (2009) research suggested that arts education had a measurable impact on at-risk youth through correcting and deterring inappropriate school behavior, reducing truancy problems, and increasing academic performance. Israel (2009) also found that the top 10% of all New York schools offered their students the most exposure to the arts (pp. 1–4).

Several studies recent to this writing showed significant statistical results from arts education. In a 12-year longitudinal study of high school students through post-

graduation; Catterall (2009) tracked students following graduation and found that students who participated in fine arts were twice as likely to complete a bachelor's degree as those who did not (p. 76). Catterall (1998, 2002a, 2002b, 2009) suggested that arts involvement encouraged students to attend school; thereby, increasing their participation in all aspects of the education process. These findings were consistently upheld by other researchers (Dege & Schwarzer, 2011; Duma & Silverstein, 2014; Elpus, 2013a, 2013b; Goldstein & Winner, 2012; Imms et al., 2011; Ingram et al., 2014), although Catterall (1998, 2002a, 2002b, 2009) was considered the definitive expert in the field.

Research work in music and theatre also examined the extracurricular work in those fine arts (Ingram et al., 2014; Inoa et al., 2014; Israel, 2009; McNeal, 1995; Moody & Phinney, 2012). McNeal (1995) found that both theatre and marching band were two of the four power cliques that functioned in a high school and made students feel connected. The other two were athletics and student government; stating that "students who are NOT a member of one of those groups are 1.9 times as likely to drop out of school [emphasis included]" (McNeal, 1995, p. 62). McNeal (1995) cited the extracurricular aspect of fine arts as another factor that led to increased attendance of students who participated in fine arts.

Achievement on Standardized Tests

The relationship between fine arts and achievement in core areas on standardized tests began as an area of study in the 1990s (Catterall, 1998; Mastrorilli et al., 2014; SAT, 2005, 2012). The well-known research involving a nationally-normed test came from a study conducted and repeated by the SAT. The study compared achievement on the SAT with enrollment in arts classes. The study concluded there was a positive correlation

between achievement on the SAT and the number of years of enrollment in fine arts courses (Bellisario & Donovan, 2012; Boske, 2012; SAT, 2005, 2012; Vaughn & Winner, 2000, 2010). Researchers Vaughn and Winner (2000, 2010) conducted extensive research in this area, and were commissioned by SAT to determine correlation. They found students who participated in multiple years of fine arts courses scored higher on the verbal and math sections of the ACT than their peers who took fewer years of fine arts. Students who took four years of fine arts courses scored 58 points higher on the verbal section and 38 points higher on the math section than students who had one-half year (or less) of fine arts coursework (SAT, 2012, p. 79-80).

Vaughn and Winner (2000, 2010) also conducted a separate study of SAT scores (in conjunction with SAT) in 2010. That study found higher achievement on the SAT for every additional year a student enrolled in a fine arts course. Students enrolled in arts courses exhibited the average results seen in Table 1.

Table 1

High School Seniors–Fine Arts Courses and SAT Scores

	VERBAL	MATH
4+ years arts	534	540
4 years	543	541
3 years	514	516
2 years	508	517
1 year	501	515
1/2 year or less	485	502
Average for ALL SAT Test Takers	508	520

Note. Adapted and reprinted with permission from Vaughn and Winner, (2000).

A repetition of the study in 2012 showed similar results. According to the College Board, when comparing high school seniors tested between 2006 and 2009, those

enrolled in fine arts courses scored 11% to 13% higher on all areas of the SAT, than those who were not (SAT, 2012; Vaughn & Winner, 2000, 2010). This study reinforced the previous SAT study, widely published in 2010.

Other research found that fine arts involvement helped stimulate the areas of the brain required for achievement in core areas. Researchers Banks (2010), Cole (2011), and Eason and Johnson (2013) analyzed the application of traditionally left-brained skills, such as recall and language, through right-brained application such as interpretation of text (Cole, 2011), or music (Banks, 2010), or both (Eason & Johnson, 2013), and found that the arts reinforced the brain connections required for recall of the left-brained information. Turr, (2013) speculated that this led to higher achievement and more depth of knowledge in those areas.

At the time of this researcher's study, fine arts was a tested area in Nebraska and being considered as a possible tested area in several other states (ECS, 2013; NAEP, 2015; Phillips et al., 2014). Some states implemented arts courses as a way to reinforce core areas and also recognized the inherent advantages of arts classes by themselves. According to the Education Council for the States (2013) during the time of this study, nine states moved forward with the possibility of a statewide assessment of students within the fine arts.

Allen (2006) found in his study that student perception about involvement in the arts also affected scholastic achievement. In interviews with high school counselors to examine their perception of student achievement and its relationship to the arts, Allen (2006) found that students truly thought they gained academic benefits from involvement in arts courses, whether those gains were demonstrated on standardized tests or in

achievement in core subject areas, or not. Both students and high school counselors responded in interviews and surveys that they thought there were significant academic gains from involvement in the arts. Allen (2006) found that student achievement on the ACT and the Texas Assessment of Knowledge and Skills were higher for those involved in fine arts. However, the data was not separated according to arts discipline, and many of the gains Allen (2006) found were based on student perception of immeasurable skills, such as risk-taking and confidence. Similar research was conducted in 2012 by Bellisario and Donovan and, in 2014 by Bowen, Greene. and Kisida.

In 2011, the Department of Education examined arts integration into subjects that increased student achievement in language arts. Walker et al. (2011) examined how theatre arts integration improved low-income middle school performance academically. They chose to examine how language arts and mathematics performance and school engagement were positively impacted when theatre arts was integrated into language arts instruction, and if and how students were able to maintain gains from a theatre-arts-integrated curriculum once traditional instruction resumed. Their research was consistent with numerous studies about theatre and achievement in lower-socioeconomic areas (Brouillette, Childress-Evans, Hinga, & Farkas, 2014; Cawthon et al., 2011; Elpus, 2013a; Goldstein, 2011; Inoa et al., 2014; Joseph, 2014; Phillips et al., 2014).

The goal of the theatre-integrated model was to provide teachers ways to help students examine their personal literacy activities and to make connections with school literacy. The assumption was that literacy was a social event and would be supported through reading, analysis, and writing. Walker et al. (2011) used four schools for inclusion in the integration model and four schools as controls. To ensure randomization,

only 14 classrooms of students from 14 teachers completed the arts integration model. The student population was 39% Latino/Hispanic, 36% African American, and 14% Asian American, with free and reduced lunch rates between 77% and 88% (p. 366). Walker et al. (2011) structured 40 theatre-based lesson plans linked to the district-mandated literacy curriculum.

In examination of the results of their study, Walker et al. (2011) found that 56% of students in theatre integrated classrooms scored proficient in the state language arts assessment, as opposed to 43% in the traditional classroom. In mathematics, 47% scored proficient, as opposed to 39% in the traditionally-instructed classrooms (p. 369). Walker et al. (2011) concluded,

> The only factor that was found to be significant in predicting whether a student would be successful on the state assessment was whether or not that student received his or her language arts instruction in a classroom where drama is used. (p. 370)

The integrated model proved to have lasting effects, as 78% of the students participating in seventh grade scored proficient in eighth grade, when compared to 69% proficient in traditionally-instructed classrooms, with 49% of students in integrated classrooms scoring proficient in math, when compared to 35% in traditionally-instructed classrooms (Walker et al., 2011. p. 371). The Walker model served as the blueprint for the other aforementioned arts integration studies.

In 2011, the Rockwood School District in Eureka, Missouri, commissioned an independent study to determine if their orchestra program, which involved removing or pull out of students from their elementary classrooms, was detrimental to their

standardized test scores, when accounting for the loss of instructional time. The study found that students who remained in the instrumental music programs scored between four and six points higher in English Language Arts (Rockwood, 2013, p. 13) and between two and 10 points higher on the math section of the MAP assessment, than those who did not continue with instrumental music (Rockwood, 2013, p. 37). This study was consistent with the findings of Roden et al. in 2012 and Slater et al. in 2013, all of which found that students in optional music programs scored higher on standardized tests. A 2014 study by the University of Kansas (Eason & Johnson, 2013; Johnson & Memmot, 2006) found that over a four-year period, high school students in the greater Nashville area with more than one year of music scored higher scores on subsections of the ACT. During the years of 2010 to 2014, students who took more than one year of music scored (on average) 1.94 points higher on the English subsection of the ACT (19.58, as opposed to 17.64) (Eason & Johnson, 2013, p 23). These students also scored (on average) 1.05 points higher on the math subsection of the ACT (18.67, as opposed to 17.62) (Eason & Johnson, 2013, p 23; & Memmot, 2006, p 298-300).

Economics

While past-research examined the impact of arts education and increasing of test scores, attendance, and perceptions of school climate, many school districts cited the need to train for business and the then-current economy as their reasons for cuts in arts education (personal communication, E Desmond Lee, Fine Arts Collaborative, September 20, 2012, March 20, 2013; Scripp & Paradis, 2014). However, in other studies, arts education was also perceived to be an advantage in the global economy (Better Schools, Better Skills, 2000, p. 2)

Economically, fine arts was considered the United States' largest export for the 30 years previous to this writing, when accounting for visual art, commercials, television, film, the music industry, and fiction writing (Fowler, 1996). Chartrand (2008) stated that the United States' largest exports were television, film, music, video, and print; all originating in the study of fine arts (as cited by Fowler, 2008; Missouri Arts Council, 2009). This was not inclusive of the additional related visual arts of advertising, architecture, and fashion. Chartrand also stated that the arts were the largest significant economic impact of any industry (as cited in Fowler, 2008). This was repeated in the community arts work of Moody and Phinney (2012), the study of teen expenditure and pop culture in Crawford-Barniskis (2012), and the research of the President's Committee on the Arts and Humanities (as cited in "Reinvesting in Arts Education," 2011). According to the Otis Report (2013) of the Creative Economy of the Los Angeles Region, one-in-seven jobs in Los Angeles involved fine arts. This resulted in one-in-ten jobs in California (during 2013) being directly linked to fine arts. The result was a total national economic impact of $273.5 billion, or approximately 7.8% of the national income (Otis Report, 2013, p.1).

A study by Iyengar and Hudson in 2014, published by the *Chronicle of Higher Education*, and based on research by the U.S. Bureau of Economic Analysis, found financial benefits from fine arts education. According to their findings, fine arts education in 2011 resulted in a total economic output of $104 billion (Iyengar & Hudson, 2014, p. 1). This was second only to advertising in economic output (and discounted the visual art aspect of advertising). The study of fine arts added $7.6 billion to the United States' gross national product (Iyengar & Hudson, 2014, pp. 1–7). The study found that

for every dollar taxpayers spent on arts education, an additional 56 cents was generated somewhere else in the United States' economy. Additionally, a coalition of business makers and policy leaders found that education in fine arts helped instill creativity, curiosity, imagination, and a capacity for evaluation, all of which were considered essential job skills by business leaders (Iyengar & Hudson, 2014, pp. 1–7). Similar findings occurred in an economic study in the St, Louis area (Arts and Education Council, 2015)

A study in 2013 from the University of Michigan (Parker, Roraback, & LaMore, 2013) also found that college graduates who majored in science, technology, engineering, or math (STEM) also benefited from exposure to the arts. Graduates, who owned their own business or held an original patent, had up to eight times more exposure to the arts than those who did not. The study implied that arts exposure benefited every STEM content area. The study cited the 21st-century skill of problem-solving as inherent within arts education (Parker et al., 2013; STEM to STEAM, 2014, 2015). While 21st-century educational skills may be a feature of the new federal education standards, in an international study of 15 countries involving arts education, conducted by the National College Board, the United States scored as one of the leaders in arts education in accessibility, but fell behind in cultural awareness and lasting future impact in the fine arts. While the United States was able to provide basic training in dance, music, theatre, and visual art, the study found that the country did not acknowledge media arts or crafts and did not show the link to a lasting culture of fine arts, as was demonstrated in many of the other 14 countries (International Arts Education Standards, 2011).

The Missouri Arts Council (2009) completed a full study of the economic Impact of the Arts (2015) involving nonprofit organizations on the state, in their report, "The Arts and Economic Prosperity." The study found that the nonprofit arts in Missouri were a $1.1 billion industry (Missouri Arts Council, 2009, p. 11), providing over 33, 617 jobs among 6,080 nonprofit arts agencies (Missouri Arts Council, 2009, p. 3). The study also found that the arts were responsible for almost double the revenue, when compared with other leisure events in the state (Missouri Arts Council, 2009, pp. 3–7), and that non-Missouri residents tended to spend more than Missouri residents. The Missouri Arts Council (2009) also found that the amount of volunteer hours donated to nonprofit arts organizations was the equivalent of over $28 million in salary and in-kind donations of over $11 million (p. 9). The arts organizations themselves resulted in additional community expenditures of more than consumers spent on the actual artistic event (Missouri Arts Council, 2009, p. 11). Any decline in arts instruction was viewed by researchers (Boske, 2012; Duma & Silverstein, 2014; Elpus, 2013a) as a grave area of concern for the health of the United States economy. Statistics suggested that fewer than half of adults reported participating in arts lessons in school. This decline followed years of increases between the 1930s and 1980s. This decline was an additional area of concern as arts education was seen as the strongest indicator of arts participation and cultural awareness (Rabkin & Hedberg, 2011).

Fine Arts and the Common Core State Standards

While researchers found arts education economically and culturally essential, the importance in American schools was inconsistent. The NCAS were introduced nationally in 2014 (NAS, 2014). The standards were released in mid-July of 2014 and contained 11

anchor standards, designed to repeat from grades kindergarten through twelve, which required links to other academic disciplines (NCAS, 2014f). The NAS, based on the Kennedy Center Standards for Arts Education, originally introduced in 1996 (NAS, 2014), attempted to enhance and clarify the link between the arts, the CCSS and the Every Student Succeeds Act (NCAS, 2014c, 2014d; ECA, 2015). The NAS (2014) focused on the link between arts education and college readiness. Prior to official publication in 2014, the NAS existed as the NCAS (NAS, 2014). Research regarding arts education was published alongside the standards in a wiki forum (NAS, 2014). The wiki published research regarding college readiness and arts education (NCAS, 2014b).

Twenty-first-century skills occurred often within arts research. In 2015, a large area of education focused on STEM education. Based on educational research, researchers suggested the replacement of STEM with STEAM, "transforming research policy to place art and design at the center of STEM" (STEM to STEAM, 2014, 2015). The rationale for this change focused on the 21st-century skills of creativity and innovation, in order to ensure a sound economy, due in part to the findings published by the U.S. Bureau of Economic Analysis (as cited by Impact of the Arts, 2014), previously mentioned in this review of literature. Additional research demonstrated that the addition of fine arts to the STEM initiative resulted in "sparking student's imagination and helping students innovate through hands-on STEM projects" (Feldman, 2015, p. 5). The most important benefit was the application of creative thought processes and design skills, allowing the skills learned in STEM coursework to be applied in new ways (Feldman, 2015). The Pulitzer Museum of Fine Arts (2015) expanded the STEM to STEAM concept in an exhibit of African Koto sculptures in 2015–2016. The use of computer

technology and math, as applied to historical works of art was the first-recorded time that technology influenced the world of Art History (Pulitzer Museum of Fine Arts, 2015).

Fine arts enhanced NCAS (2014d) through STEM-like teaching strategies. One trend in 2015 was the adoption of Arts Integration. According to Riley (2012),

> What is striking is that both STEM and Arts Integration are linked through definition as an approach to teaching through one or more content areas. . . . These parallels attest to the rigor of the arts and the need for their processes in today's global workforce and unforeseen future. (p. 4)

Arts integration has been a model integrated into classrooms over the first 10 years of the 21st century (Duma & Silverstein, 2014; Goldstein, 2011; Imms, 2011; Ingram et al., 2014).

A concern of the CCSS (MODSE, 2016a) was the synthesis of information from multiple subject areas. The NCAS (2014d) addressed this. The committee drafting the CCSS examined academic rigor in the arts and came up with the rationale that fine arts should reward the act of "looking, looking, and more looking" ("Art and the Common Core," 2014, p. 3). This resulted in reinforcement of literacy techniques, as well as forcing students to begin synthesizing information and drawing on past experiences, all skills required for success on the Common Core State Assessments ("Art and the Common Core," 2014). A report by the Theatre Communications Group (2013) echoed the skills presented in *Education Week* and cited specific ways that theatre education reinforced the CCSS assessments. The Theatre Communications Group (2013) found that the skill shift for arts integration worked out easily with what was already taught in classrooms, stating,

> As theatre artists, we are required to carefully analyze a script and make choices based on evidence we found in the text. Skills like close reading and identifying the author's purpose are important to helping students make strong artistic choices. (p. 1)

Summary

At the time of this researcher's study, the only research regarding fine arts linked to student achievement on national standardized tests were comparisons on the SAT (Elpus, 2013a, 2013b; SAT, 2008, 2012). There were no previous studies specifically related to arts courses and the ACT found, other than a subsection measurement in 2014 in Nashville, Tennessee. Additionally, there were no studies related to individual arts areas, as correlated to specific traditional core-content areas, when compared with other arts disciplines. There was an absence of research tracking students enrolled in multiple years of fine arts classes and in multiple arts disciplines (i.e., students enrolled in both orchestra and in choir). The intent of this study was to seek a possible connection between fine arts instruction and core academic success, and a check as to whether this correlation showed a decrease in the achievement gap.

Arts research and the positive impact on society and education was a topic of study for nearly 40 years, prior to this study. The overall findings almost unilaterally pointed toward a positive relationship between scholastic fine arts and student gains in other content areas, standardized testing, attendance, brain development, long-range economic progress, and student self-esteem. Despite these findings, arts programs continued to be one of the first areas that were the victim of cuts in programming or funding (NAS, 2014).

The NCLB Act of 2001 (2003) gave fine arts equal footing as a legitimate core discipline along with English, math, science, social studies, health, physical education, and foreign language. This was echoed in the Every Student Succeeds Act (2015). However, in the wake of the CCSS, many schools were only supporting English and math courses, or areas specifically endorsed by STEM (STEM to STEAM, 2014). In the state of Missouri, district accreditation was tied to student achievement on the ACT (MODESE, 2015a). However, no study was found comparing overall ACT scores and involvement in fine arts coursework. Considering the impact of this high-stakes test on both schools and students, it was an area that warranted study.

Chapter Three explains the methodology used to prepare the data for analysis for this study. Chapter Four reports the analysis of the sample data. Chapter Five examines the results of the study and implications for the future research.

Chapter Three: Methodology

Research Overview

This study investigated a possible correlation between ACT scores and student enrollment in fine arts courses within a suburban, lower middle school, with a predominantly African American school district. The researched school district consisted of three high schools and one alternative high school, with a total student population of approximately 11,000 students for each of the years from 2008 to 2013 (District Twelve, 2008, 2009, 2010, 2011, 2012, 2013). Of this number, approximately 4,000 students enrolled in grades nine through twelve, each year (MODESE, 2015b); a figure that remained consistent over the time period of this study. The study also examined a possible relationship between five specific arts disciplines offered in the three studied high schools: band, orchestra, theatre, visual art, and vocal music; and student achievement on the specific subsections of the ACT: English, mathematics, reading, and science. This was a quantitative study using a secondary data source obtained over a five- year period from the scholastic calendar years of 2008 through 2013. The alternative high school offered an online music appreciation course, for one course credit of fine arts. Therefore, the researcher decided not to include the alternative high school in the data set analyzed for this study.

Site

The researcher conducted this study at a predominantly African American school district (n = 78%). The study included specifically three high schools, with permission granted by the study district Director of Secondary Education and the Assistant

Superintendent of Information and Technology (see Appendix A). The study accessed district ACT data from the calendar years 2008 through 2013.

The researcher of the study served the district as a teacher of theatre and previously taught all fine arts disciplines offered at the study site. The researcher also temporarily served as a choir director and jazz band conductor for the district studied. During the majority of this study, the researcher instructed fine arts courses in theatre, four class periods per day, at one of the studied high schools, as well as managed and directed the after-school theatre program. The high school in which the researcher instructed, most recently to this writing, served 1,365 students in grades nine through twelve (District Twelve, 2015), which also was the median-scoring high school for state-reported tests, in the school district researched by the study.

The researcher also served as the K–12 fine arts content leader for the researched district, supervising approximately 88 fine arts teachers in all four fine arts areas, visual art, vocal music, instrumental music, and theatre (District Twelve, 2015), and supervised the ACT Prep coursework for the district. In this role the researcher instructed, staffed, and coordinated all supplies for the summer ACT Prep programs within the researched school district. As fine arts content leader, the researcher had primary access to fine arts benchmark data, ACT scores, and enrollment data for all courses.

Research Design

The intent of this study was to investigate a possible correlation between years of study in fine arts and student achievement on the ACT. The district involved in the study explored ways to improve fiscal issues and raise test scores, and the researcher believed results of this study could be used in future staffing decisions and programming at the

researched district. Additionally, the state of Missouri adopted ACT scores as one measure of student achievement collected in the district-wide accreditation process, in the year 2014 (MODESE, 2013a).

For the purpose of this study, the researcher decided to focus on the scores of students who selected and enrolled in multiple fine arts coursework, rather than focusing in just one arts area. Based on the results found within the then-current literature, the researcher hypothesized that theatre students would score higher on the English subsection and music students on the math section. The researcher analyzed data that compared each of the artistic areas for a possible relationship and difference between each area, with regard to achievement on the ACT.

The researcher examined any possible correlation between achievement within in a specific core subject area and a specific arts discipline for the years 2008 through 2013. Due to the use of secondary data, a quantitative study was appropriate.

Preparation of the Data

According to both Wisdom (Wisdom, S., personal communication, June 2013) in her class lectures and Bluman (2010) in his text, *Elementary Statistics,* a sample size of 50 was statistically valid for this type of study. The researcher used that number as the sample size to allow for accurate results when generalized to the population (Bluman, 2010, pp. 362–363). Therefore, the researcher used a randomized sample of 50 from each of the ACT assessments offered during the time-period of the study.

The data used came in two forms. First, MODESE (2008, 2009, 2010, 2011, 2012 - 2013a) reported student ACT scores for the years 2008 through 2013 to the researched school district. Upon further investigation, the researcher discovered that

those scores contained only the ACT scores of seniors who actually graduated in the same calendar year in which the data was reported. Therefore, the researcher also prepared a randomized sample, in order to determine an actual mean ACT score. The researcher completed this for the overall ACT score, as well as the sub-scores on all four of the ACT sections, English, Math, Reading and Science. All student scores were simply alphabetized by student last name in the district database and not separated by year. The researcher coded scores by year and removed all information except for student name, the year the test was taken, and the ACT score.

The second set of data included the list of student names according to fine arts course enrollment for the years 2008 through 2013. The researcher again separated the students by year, then by course title and course discipline into visual or performing arts, with each course title corresponded to the number of years of fine arts instruction. Since visual art courses were one semester long, visual art class data studied used were only those courses that mandated a full year of visual arts study prior to student enrollment in the course. Students could enroll in as many arts courses as they wished, at any point in grades ten through twelve. Student grade level distinguished student enrollment for courses unspecified to a grade level. For example, a student may take painting 2 at any time in grades ten through twelve, but may only take AP Art Studio in grade twelve.

Some courses no longer existed in the district database, at the time of the study, due to streamlining of the district College and Career Guide, or the course existed only one year. For example, Percussion and New Art History were only offered one year. Only one school in the researched school district offered this type of course on ‘special

permission' status. For the purposes of this study, those courses were removed from data analysis.

The researcher examined data involving multiple subgroups, 50 in each subgroup were randomly selected, using randomizer software. If a random sample of minimum size, n = 15, was not available within each subgroup, the researcher prepared to use the maximum number available with the application of a Chi Square test to determine a possible relationship. Since one year of fine arts was a state requirement at the time (MODESE, 2013a), students with only one year of fine arts study were part of the general population, or the control, and not of a specific subgroup. Students who had not taken a minimum of one year of fine arts credit were excluded from the study.

The second set of hypotheses involved analyzing data of students enrolled in multiple years of fine arts coursework. From the original data collection in visual art, only the courses of Art Basics and Drawing 1 were removed from the data field. One possible inconsistency in visual art occurred from the structure of the classes themselves. The courses offered in visual art were one-semester courses, as opposed to the year-long performing arts courses. Therefore, it was possible that a student may have had multiple years of visual arts courses and yet appeared to have only one year of art on the transcript, due to the course titles and prerequisites. The breakdown of visual arts courses and their classifications, for the purposes of this study is listed in Table 2.

In performing arts, from the original data collection, the introductory courses of: Acting 1, Art Basics, Choir 1, Drawing 1, Instrumental Music, Intro to Acting, Mixed Choir, Music Appreciation, Music Survey, Piano 1, and Women's Chorus were removed from the data field.

Table 2

Visual Arts Courses Separation

2 to 4 years of Visual Art	Airbrush 2
	Ceramics 2
	Drawing 2
	Graphics Design 2
	Jewelry 2
	Painting 2
	Sculpture 2
4 years of Visual Art	AP Art History
	Advanced Art Studio
	AP Art Studio

One issue that occurred was the difference in names in courses that were identical. From 2008 to 2011, several schools in the district referred to courses with identical course numbers by different names. For example, Acting 1 and Intro to Acting were the same course with the same course number, despite the differing course titles. The same was true of Mixed Choir and Choir 1. Since the course numbers were identical, data gathered through use of those courses were combined for the purpose of this study. The same issue occurred for advanced fine arts courses and the following coursework: Stagecraft and Technical Theatre and Acting 3 and Advanced Acting 3. For the purposes of this study, like course numbers were combined, regardless of course title. The breakdown of Performing Arts courses for the purposes of this study is listed in Table 3.

Table 3

Performing Arts Courses Separation

2 to 4 years of Performing Arts	Technical Theatre
	Concert Choir
	Marching Band
	Men's Ensemble
	Women's Ensemble
	Concert Band
	Orchestra
	Jazz Band
2 years of Performing Arts	Acting
	Honors Orchestra
	Honors Wind Ensemble
	Piano 2
	Show Choir
3 years of Performing Arts	Honors Acting
	Piano 3
	Chamber Singers
4 years of Performing Arts	College Acting and Directing
	AP Music Theory
	Piano

Null Hypotheses

The researcher examined the following null hypotheses:

H_o1 (Null): There is no relationship between high school student ACT scores and the number of years the students enrolled in fine arts coursework.

H_o2 (Null): There is no difference between the average high school student ACT composite score when compared to students who enrolled in multiple years of fine arts coursework to the average ACT composite score for the district population (for the academic years 2008–2013).

H_o3 (Null): There is no difference between the average high school student ACT composite score, and average ACT sub score in English, math, reading, and science when compared to students enrolled in multiple years of fine arts coursework and average ACT sub score in English, math, reading, writing, and science of students who have enrolled in only the one required year of fine arts (for the academic years 2008–2013).

Instrumentation

The researcher had access to all ACT scores of all students enrolled in three high schools and course enrollment lists. By contacting the district office of data and information, the researcher was able to obtain the secondary source data for the years of study from the District Twelve (pseudonym) data supervisor. The researcher collated the ACT scores and course enrollments for all students who completed the ACT test and enrolled in fine arts courses for the years 2008 through 2013. The data analyzed were secondary source data reported to the district. All identifiers were scrubbed by the researcher before analysis began which meant, after matching individual student criteria, the researcher removed names, grade level, and student number. Remaining data consisted of year of ACT testing, ACT score, and fine arts course enrollment. The researcher kept all data (as it was electronic) on a dual password-protected computer and kept all printouts in a locked file cabinet.

Population and Sampling Procedures

The researched population included students who completed the ACT during the years 2008 through 2013 and attended one of the three researched suburban high schools, which were a part of District Twelve. The researcher divided student scores into

subgroups dependent on each artistic discipline to which they enrolled. Due to reporting procedures required by the ACT testing organization, students who completed the test in fall of 2008 (the first school year included) had their scores reported to the district in 2009. All scores were separated according to scholastic calendar year (September through June), rather than numeric calendar year, since that grouping of ACT scores and arts instruction occurred simultaneously.

The population included students from one district controlling three suburban Midwest high schools (see Table 4).

Table 4

Variance in Studied School Populations

Year	2008	2013
School 1 Population	1,680	1,898
School 2 Population	1,498	1,280
School 3 Population	832	680

During the time period of the study, a total of 5,351 students completed the ACT test (District Twelve, 2015). A computerized randomizer created a statistically valid sampling of 50 students from each sub category, who attended the researched high school, to determine the mean ACT score of each year. Students enrolled in a beginning fine arts course or who completed the first-year coursework in the following courses: Art Basics, Basic Instrumental Music, Introduction to Theatre, Mixed Choir, Music Appreciation; Music Survey or Piano 1; were included in the general population. This helped to establish the estimated ACT mean; student scores were analyzed separately to calculate the results for Null Hypothesis 3.

Research Procedure

The researcher analyzed secondary data for Null Hypothesis 1 applying a Pearson Product-Moment Correlation Coefficient (PPMCC). The researcher applied a *z*-test for difference in means to test Null Hypothesis 2 and Null Hypothesis 3, considering the fine arts subgroups of visual and performing arts, as well as the control group (students only taking one year of fine arts courses). If statistical differences and significant relationships resulted during the analysis, the researcher conducted a regression analysis on the data.

Summary

Previous studies revealed fine arts instruction to be relevant to student achievement (Catterall, 2009); however, other than analysis of the SAT, the researcher located no related analysis of national standardized collegiate testing. Students who scored average and above on the ACT received more invitations to attend colleges and universities and were perceived by those within higher education to have completed a well-rounded and academically rigorous education (ACT, Inc., 2014). In several states, student ACT achievement corresponded to district accreditation (MODESE, 2013a). The researcher compared student achievement on the ACT to the number of years of fine arts instruction and then analyzed holistically and with respect to each of the subsections.

The researcher determined that a quantitative analysis proved the most accurate way to analyze the data. If the analysis was proven statistically significant, a regression was performed and the number of years of arts instruction could potentially be used as a predictor of a student's ACT score. Further analysis determined whether a relationship existed between visual or performing arts coursework and student scores on each of the five subsections of the ACT.

Chapter Four discusses each of the statistical tests completed, using secondary data by each year reported. The researcher described overall results for each year of the ACT, categorized by the visual and performing arts disciplines represented by students who contributed to the secondary data and analyzed the sub scores of the various ACT sections for students in multiple years of fine arts coursework, when compared with the general district population. Finally, the researcher compared the sub scores of students who enrolled in multiple years of fine arts coursework with those students who enrolled in only one year of fine arts. The researcher then analyzed whether multiple years of arts instruction in more than one area was related to improved ACT achievement. In Chapter Five, the researcher discusses the results of the study and makes recommendations for future research.

Chapter Four: Results

Overview

The relationship between fine arts coursework and achievement in other academic areas was a subject of research for over 30 years, previous to this writing, with a large proportion of the debate concerning causality. Numerous research studies verified the relationship between increased programming in fine arts and higher student achievement on standardized tests. During the years of this study, 2008 through 2013, the SAT and ACT were the two major national standardized tests used to determine college readiness. While several studies compared arts participation and achievement on the SAT, the researcher was unable to locate studies comparing arts participation and achievement on the ACT (Ruppert, 2006; USDOE, 2015; Vaughn & Winner, 2000, 2010).

During the years of the study, 2008 through 2013, the ACT became an indicator of school district accreditation within the state of Missouri. Higher ACT scores were linked to both better chances of college achievement and higher scores for district accreditation. As ACT scores affected district accreditation during the years of the study (and continued to do so at the time of publication), school district officials could use the results of this study to inform curricular programming, in order to establish best practices resulting in higher scores on the ACT.

This study was designed to examine several research hypotheses. The first research hypothesis concerned student achievement on the ACT, comparing students who had only taken one year of fine arts to students who completed multiple years of fine arts. For this hypothesis, based on past research involving the SAT, the researcher hypothesized that there would be a positive statistical difference in both the average

overall scores and the average sub scores of students taking multiple years of fine arts and those enrolled in only one year of fine arts.

The second hypothesis examined whether there was a statistical difference between students who took multiple years of fine arts and the average district achievement, with regard to performance on the ACT. Based on the historical research and the demographics and percentage of students enrolled in fine arts courses, the researcher based the hypothesis on the assumption that there would be no statistical difference in achievement between students who took more than one year of fine arts and the district population. The researcher based this assumption on the high number of students enrolled in fine arts classes and the assumption that, if there were causality, those student scores would raise the population score to be statistically irrelevant. The researcher took into account that the results would include students who completed only one year of fine arts or who completed no fine arts at all, but that those numbers would not affect the population average enough to result in statistical significance.

The final hypothesis examined whether there was a difference in achievement, with regard to area of arts participation. Specifically, this hypothesis addressed the question: Did students enrolled in visual arts courses score higher on the ACT than students enrolled in performing arts courses? The researcher used the hypothesis that there would be no difference in achievement for students between visual and performing arts. In other words, the results would be the same for students who took multiple years of fine arts, regardless of the arts discipline in which the student was enrolled.

Null Hypotheses

The researcher examined the following null hypotheses:

H_o1 (Null): There is no relationship between high school student ACT scores and the number of years the students enrolled in fine arts coursework.

H_o2 (Null): There is no difference between the average high school student ACT composite score when compared to students who enrolled in multiple years of fine arts coursework to the average ACT composite score for the district population (for the academic years 2008–2013).

H_o3 (Null): There is no difference between the average high school student ACT composite score, and average ACT sub score in English, math, reading, and science when compared to students enrolled in multiple years of fine arts coursework and average ACT sub score in English, math, reading, writing, and science of students who have enrolled in only the one required year of fine arts (for the academic years 2008–2013).

Preparation of the Data

To evaluate these three null hypotheses, the researcher analyzed secondary source data of fine arts course enrollment. He then compared this data to that of ACT scores reported to the district, directly from the ACT, Inc., database. Students were coded into three categories: those students who completed no fine arts courses; those students who completed one introductory level fine art; and those students who completed two or more years of fine arts.

This population was then randomized into a 50 student samples per year, drawn from the categories of one year of fine arts, and two or more years of fine arts. The sample was expanded to 50 data points for each year in both categories, including two or more years of visual arts and two or more years of performing arts. Student ACT data

was then separated into overall scores and scores for each subsection of the test, English, math, reading, and science.

The data samples came from a predominately African American suburban school district, which consists of 17 elementary schools, three middle schools (servicing grades 7–8), three high schools, and one alternative school. The district was the fourth largest school district in St. Louis County and was one of only two primarily African American school districts in the state of Missouri to be fully accredited during the years of the study, through MSIP 4. During the years of the study, the district offered semester long ACT Prep courses during the day and a four-class afterschool refresher through Community Education. From 2007 to 2012 the district piloted both summer and Saturday ACT Prep programs instructed by the researcher.

At the conclusion of the study, the district population reported to the MODESE was 88% African American, 10% Caucasian and 2% Other (predominantly Hispanic and Middle Eastern) (MODESE, 2013b). At the conclusion of the study, the district was at 78% free and reduced lunch and 27% Special Education students (MODESE, 2013b). The district housed three high schools and one alternative high school. For the purpose of this study, a randomized sample of 50 was taken from the overall ACT scores reported by the district for each year of the study. The analyzed years of the study were taken as calendar years (as reported by ACT, Inc.), rather than scholastic years. The sample was randomly drawn from the three aforementioned suburban high schools, as the ACT data for the alternative school was reported to each student's 'home' school.

The average population demographic of students taking the ACT varied slightly from the district population. The ACT-testing population for the district for the years of the study is illustrated in Table 5. Rounding was used in order to create even percentiles.

Table 5

Average Population Demographics 2008–2013

	Gender			Race		
Class	Female	Male	Special Education Students	African American	White	Other
10	81%	19%	4%	70%	30%	0%
11	54%	46%	1%	68%	30%	2%
12	50%	50%	0%	64%	25%	1%

The tested population was separated by grade levels eligible to take the ACT and by gender, race, and whether the student was classified as special education. Special education included any student who had an Individualized Education Plan (IEP), regardless of whether the IEP affected testing conditions. The gender breakdown of testing students stayed consistent within the time period of the study (less than a 5% shift), while the racial makeup of students taking the ACT shifted from 65% African American to 80% African American. The district reported bi-racial students as African American.

The researcher used a randomized sample of scores of 50 students who completed the ACT in grades nine through twelve to calculate the mean ACT score for the population for each of the years in the time of the study. A randomized sample of 50 students per year was then taken in each of three areas: students who completed one year of fine arts, students who completed more than one year of visual arts, and students who

completed more than one year of performing arts. This set of three samples of 50 was repeated for each of the five years of secondary data utilized in the analysis for the study.

Null Hypothesis 1

H_o1 (Null): There is no relationship between high school student ACT scores and the number of years the students enrolled in fine arts coursework.

The goal of the first null hypothesis was to determine if there was actually a relationship between the number of years a student enrolled in fine arts coursework and the student's cumulative score on the ACT, when compared with other high school students who had only taken the one year of required fine arts coursework. To determine that answer, the researcher analyzed the overall ACT scores and scores on each of the ACT subsections, to determine the PPMCC between the two data sets. The correlation coefficient of two variables showed the strength of the potential relationship between those two variables, as well as whether that relationship was positive or negative (Bluman, 2010).

Correlation coefficients may range from -1.0 to +1.0. A correlation coefficient close to -1.0 meant a strong inverse relationship between the two variables, while a correlation coefficient close to +1.0 implied a strong positive relationship between the two variables. The closer the correlation coefficient was to zero, the weaker the relationship between the two variables. Therefore, a correlation coefficient of zero means that there is no definitive relationship between the two variables (Bluman, 2010).

The researcher first determined the average ACT Scores for the randomized sample. The researcher determined the average ACT score for students taking one year of fine arts, two or more years of visual arts, two or more years of performing arts, and

the district average ACT score reported to the MODESE. Those results can be viewed in Table 6.

Table 6

Average ACT Score

Year	District Average ACT Score	One Year of Fine Arts Coursework	Two or More Years of Visual Arts	Two or More Years of Performing Arts
2008	17.32	17.33	18.16	20.84
2009	17.40	17.72	18.08	20.42
2010	17.96	17.15	18.28	20.84
2011	17.41	17.32	17.95	19.87
2012	17.18	17.52	18.44	20.10

The researcher used the data to determine the PPMCC. The researcher used a 95% confidence interval and $\alpha = 0.05$ to analyze the data, along with comparison of the PPMCC with an *r*-critical value of 0.273.

Based on the analysis and a 95% confidence level, the researcher concluded that the sample set was normal and did not contain an undue skew. Table 7 includes the results from the PPMCC analysis and the regression analysis. The average correlation during the years of the study was 0.395 for visual art and 0.652 for performing arts. Using the table for critical values for the PPMCC, the significant value was 0.273. The year 2011 in visual art did not result in statistically relevant results, and the year 2012 in performing arts did not result in statistically relevant results.

Table 7

Correlation Statistics Comparing Visual and Performing Arts

Year	Two or More Years of Visual Art	Two or More years of Performing Arts
2008	0.415	0.725
2009	0.335	0.748
2010	0.826	.0712
2011	0.105	0.808
2012	0.294	0.267

The correlation coefficients found in this study suggested an average weak positive correlation for visual arts and a moderate positive correlation for performing arts. For the entire sample of 50 for each category, that allowed for greater than 48 degrees of freedom. Using the table for critical values for the PPMCC, the significant value was 0.273 (Bluman, 2010). Based on these results, the Null Hypothesis 1 was rejected for all categories, except 2011 visual art and 2012 performing arts.

The results warranted a regression to check for causality of the data. The regression analysis also allowed the researcher to create a scatter plot of the data with a line of best fit visualized. This could be used to contribute to the prediction of a student's ACT score based on the arts discipline in which he or she was enrolled. The results can be seen in Figure 1.

The average visual arts *r*-squared value of 0.13 implies that at the 95% confidence level, 13% of student variation in ACT score could be accurately predicted by variation in the number of visual fine arts coursework in which the student enrolled. This would

be based on his/her enrollment in two or more years of visual arts. However, the other 87% of the student's ACT score would likely be affected by other variables.

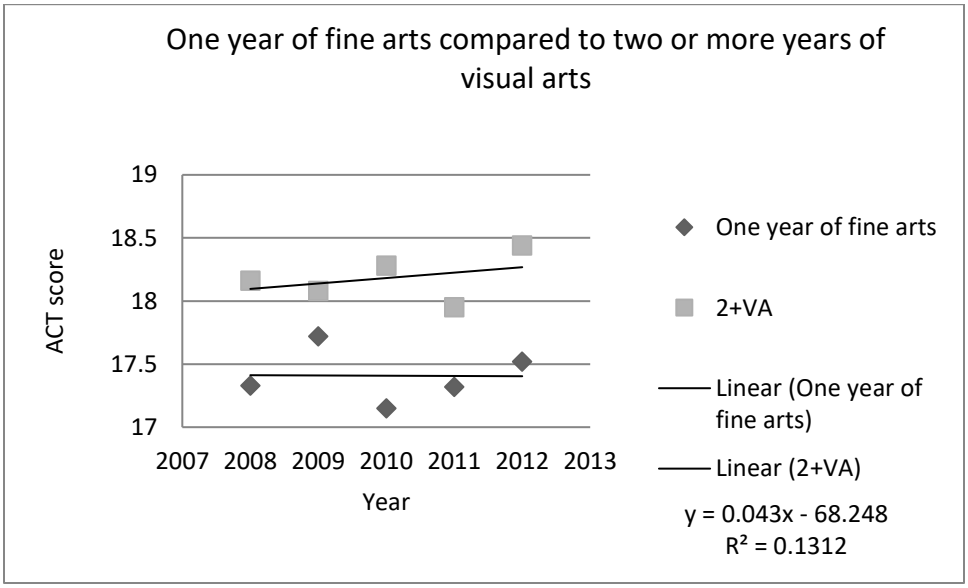

Figure 1. Regression trend line for two or more years of visual arts when compared to one year of fine arts only.

Therefore, the results in visual art are not easily predicted. The researcher then examined the results in two or more years of performing arts when compared with ACT scores of students who had only taken a single required year of fine arts. The results can be seen below in Figure 2.

In this case, the *r*-squared value of 0.54 implies that at the 95% confidence level, 54% of the variation in a student's ACT score could be accurately predicted by variation in the number of fine performing arts coursework in which the student enrolled. This would be based on his/her enrollment in two or more years of performing arts. However, the other 46% of the student's ACT score would likely be affected by other variables. This supports historical research in performing arts.

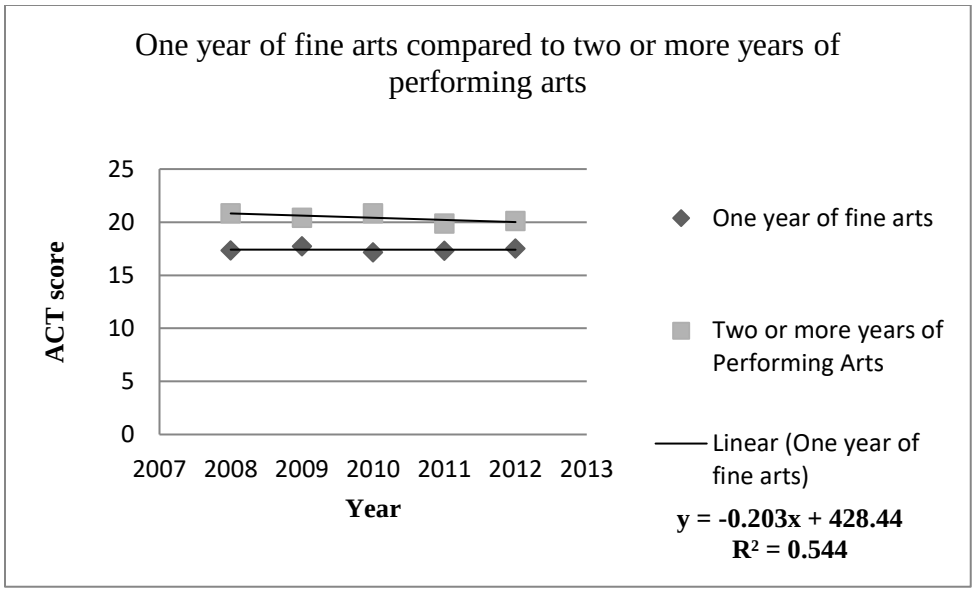

Figure 2. Regression trend line for two or more years of Performing Arts when compared to one year of fine arts only.

Based on the results of the correlation and regression analyses, the researcher rejected the Null Hypothesis 1 and supported Hypothesis 1, implying that there is a relationship between cumulative ACT scores and the number of fine arts courses completed, as in situations in which students have only taken one year of fine arts and students have taken more than one year of fine arts. However, based on the statistical data, this is a mild relationship in visual arts and more moderate in the performing arts.

Null Hypothesis 2

H_o2 (Null): There is no difference between the average high school student ACT composite score when compared to students who enrolled in multiple years of fine arts coursework to the average ACT composite score for the district population (for the academic years 2008–2013).

The goal of the second hypothesis was to determine if there was a statistical difference in composite ACT score among students who completed more than the required one year of fine arts when compared with the district population. Hypothesis 2

concerned the overall composite test scores only. The researcher compared students from the sample set who completed multiple years of fine arts with the ACT scores that the district reported to MODESE during the years of the study.

The researcher took ACT scores for students in the sample sets, created mean composite ACT scores for each of the years of the study and then compared that mean score with the district reported score. The researcher then applied a *z*-test for difference in means, comparing two means in order to determine if any exiting difference was statistically significant during the five years of the study. Standard deviation of both the district population and the sample set of students who had completed two or more years of fine arts was then completed. A comparison of ACT scores can be found in Table 8.

Table 8

ACT Scores

Year	District ACT Average	Two or More Years of Fine Arts Average
2008	17.32	19.5
2009	17.40	19.25
2010	17.96	19.56
2011	17.41	18.91
2012	17.18	19.27

Based on the analysis, and with a 95% confidence level, the researcher concluded that the sample set was normal and did not contain an undue skew. When analyzing the data, the researcher was working with a null hypothesis that there was no difference in cumulative ACT score between the district population and students taking two or more

years of fine arts instruction during the time of the study. The researcher was working with a hypothesized mean of zero. The results can be seen in Table 9.

Table 9

Z-Test 1 results

Statistical Test	Result
Hypothesized Mean Difference	0
z	-5.54
alpha	0.05
Z-Critical two-tail	1.95
Confidence Interval	95%

The researcher calculated a *z*-score of -5.54. Because the value of -5.54 was smaller than the *z*-critical value of -1.95, the *z*-value does fall in to the critical range and the null hypothesis was rejected. Based on the *z*-score, it can be concluded that there was a statistical difference between scores on the composite ACT between the district population and students who completed more than the required one year of fine arts. Therefore, Null Hypothesis 2 was rejected, and Hypothesis 2 was supported. The researcher noted that, in addition to a statistical difference, there was also an observable difference in mean. The researcher also noted that, during the time period of the study, out of the 5,329 students who took the ACT, 2,603 were enrolled in more than one year of fine arts. This equates to 48.8 % the population.

Null Hypothesis 3

H_o3 (Null): There is no difference between the average high school student ACT composite score, and average ACT sub score in English, math, reading, and science when compared to students enrolled in multiple years of fine arts coursework and average ACT

sub score in English, math, reading, writing, and science of students who have enrolled in only the one required year of fine arts (for the academic years 2008–2013).

Table 10

ACT Scores on Subsections

Year	Subject Area	One Year of Fine Arts Coursework	Two or More Years of Visual Arts	Two or More Years of Performing Arts
2008	English	15.94	17.6	21.02
	Math	16.81	18.3	20.44
	Reading	17.52	17.84	21.1
	Science	17.75	18.02	20.2
2009	English	16.68	17.6	20.5
	Math	18.12	17.24	20.14
	Reading	17.38	18.16	20.78
	Science	18.26	18.9	19.9
2010	English	16.65	17.68	20.66
	Math	16.67	17.6	19.78
	Reading	17.58	18.14	24.26
	Science	17.59	19.089	21.06
2011	English	16.58	17.67	19.63
	Math	16.94	17.95	19.3
	Reading	17.76	17.55	20.14
	Science	17.54	18.25	20.12
2012	English	16.64	17.66	19.86
	Math	17.66	17.56	19.44
	Reading	17.84	18.48	20.52
	Science	17.44	19.5	20.24

Hypothesis 3 dealt with comparisons of the sub scores of the various sections of the ACT test to see if particular disciplines were affected more greatly than others. Table 10 lists the average scores on each subsection. The researcher wished to determine if any of the various subsections of the test saw greater impact from student enrollment in arts courses. The researcher used the same sample sets from one year of fine arts study only and then two or more years of both visual and performing arts.

The researcher took student scores in the sample sets and created mean composite ACT scores for each of subsections. The researcher then again applied a *z*-test for difference in means, comparing two means in order to determine if there was a statistical difference between the means during the five years of the study.

Table 11

Z-Test 2 Results

ACT Subsection	Alpha	Hypothesized Mean Difference	Confidence Interval	z-value	z-critical value (two-tailed)	Reject Null Hypothesis
English	0.05	0	95%	5.16	1.95	yes
Math	0.05	0	95%	3.18	1.95	yes
Reading	0.05	0	95%	4.31	1.95	yes
Science	0.05	0	95%	4.50	1.95	yes

The researcher calculated the standard deviation for each sub test of English, math, reading and science for the five years of the study. Standard deviation was calculated for two separate groups: students who had only taken the one required year of fine arts, and students who completed more than the required year of fine arts. The *z*-value for a two-tailed test was then calculated with the decision of whether to accept or

support the null hypothesis. The researcher used an alpha level of 0.05 and then applied the *z*-test for difference in means. The results are seen in Table 11.

Based on the analysis, and with a 95% confidence level, the researcher concluded that the sample set was normal and did not contain an undue skew. Based on the *z*-scores, it was concluded that there was a statistical difference on each subsection of the ACT, among students who completed more than the required one year of fine arts and those who have only taken one year of fine arts. In the English subsection, the *z*-value of 5.16 was greater than the *z*-critical value of 1.965. The *z*-value falls into the critical regions on a normal bell curve and the null hypothesis was rejected. In the Math subsection, the *z*-value of 3.18 was greater than the *z*-critical value of 1.965. The *z*-value falls into the critical regions on a normal bell curve and the null hypothesis was rejected. In the Reading subsection, the *z*-value of 4.31 was greater than the *z*-critical value of 1.965. The *z*-value falls into the critical regions on a normal bell curve and the null hypothesis was rejected. And finally, in the Science subsection, the *z*-value of 4.50 was greater than the critical value of 1.95. The *z*-value falls into the *z*-critical region on a normal bell curve and the null hypothesis was rejected. Because all of the subsections supported the rejection of the null hypothesis, Null Hypothesis 3 was rejected. Additionally, the researcher supported Hypothesis 3, and there was a difference between the sub scores on the ACT, when comparing student scores for those who completed two or more years of arts instruction and those who completed only the single required year.

Summary

This was a quantitative study consisting of analysis of secondary source data. The researcher attempted to answer three main hypotheses with this study. First, the

researcher wanted to determine if there was a relationship between the composite ACT score and the number of fine arts courses completed, as described by students who completed two or more years of arts instruction and those who completed only the one required year. Secondly, the researcher hoped to determine if there was a statistical difference between the district population and students who completed two or more years of arts instruction. Finally, the researcher hoped to see if there was a difference in specific subsections of the ACT, between students who completed two or more years of arts instruction and those who completed only the required one year.

The researcher analyzed the ACT data by calculating the PPMCC of the data groups. The researcher next conducted a regression analysis to see if it was possible to determine a student's ACT score based on enrollment in the number of fine arts class completed. Based on those results, the researcher rejected Null Hypothesis 1, supporting that there was a statistically significant relationship between fine arts enrollment and composite ACT score.

Next, the researcher examined the data of the subgroup of students taking two or more years of fine arts and compared with the district ACT population. The researcher applied a *z*-test for difference of means of the two variables using the hypothesized mean difference of zero. Based on the results of the test, the researcher rejected the null hypothesis that there was not a statistical difference in scores between the district population and the group of students taking two or more years of fine arts. In addition to the statistical difference established, the researcher noted an observable mean difference. The researcher also noted that almost 49% of the population took two or more years of fine arts, which could possibly account for the support of Hypothesis 2.

Finally, the researcher examined the specific subsections of the ACT to see if one area showed higher results than another. The researcher compared each of the four subsections of the ACT, English, math, reading, and science, to determine if students who completed two or more years of fine arts scored higher on the subsections of the ACT than those students who only took the one year of required fine arts. The researcher applied a *z*-test for difference of means of the two variables using the hypothesized mean difference of zero. Based on the results in every section, the researcher rejected the null hypothesis and supported the hypothesis that there was a statistical difference in scores on the subsection of the ACT, when comparing students who completed only one year of required fine arts to those who completed two or more years of arts instruction.

The researcher discusses the implications of the results of the study in Chapter Five. The researcher makes inferences and examines trends discovered as a result of this study. The researcher discusses what this might mean for school districts in regards to curricular programming and accreditation. Finally, the researcher discusses the ways that school districts may benefit from the research in the future.

Chapter Five: Discussion and Reflection

Overview

The study of fine arts and its correlation to student achievement in other academic areas was a topic of study for many years, prior to this writing. While the NCLB Act (2003) stated that fine arts was a core subject area, as of 2015 it had yet to be a tested area in the state of Missouri, with the exception of items included on the NAEP (2015). The MSIP 5 changed the standards for school district accreditation in Missouri (MODESE, 2015a). Under MSIP 5, fine arts coursework at the elementary level was no longer a required area, and was instead considered a Best Practice. Middle School required no fine arts whatsoever. While students in the state of Missouri were required to take one year of fine arts for high school graduation, there was no part of MSIP 5 that required any district to offer or maintain any fine arts coursework, other than the one credit required for graduation.

Within the five years of this study and through the publication date of its results in the form of an EdD dissertation, numerous research studies began showing causality between fine arts as an area of study and achievement in other academic fields. Most notable was the study from Moreno et al. (2011) that found two years of a fine art changed the chemical composition of the brain, allowing the brain to learn new information at a faster rate and at an increased level of recall. Moreno et al. (2011) research found that it required two consecutive years of the same fine art in order to gain significant results.

As a result of the MSIP 5 adoption in 2014, some school districts began reducing fine arts coursework and teaching positions, in order to balance district budgets or to

provide more funding to assessed content areas (Missouri Alliance for Arts Education, 2015). MSIP 5 made the ACT a mandatory statewide test for all juniors. Scores on the ACT were a factor in accreditation for all school districts in Missouri, beginning in 2014 (MODESE, 2015a).

In 2016, Missouri required 24 completed credits for high school graduation (MODESE, 2016a). Only one year of fine arts study was needed for high school graduation. Additional years of study in fine arts counted as elective credits. In contrast, Missouri required four credits of English and three each of social studies, math, and science. Practical arts, including personal finance, and physical education/health each required one and a half credits. The state of Missouri also required seven elective credits for graduation. This made fine arts the smallest required area of study for Missouri high school graduation in 2016. (MODESE, 2016a).

There were several ongoing studies about the correlation of fine arts coursework and SAT scores. The most notable was the research of Vaughn and Winner (2000, 2010) in numerous studies, as well as their individual work with other researchers. The SAT was the dominant college admissions test on both the East and West Coasts of the United States (SAT, 2015). Other than an individual study in 2014 by the Nashville school system, the researcher could not locate research studies regarding fine arts coursework and the correlation to the ACT, which was the most common college admissions test in the Midwest United States (ACT, Inc., 2014). Furthermore, the researcher was unable to find past studies linking the study of fine arts coursework to standardized test achievement when dealing with a predominantly African American population.

The researcher focused on three research hypotheses in this study. All three hypotheses were quantitative in nature and involved secondary source data. The researcher obtained this data directly from the District Twelve Department of Research and Evaluation.

The first hypothesis was whether there was a statistical relationship between ACT scores and the number of fine arts courses completed; described as students who completed only the required year of fine arts needed for graduation or students who completed more than one year of either visual arts or performing arts. The second hypothesis concerned whether there was a statistical difference in the scores of students taking more than one year of fine arts when compared with the cumulative ACT scores of the district population. The final hypothesis was whether there was a statistical difference in the scores on the four subsections of English, Math, Reading, and Science, of students taking one year of fine arts when compared with students who completed more than one year of fine arts.

Hypotheses

H_a1:(Alternate)There is a relationship between high school student ACT scores and the number of years the students enrolled in fine arts coursework.

H_a2 (Alternate): There is a difference between the average high school student ACT composite score when compared to students who enrolled in multiple years of fine arts coursework to the average ACT composite score for the district population 2008–2013.

H_a3 (Alternate): There is a difference between the average high school student ACT composite score, and average ACT sub score in English, math, reading, and

science when compared to students who enrolled in multiple years of fine arts coursework and average ACT sub score in English, math, reading, writing, and science of students who have enrolled in only the one required year of fine arts 2008–2013.

Data Analysis

The researcher used secondary data sources, reported by the district and used in the study. The sample included data gathered from three high schools, in the same school district, over a five-year calendar period. The researcher used the ACT scores reported to the district directly from ACT, Inc. These scores were reported to the district annually, four-to-six weeks after the four nationally scheduled testing dates, scheduled in October, December, February, and June. This meant that the district received score updates four times each year. If a student took the ACT on an alternate date, such as scheduled in September or January, those scores were reported to the district with the next national testing date score disbursal.

The researcher divided students by calendar year of ACT participation and by arts course enrollment. The researcher then defined which arts courses were considered second year arts courses or higher and which were considered introductory level courses, based on the prerequisites in the District Twelve (2008, 2009, 2010, 2011, 2012, 2013) course catalogs for the researched years.

The researcher then collected a randomized sample of 50 for each academic year using a computerized randomizer. The researcher completed the randomized samples of 50 for each calendar year and then conducted randomized samples separated by fine arts content and number of years in each fine art, and then calculated the mean, standard

deviation, and variance for each sample set. Statistics were completed using an electronic spreadsheet in Microsoft Excel.

Because of the overlap in the scholastic year, the years for purposes of this study were defined by calendar year, meaning the actual time period of the study was from the academic years of 2008–2009 to 2012–13. In 2013–2014, the state began mandating that districts test all 11th-grade students with the ACT, which shifted the overall scores. Prior to 2013–2014, the ACT was an elective test and was usually only taken by students planning to attend a four-year university.

For the ACT score of the general population, the researcher originally planned to use the mean ACT scores reported by the district to the state of Missouri during the years of the study (2008–2013) to define the district population. However, upon a discussion with the District Twelve data analyst, the researcher found that the ACT scores reported to the state were only the mean of 12th-grade students who actually graduated in that same calendar year. The mean score reported to the state did not include students in grades nine through eleven, nor did it include 12th-grade students who did not actually receive a diploma, regardless of the reason, the student did not graduate.

Because of this, the researcher used the same randomized methodology to calculate the sample mean ACT score for each year from the general population. When including a randomized sample of the entire tested population, the researcher found the mean ACT score for the population differed from the mean ACT score annually reported to the state of Missouri by up to two points.

Hypothesis 1

To answer the first hypothesis regarding student ACT scores and number of years of arts coursework, the researcher applied a PPMCC. The researcher hoped to determine if there was a statistical correlation between the number of years a student was enrolled in fine arts coursework and the student's ACT score.

The average correlation during the years of the study was 0.395 for visual art and 0.652 for performing arts. Using the table for critical values for the PPMCC the significant value was 0.273. Only the years 2011 (in visual art) and 2012 (performing arts) did not result in statistically relevant results, therefore the researcher supported Hypothesis 1. The correlation coefficients found in this study suggest an average weak positive correlation for visual arts and a moderate positive correlation for performing arts.

Therefore, the researcher supported the hypothesis that there was a statistical relationship between ACT scores and the number of fine arts courses completed, among students who completed one year of fine arts and students who completed two or more years of visual arts or two or more years of performing arts. Based on these results, the researcher chose to run a regression to see if it was possible to predict the ACT score of students based on fine arts courses. The researcher found that visual arts courses possibly contributed up to 13%, and performing arts by 54%, toward academic success on the reported scores measured by ACT, Inc. The researcher can state that there is a positive relationship between the number of years a student is enrolled in a fine arts course and the student's ACT score.

Implications

The results of this particular aspect of the study supported what the historical research showed. They also supported the research that was completed with regard to the SAT (Vaughn & Winner, 2000, 2010). Most intriguing was that there were other new arts studies that were then-currently claiming causality, regarding arts coursework and achievement in other areas (Johnson & Memmot, 2006). This aspect of the study demonstrated that the one year of required fine arts was not enough to impact significant change on test scores. The study recent to this writing by Moreno et al. (2011) found that two years of music instruction was required to change the brain chemistry to increase learning. This study would also support those findings. The study also supports the historical research citing a correlation between fine arts coursework and achievement in other areas. The discrepancy between visual and performing arts also echoes the study conducted by Winner and Cooper (2000) and Vaughn and Winner (2000, 2010), who claimed that only instrumental music had any real impact on student achievement.

The results of this study could be used by school districts and school counselors to help shape student elective choices. Suggesting a student continue in a fine art, or making that feasible for a student to do, would seem to increase the student's achievement on the ACT and help with postsecondary achievement.

The Wright City School District (2015), in Missouri, changed scheduling approach in order to follow research from the Moreno et al. (2011) study (personal communication, E Desmond Lee, Fine Arts Collaborative, September 20, 2012). The elective areas were scheduled first on the high school schedule. This meant that any student who wanted to take fine arts was allowed to do so, without having scheduling

conflicts with core area classes. After making this change in 2013, the district went from being a low-performing district to winning Missouri's Most Improved award, due to high standardized test scores, including the ACT (personal communication, E Desmond Lee, Fine Arts Collaborative, September 20, 2012). Representatives from the district believed the improvement was a result of an increased focus on the arts. The Wright City model was considered by other districts as a way to improve student achievement.

The important factor to note is that arts programs were given validation as arts programs, rather than being forced to teach core content, disguised as a fine arts course, which was occurring in many districts. Many arts teachers reported having to sacrifice fine arts instructional time to teach math or English/Language Arts lessons, disguised as fine arts. This allowed for students to increase engagement and learn the actual arts curriculum (personal communication, M. Motil, art department chair, October 24, 2014).

Furthermore, the sacrifice of arts instructional time violated the MODESE (2016a) model of arts integration for the Missouri Learning Standards, which used the exact opposite approach. Rather than teach core content in fine arts courses; instead, core courses were using fine arts approaches and units of study in those classes, in order to teach content. For example, a science class might study light and sound as it applied to a theatrical production, or a math class might learn the geometry behind artistic tessellations.

Recommendations for Further Study

The aspect of this study that examined the relationship between academic achievement and the number of fine arts courses completed that could be developed further. It would be interesting to determine if there was a greater statistical difference as

students take more and more years of arts coursework. Past research suggested this was true, but there was no statistical confirmation.

Another area of study would be to examine specific arts disciplines, to determine if there was a difference in achievement, depending on the specific fine art that a student studied. This research study suggested that performing arts was linked to greater achievement on the ACT than visual arts. Potential questions include: Is there a difference depending on the specific performing art?; and, for example, does instrumental music create a greater effect than vocal music, theatre, and dance when looking at ACT scores?

It might be interesting to examine students who completed more than one fine arts course for more than one year and see if the scores increase. The questions: Does a student who enrolls in multiple years of both band and visual art score higher on the ACT than a student who only takes band?; and, furthermore, if there is a statistical benefit, how many years of course study is required in each area in order to see the benefits?

The researcher also recommends examining fine arts courses with an extracurricular aspect, to see if those courses increase scores more than those arts courses without an extracurricular piece. A researcher might ask: Do band, choir, dance, and theatre students who also participate in band, choir, dance, and theatre after school score higher than those who do not? The same question could be asked of students who were enrolled in private arts lessons as an afterschool activity. Also, the study could be repeated among a district that was not predominantly African American, in order to see if the results are cultural.

The researcher is also intrigued by the discrepancy between visual and performing arts. One thing to note is that in every one of the schools studied, the performing arts courses were taught by the same instructor for four years, while the visual arts were not. Each school studied employed more than one visual art teacher, and the courses taught would vary from year-to-year. Two of the schools participating in the study had four different visual arts teachers.

In contrast, at all three schools a student would have the same instructor for band, orchestra, choir, or theatre. Of the three high schools studied, only one had two choir teachers, yet they team-taught. One other school had three theatre teachers, who each taught different courses; however, the classes had an extracurricular component and all three teachers worked collaboratively with all students after school. Yet, in each school, students had a different visual art teacher for every visual art course taken. As all visual art classes were one semester long, as opposed to the year-long performing arts courses, it was highly unlikely that students had the same teacher. Additionally, there was not a co-curricular after-school component for visual art, yet each of the performing arts had an after-school component, from as little as two concerts per year to programs as intense as six weeks of daily play practice. The researcher would be curious to know how much of the statistical results were as a result of adult/student mentoring relationships developing and how much had to do with actual arts content.

Hypothesis 2

The researcher hoped to determine if there was a statistical difference between the cumulative ACT scores of the district population and the cumulative ACT scores of

students who completed two or more years of fine arts. The researcher was working with a null hypothesis that there was not a statistical difference between the two scores.

The researcher applied a *z*-test for two different means to determine the answers using the mean ACT score the district reported to the state as the population mean. As previously stated, after discovering that the district mean reported to the state consisted of only the top ACT scores of seniors who actually graduated, the researcher then re-calculated a mean more accurate to the purposes of this study, from a randomized population sample. The researcher used the re-calculated mean from the randomized samples, which combined students who completed two or more years of either visual or performing arts into one sample set.

The researcher calculated a *z*-score of -5.54. Based on the *z*-score, it could be concluded that there was a statistical difference between scores on the composite ACT between the district population and students who completed more than the required one year of fine arts. Therefore, Hypothesis 2 was supported, and there was a significant difference between those who completed fine arts coursework and the general population. The researcher did note that students taking more than one year of fine arts made up almost 50% of the population.

Implications

The results of this test seem to support historical research. However, in retrospect, this null hypothesis seems possibly flawed. Once the data was separated, it became clear that almost 50% of the population also fell into the subgroup of being enrolled in two or more years of fine arts. This could account for the statistical results.

This test was applied with all fine arts areas, whereas Hypothesis 1 separated visual and performing arts. This test also did not account for students who may have taken fine arts in ninth and 10th grade and then took the ACT as 11th graders. These students would have completed the coursework, but were not be tracked in the data, since they were not then-currently enrolled in fine arts. There was an observable difference and the students who completed two or more years still demonstrated higher ACT scores. However, the results agreed with past research and showed a strong positive correlation between enrollment in fine arts coursework and higher scores on the ACT.

Recommendations for Further Study

The researcher would like to repeat this study with the new ACT, Inc., data from 2014, 2015, and 2016, now that every junior represented in the original data pool was tested, to see if the statistical difference originally established still held. It would be interesting to compare the scores of juniors enrolled in two or more years of fine arts with those who did not take fine arts or who only completed one year. This might be a more accurate picture, as the ACT was optional prior to 2014, and only students who planned on attending college took the test. Since this was conducted prior to the ACT being a state-mandated test, the fact that the test was elective and only involved college-bound students could have had an effect on the outcome. The fact that almost 50% of the population was also enrolled in a second year of fine arts also accounted for the lack of statistical difference.

The researcher examined the data from 2013 and 2014. The ACT was an optional test for the district in 2013, and District Twelve chose to pilot the test to all juniors. In 2013, the average ACT score for the district among graduates was an 18. However, in

2014, all juniors were required to be tested. The district average ACT score among juniors was a 16.4. Among graduates in 2014, it was a 17.3 (District Twelve, 2015).

The researcher would be interested in repeating the study and comparing juniors who were enrolled in more than one year of fine arts to the district population of juniors to see if there was a statistical difference. If there was a statistical difference, especially considering the events in the district community during 2014, the results would be highly notable. The researcher plans to repeat this study with that data and examine those results.

Hypothesis 3

The researcher hoped to determine if there was a statistical difference in any of the sub tests, when comparing students who completed more than one year of fine arts with those students who completed only the one required year of fine arts. The researcher was working with the null hypothesis that there was not a statistical difference between the scores.

The researcher applied a *z*-test for difference in means to determine the answers, using the mean ACT score the district reported to the state as the population mean. The researcher used the calculated mean from the randomized samples, which combined students who completed two or more years of either visual or performing arts into one sample set for each of the four ACT subsections of English, Math, Reading and Science. In the English, Math, Reading, and Science subsection, the *z*-values of 5.16, 3.18, 4.31, and 4.50, respectively, fell into the critical region on a normal bell curve and the null hypothesis was rejected, with regard to each sub test. Because all of the subsections supported the rejection of the null hypothesis, the researcher chose to reject the null

hypothesis and supported the hypothesis that there was a statistical difference between each of the subsections and the average ACT composite score, when compared to students who enrolled in multiple years of fine arts coursework and to students who enrolled in only the one required year of fine arts.

Implications

Each of the subsections showed statistical significance. This means that fine arts coursework impacted student achievement in each of the areas tested on the ACT. Significantly, the greatest statistical increases were in English and Reading. This implied that students taking fine arts could expect the greatest achievement in the English/ Language Arts sections of the ACT. This was interesting, as most of the historical research completed involved math and the increases in fine arts (Catterall, 2009). This raises a potential question of whether students in fine arts were stronger readers than those who were not.

The second largest increase was in science. The science section of the ACT involved minimal scientific knowledge and instead involved the ability to read a chart or graph (ACT, Inc., 2015). The fact that this area showed the next highest development was interesting and warrants further study. As science was becoming an area of focused testing in the state of Missouri, this meant that arts coursework could potentially increase achievement on that test also.

Finally, the math section of the ACT also showed a significant difference for students involved in two or more years of fine arts. This confirmed past research and also suggested that arts may be a way to contribute to elimination of the achievement gap in mathematics instruction.

Recommendations for Further Study

As the ACT was a mandatory state test for all 11th graders, starting in 2014, this aspect of the study would be interesting to repeat to determine if the results are the same. It would also be interesting to examine student test scores on the Missouri End of Course exams to see if the same benefits were occurring. The researcher was also interested to see if the increased test scores apply to students in lower grades. The question could be, do elementary students in the same district score higher on their standardized tests when they are exposed to increased fine arts?

The then-current pedagogical trends and research were heavily focused on arts integration as a way to benefit student achievement in core content areas. The researcher would be interested to see a research study that examined the results of arts integration. Interesting questions would be: Does using visual art to teach reading have a significant impact on reading levels when it is taught in a regular classroom setting involving a regular classroom teacher, a teaching artist, and an arts educator?; and how much of any gains are based on engagement and how much on actual learning?

The researcher would also be interested to see if the specific increases on content-specific classes also applied to daily achievement. Research could possibly answer: Do students enrolled in two or more years of fine arts courses have higher grade point averages than those who are not?; and, does it only apply to specific courses? It might also be interesting to conduct a qualitative study to see if students perceived any of the benefits of an arts education in their core classes.

Another research question would be to examine when students actually began arts education. Most strings students begin in grade three and band in grade four. All

students were required to have vocal music and visual art through grade five. An investigation could answer: When did students begin performing in theatre?; or dance?; or do students feel that they are actually learning core content concepts through their arts courses, or do they feel that they are learning research habits and academic discipline that are enabling them to achieve?

Conclusion

The researcher focused on three quantitative research hypotheses in this study. All three hypotheses were analyzed quantitatively. The first hypothesis examined whether there was a relationship with ACT scores between students who completed only the required year of fine arts and students who completed more than one year of either visual arts or performing arts. The second hypothesis concerned whether there was a statistical difference in the scores of students taking more than one year of fine arts when compared with the cumulative ACT scores of the district population. The final hypothesis was whether there was a statistical difference in the scores on the four subsections of English, Math, Reading and Science, of students taking one year of fine arts when compared with students who completed more than one year of fine arts. The researcher used secondary source material from the focus district in order to answer these questions. The district studied was predominantly African American at the time of the study.

When researching the relationship between number of years of arts study and ACT score, the researcher looked at the composite ACT score of students who had only taken one required year of fine arts and compared it with students who completed two or more years of visual arts and two or more years of performing arts. He calculated the

PPMCC of the data sets. He also conducted a regression analysis on this data to determine whether it was possible to predict a student's ACT score, based on the number of years of fine arts coursework. The researcher found an average weak positive correlation for visual arts and a moderate positive correlation for performing arts. He found that contributions to ACT score could be as much as 13% from visual arts and as much as 54% from performing arts. The researcher established that there was a positive correlation between number of years of fine arts enrollment and ACT score.

The study took place over a five-year period and examined the calendar years, rather than the academic years. As the ACT was now given to all juniors in Missouri, at the conclusion of the study timeline, it is possible that the results would be even more significant. Repeating the study would also increase the reliability of the results. The researcher calculated the *z*-value to check for a difference in means between the average district ACT population and the average ACT score of students who completed two or more years of fine arts to address Null Hypothesis 2. The researcher used the calculated mean from the randomized samples which combined students who completed two or more years of either visual or performing arts into one sample set. Based on the *z*-score, it was concluded that there was a statistical difference between scores on the composite ACT between the district population and students who completed more than the required one year of fine arts. Therefore, the researcher supported Hypothesis 2.

The third hypothesis involved scores on each of the subsections of the ACT and the comparison of those sub scores between students who completed only one required year of fine arts and students who completed two or more years. The researcher

calculated the *z*-score of each of the compared subsections. In each of the subsections, he found a statistically significant difference in score.

That statistical difference implied that students who enrolled in more than one required year of fine arts scored higher on every subsection of the ACT. The most significant increases were in English and Reading, followed by the Science subsection and then Math. It may be beneficial for future researchers to examine if student exposure to fine arts increased reading ability, or increased scores on other state tests. The then-current trend of Arts Integration might also benefit from additional research in this area.

In the then-current high stakes testing environment that was education, many times administrators and school communities lost sight of the overarching goal of education: to create a well-rounded and independent adult, capable of handling any variety of issues that may arise in the course of his or her lifetime. The focus on testing led to a reduction in actual instructional time and issues with student engagement. Students should want to come to school. In addition to the reduction of arts instruction, other elective areas, such as world language, physical education, and career and technical education, also felt a reduction in instruction. Despite the statement that fine arts was a core area in both NCLB and the Every Student Succeeds Act (2015), the arts were being eliminated and perceived as frivolous by many administrators and legislators.

Many educators and school districts were simply increasing instructional and testing time in the core subject areas of English/Language Arts and math, while reducing instructional time in all other areas. Years of research stated that, not only was this ineffective, but it was actually counterproductive; however, it was still a common practice. Under MSIP 5, the state of Missouri removed the mandatory minutes for

elementary students in Art, Physical Education, and Music, downgrading them to a Best Practice status (MODESE, 2015a). Under MSIP 4, a district could actually lose accreditation if it failed to provide arts instruction. Under the new evaluation cycle, it was merely a suggestion.

The School District of Riverview Gardens (2007) added an additional English and math course for all of its students when test scores dropped in 2001. Riverview Gardens High School adopted a block schedule of eight periods. Students had a math and English class each day for 90 minutes. Rather than increasing scores, the scores actually went down, as student attendance and engagement dropped. Within five years, the district was unaccredited, and the state took over their management (personal communication, data personnel, School District of Riverview Gardens, 2007). This is just one example of how the then-current educational philosophy of increasing instructional time in core areas to improve their achievement on standardized tests was ineffective.

If the United States is to remain a viable world power, schools must increase and capitalize on the things that made us strong. At the time of this writing, there was a public outcry over test scores; however, the United States test scores were never been at the top. Since the 1960s, the United States was been firmly in the middle, as far as language and math achievement (Programme for International Student Assessment [PISA], 2015).

What, then, made our economy the top ranking economy in the world? Our ability to innovate (Pink, 2006). Other countries were adopting the instructional methods that great educators used in previous decades, when student success and teacher success were not measured by a standardized test score. They were teaching engaging, fun

lessons that encouraged students to have experiential learning and to think 'outside the box' — the very skills that were taught in fine arts courses. Yet these were the then-current skills that educational leaders were referring to as 'fluff' and were eliminating in favor of linear plans of study.

Pink (2006) stated in his book, *A Whole New Mind*, that the way to improve 21st-century skills was by teaching right-brained thinking, the kind of thinking taught in fine arts. Pink stated that the then-current skills needed were Design, Story, Symphony, Empathy, Play, and Meaning. These replace the linear 20th-century modalities and skills of function and acquisition.

If our educational system was to remain outstanding, we must acknowledge what was stated in NCLB (2003) and then restated in the Every Child Succeeds Act (2015). There are more core content areas than simply tested areas. Those areas are vital to the success of 21st-century learners and need to be given the same respect and focus.

Most students do not remember the day they learned to factor polynomials. However, they do remember the day they made gingerbread people after reading *The Gingerbread Man* in first grade. The teacher taught literature, math through measuring, science through heat and chemical reaction, and visual art through the design and decoration of those cookies (You want a gingerbread dinosaur instead? Perfectly fine. Design it.); and then, theatre as they acted out the story. That experience and those skills were retained as a long term memory. This supported the idea of arts integration. Many students will cite a fine arts teacher as the person who inspired them to try something new or to trust in themselves.

There is also the issue that non-tested areas, specifically the arts, provide a place that some students will shine. Students learn to work with various types of people in fine arts classes. All students are integrated in fine arts. Students will learn to work with ESL students, making them stronger world citizens. They will work with mentally impaired special education students and learn empathy and teamwork, and they will work with physically disabled students and learn that there are not the differences that they may have perceived.

Additionally, academically gifted students benefit the most from the arts. The reason is simple. In addition to the requirement of creative thought synthesis, application and teamwork, rather than simply regurgitating facts on a worksheet, gifted students learn that it is impossible for any work of art to be perfect. There is always revision or improvement that can be done. For a severe overachiever, this can be the most important lesson they learn as it forces a child to apply effort, persevere, and work to achieve at a higher level, while still realizing that they can always improve.

Pink (2006) stated that in the 21st-century, it is essential schools and society teach children to innovate. If something can be made by a machine or outsourced to another country, it will be. Schools need to teach innovation and creativity. If schools fail to educate the whole child and start advocating for one subject area over another, or simply focus on the 'three Rs' of 'reading, 'riting and 'rithmetic,' the United States position as the strongest global economy is destined to fail. The arts allow students to integrate every content area and require that in order to create or perform art. It is hardly surprising that the arts resulted in higher test scores in other areas. Subjects should be interrelated. When educators teach them in isolation, they lose sight of the importance of

collaboration. Equal education of the whole child in every content area is the key to success.

References

Allen, R. S. (2006). Fine arts and student academic success: A critical examination (Doctoral dissertation). Sam Houston State University, Access No. 20060101.

Ahmed-Ullah, N. (2012a, February 28). Arts programming a factor in improved standardized tests. *Chicago Tribune*, Entertainment, n.p.

Ahmed-Ullah, N. (2012b, March 3). Arts education leads to improved test scores. Three- year research study conducted in 2011 by Loyola University School of Education. *Chicago Tribune*, n.p.

American College Test, Inc. (2011). ACT. Retrieved from http://www.act.org/research-policy/national-curriculum-survey/

American College Test, Inc. (2013). ACT. Retrieved from http://www.act.org/research-policy/national-curriculum-survey/

American College Test, Inc. (2014). ACT. Retrieved from http://www.act.org/research-policy/national-curriculum-survey/

American College Test, Inc. (2015). Testing resource guide: District Twelve School District. PowerPoint, slide 59.

Art and the Common Core. (2014). *Education Week* webinar. Retrieved from http:// www.ed week.org/go/webinars

Art teachers nurture six senses in developing visual literacy. (2014). National Art Education Association. Retrieved from http://www.arteducators.org/advocacy

ArtScan. (2014). Missouri state policies. Snapshot of the states. Retrieved from http:// www.aep-arts.org

Arts and Education Council of Greater St. Louis. (2015, Summer). Art happenings: The state of the arts. Arts and Educational Council of Greater St. Louis, pp. 6–12.

Arts Education Partnership. (2009). Arts access in U.S. Schools. Retrieved from http://www.aep-arts.org/resources-2/report-arts-education-in-public-elementary-and-secondary-schools/

Arts Education Partnership. (2014). A snapshot of state policies for arts education. Retrieved from http://www.aep-arts.org/wp-content/uploads/2014/03/A-Snapshot-of-State-Policies-for-Arts-Education.pdf

Banks, O. (2010, March). Critical postcolonial dance pedagogy: The relevance of West African dance education in the United States. *Anthropology and Education Quarterly, 41*(1), 18-34.

Barry's Blog. (2011, July/August). News, advice and opinion for the arts administrator. Forum on Arts Education. Retrieved from http://blog.westaf.org/

Batcheldor, M. (2015). New program set to explore effects of music on mind. *Research News,* Vanderbilt University. Retrieved from http://news.vanderbilt.edu/20H15/09/new-program-set-to-explore-effects-of-music-on-the-mind/

Bellisario, K., & Donovan, L. (2012). Voices *from the field: Teachers' views on the relevance of arts integration.* Cambridge, MA: Lesley University.

Better Schools, Better Skills. (2000). Kennedy Center for the Arts. Retrieved from http://www.kennedycenter.org

Bluman, A. G. (2010). *Elementary statistics fifth edition.* New York, NY*:* McGraw-Hill.

Boske, C. (2012). Sending forth the tiniest ripples of hope that build the mightiest currents: Understanding how to prepare school leaders to interrupt oppressive school practices. *Planning and Changing, 43*(1), 183–197.

Bowen, D. H., Greene, J. P., & Kisida, B. (2014). Learning to think critically: A visual art experiment. *Educational Researcher, 43*(1), 37-44.

Brouillette, L., Childress-Evans, K., Hinga, B., & Farkas, G. (2014). Increasing the school engagement and oral language skills of ELLs through arts integration in the primary grades. *Journal of Learning through the Arts, 10*(1), 1-27.

Burton, J., Horowitz, R., & Abeles, H. (2000). Learning in and through the arts: The question of transfer, studies in art education. *Studies in Art Education*, *3*(41), 228–257.

Catterall, J. S. (1998). Involvement in the arts and success in secondary school. *Americans for the Arts Monographs, 1*(9), 1-12.

Catterall, J. S. (2002a). *Essay: The arts and the transfer of learning*. Retrieved from http://209.59.135.52/resources/toolkits/criticallinks/cl_overview.pdf

Catterall, J. S. (2002b). Essay: Research on drama and theatre in education. In R. Deasy (Ed.), *Critical links: Learning in the arts and student achievement and social development* (pp. 58-63), Washington, DC: Arts Education Partnership.

Catterall, J. (2009). Doing well and doing good by doing art: A 12-year national study of education in the visual and performing arts, effects on the achievements, and values of young adults. United Kingdom: iGroup Books.

Catterall, J. S., & Waldorf, L. (1999). Chicago Arts Partnership in Education. Evaluation summary. In E. Fiske, (Ed.). *Champions of Change: The impact of the arts on*

learning (pp. 47-62). Washington, DC: The Arts Education Partnership and the President's Committee on the Arts and the Humanities.

Catterall, J. S., & Waldorf, L. (2002). Chicago Arts Partnership in Education: Evaluation summary. In R. Deasy (Ed.), *Critical links: Learning in the arts and student achievement and social development* (pp. 72-73), Washington, DC: Arts Education Partnership.

Cawthon, S., Dawson, K., & Ihom, S. (2011). Activating student engagement through drama-based instruction. *Journal for Learning through the Arts, 7*(1), 1-31.

Cole, B. (2011). Community music and higher education: A marriage of convenience. *International Journal of Community Music, 4*(2), pp. 79-89.

Crawford-Barniskis S. (2012). Graffiti, poetry, dance: How public library art programs affect teens. *The Journal for Research on Libraries and Young Adults*, Part 2. Retrieved from http://www.yalsa.ala.org/jrlya/2012/09/graffiti-poetry-dance-how-public-library-art-programs-affect-teens-part-1-introduction-literature-review/

Crouch, E. (2013, September 22). Jennings schools show improvement even as neighboring districts struggle. *St. Louis Post Dispatch*, Section B, pp. 20-21.

D'Agrosa, E. (2008). Making music, reaching readers: Making powerful connections possible for young students. *General Music Today* (Online), *21*(2), 6–10. Retrieved from http://search.proquest.com/docview/1482377?accountid=12104

Darrow, A. (2008). Music and literacy. *General Music Today* (Online), *21*(2), 32–34. Retrieved from http://search.proquest.com/docview/1483034?accountid=12104

Dege, F., & Schwarzer, G. (2011, June). The effect of a music program on phonological awareness in preschoolers. *Frontiers in Psychology*, *2*(124). Doi: 10.3389/fpsyg.2011.00124

De la Cruz, R. E. (1995). The effects of creative drama on the social and oral language skills of children with learning disabilities (Doctoral dissertation). Illinois State University. Retrieved from http://www.artsedsearch.org/summaries/the-effects-of-creative-drama-on-the-social-and-oral-language-skills-of-children-with-learning-disabilities

Duncan, A. (2010, April 9). The well-rounded curriculum. Remarks at the Arts Education Partnership National Forum [Archived Information, Speech]. Retrieved from http://www.ed.gov/news/speeches/well-rounded-curriculum

District Twelve School District. (2008). Core data. Retrieved from http://www.fergflor.org.

District Twelve School District. (2009). Core data. Retrieved from http://www.fergflor.org.

District Twelve School District. (2010). Core data. Retrieved from http://www.fergflor.org.

District Twelve School District. (2011). Core data. Retrieved from http://www.fergflor.org.

District Twelve School District. (2012). Core data. Retrieved from http://www.fergflor.org.

District Twelve School District. (2013). Core data. Retrieved from http://www.fergflor.org.

District Twelve School District. (2014). Core data. Retrieved from http://www.fergflor.org.

District Twelve School District. (2015). Core data. Retrieved from http://www.fergflor.org.

Duma, A. L., & Silverstein, L. B. (2014). Cross-study findings: A view into a decade of arts integration. *Journal for Learning through the Arts, 10*(1), 1-20.

Eason, B. J. A., & Johnson, C. M. (2013). *Prelude: Music makes us*. Baseline research report. Nashville, TN: Metro Nashville Public Schools.

Education Council of the States. (2013). Maryland Assessment of Fine Arts in Education. Retrieved from http://www.ecs.org/html/Document.asp?chouseid= 5488

Elpus, K. (2013a). *Arts education and positive youth development: Cognitive, behavioral, and social outcomes of adolescents who study the arts*. National Endowment for the Arts. Retrieved from https://www.arts.gov/sites/default/files/ Research-Art-Works-Maryland.pdf

Elpus, K. (2013b). Is it the music or is it selection bias? A nationwide analysis of music and non-music students' SAT scores. *Journal of Research in Music Education, 61*(2), 175–194.

Evans, K. (2008,). Arts and smarts. University of California, Berkeley. Retrieved from http://greatergood.berkeley.edu/article/item/arts_smarts

Evans, K. (2012). Arts and smarts. University of California, Berkeley. Retrieved from http://greatergood.berkeley.edu/article/item/arts_smarts

Evans, K. (2016). Arts and smarts. University of California, Berkeley. Retrieved from http://greatergood.berkeley.edu/article/item/arts_smarts

Every Student Succeeds Act. (2015). 20 U.S.C.A. § 6301 et seq. Retrieved from https://www.congress.gov/bill/114th-congress/senate-bill/1177

Fine Arts Regional Consortium. (2015). Discussions on arts education. Retrieved from http://www.edplus.org/Job-Alike%20Groups/pln.php

Feldman, A. (2015, June 16). STEAM Rising. Arizona State University. Retrieved from http://www.slate.com/articles/technology/future_tense/2015/06/steam_vs_stem_why_we_need_to_put_the_arts_into_stem_education.html

Forseth, S. (1980). Art activities, attitudes, and achievement in elementary mathematics: Studies in art education. *Education Journal, 2*(2), 22-27.

Fowler, C. (1996). Strong *arts, strong schools.* New York, NY: Oxford University Press.

Fowler, C. (2008). *Strong arts, strong schools.* New York, NY: Oxford University Press.

Goldstein, T. R. (2011). Correlations among social-cognitive skills in adolescents involved in acting or arts classes. *Mind, Brain, and Education, 5*(2), 97–103.

Goldstein, T. R., & Winner, E. (2012). Enhancing empathy and theory of mind. Journal of *Cognition and Development, 13*(1), 19-37.

Goodman, J. R. (2002) A naturalistic study of the relationship between literacy development and dramatic play in five-year-old-children (Doctoral dissertation). George Peabody College for Teachers. Unpublished draft in 1990; published 2002. Retrieved from http://www.artsedsearch.org/summaries/naturalistic-study-of-the-relationship-between-literacy-development-and-dramatic-play-in-five-year-old-children

Government Access Organization. (2009). Access to arts education: Inclusion of additional questions in education's planned research would help explain why

instruction time has decreased for some students. Government Access Organization. Retrieved from http://www.gao.gov/new.items/d09286.pdf

Heastrup, M. (2010). *The effect of seventh-grade speech and drama classes on communication arts achievement* (Doctoral dissertation). St. Louis, MO: Maryville University.

Horn, J. (1992*). An exploration into the writing of original scripts by inner-city high school drama students.* Washington, DC: National Arts Education Research Center, Department of Education.

Imms, W., Jeanneret, N., & Stevens-Ballenger, J. (2011). *Partnerships between schools and the professional arts sector: Evaluation of impact on student outcomes*. ArtsEdSearch. Southbank, Victoria: Arts Victoria.

Impact of the arts. (2015). Missouri Citizens for the Arts. Retrieved from http://mo4arts.org/impact/impact-of-the-arts/

Ingram, D., Pruitt, L., & Weiss, C. (2014). Found in translation: Interdisciplinary arts integration in Project AIM. *Journal for Learning through the Arts*, *10*(1), 1-23.

Inoa, R., Weltsek, G., & Tabone, C. (2014). A study on the relationship between theater arts and student literacy and mathematics achievement. *Journal for Learning through the Arts*, *10*(1), 1-23.

International Arts Education Standards. (2011, August). The College Board, National Coalition for Core Arts Standards. Retrieved from http://www.nationalarts standards.org/sites/default/files/College%20Board%20Research%20-%20 International%20Standards_0.pdf

Israel, D. (2009, October*). Staying in school: Arts education and New York City high schools.* The Center for Arts Education. Retrieved from http://www.creativenz. govt. nz/ assets/ckeditor/attachments/1029/staying_in_school.pdf? 141023454 0ucation

Iyengar, S., & Hudson, A. (2014, March 10). Who knew? Arts education fuels the economy. *Chronicle of Higher Education.* Retrieved from http://www.chronicle. com/article/Who-Knew-Arts-Education-Fuels/145217/

Jensen, E. (2002). Arts with the brain in mind. *Adolescence*, 37(147), 649.

Jensen, E. (2005). Teaching *with the brain in mind* (2nd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.

Johnson, C. M., & Memmott, J. E. (2006). Examination of relationships between participation in school music programs of differing quality and standardized test results. *Journal of Research in Music Education, 54*(4), 293–307.

Joseph, A. (2014). The effects of creative dramatics on vocabulary achievement of fourth-grade students in a language arts classroom: An empirical study. Seattle Pacific University. Retrieved from http://www.artsedsearch.org/summaries/the-effects-of-creative-dramatics-on-vocabulary-achievement-of-fourth-grade-students-in-a-language-arts-classroom-an-empirical-study

Kalyoncu, R., & Tepecik, A. (2010). An application of project-based learning in an urban setting. Project Topic in the visual arts in 8th-grade classes of primary education. Retrieved from http://search.proquest.com/doc view/857523626

Korn, S., & Associates, Inc. (2012). Program Evaluation: Art Around the Corner. Unpublished Manuscript. Washington, D.C.: National Gallery of Art.

Marcotte, D., & Hansen, B. (2010). Time for school? *Education Next 10*(1*).* Retrieved from http://www. http://educationnext.org/time-for-school/

Malin, H. (2012). Creating a children's art world: Negotiating participation, identity, and meaning in the elementary school art room. *International Journal of Education and the Arts, 13*(6), 1-23.

Marzano, R. J. (2005). Best practices 6: Cooperative learning. Retrieved from https://esc marzano.wikispaces.com/6.+Cooperative+Learning.

Marzano, R. J. (2015). Best practices 6: Cooperative learning. Retrieved from https://esc marzano.wikispaces.com/6.+Cooperative+Learning.

Mastrorilli, T. M., Harnett, S., & Zhu, J. (2014). Arts Achieve, impacting student success in the arts: Preliminary findings after one year of implementation. *Journal for Learning through the Arts, 10*(1), 1–24.

McNeal, R. B. (1995). Extracurricular Activities and high school dropouts. *Sociology of Education, 68*(1), 62. Retrieved from http://search.proquest.com/doc view/ 21648 5750?accountid=12104

Michalos, A., & Kahlke, P. M. (2008, November). Impact of arts-related activities on the perceived quality of life. *Social Indicators Research, 89*(2), 193–258. Retrieved from http://eric.ed.gov/?id=EJ811263

Minton, S. (2002). Assessment of high school students' creative thinking skills: A comparison of the effects of dance and non-dance classes. In R. Deasy (Ed.), *Critical links: Learning in the arts and student achievement and social development* (pp. 8-9), Washington, DC: Arts Education Partnership.

Missouri Alliance for Arts Education. (2015). Missouri Alliance for Arts Education. Retrieved from http://www.moaae.org/main_page0.aspx

Missouri Arts Council. (2009). *The arts and economic prosperity*. Retrieved from https://www.missouriartscouncil.org/graphics/assets/documents/0cf6cfca8a05.pdf

Missouri Department of Elementary and Secondary Education. (2008). School data. Retrieved from http://dese.mo.gov/index.html

Missouri Department of Elementary and Secondary Education. (2009). School data. Retrieved from http://dese.mo.gov/index.html

Missouri Department of Elementary and Secondary Education. (2010). School data. Retrieved from http://dese.mo.gov/index.html

Missouri Department of Elementary and Secondary Education. (2011). School data. Retrieved from http://dese.mo.gov/index.html

Missouri Department of Elementary and Secondary Education. (2012). School data. Retrieved from http://dese.mo.gov/index.html

Missouri Department of Elementary and Secondary Education. (2013a). Common Core State Standards. Retrieved from http://dese.mo.gov/divimprove/curriculum/common-core-ela.html

Missouri Department of Elementary and Secondary Education. (2013b). School data. Retrieved from http://dese.mo.gov/index.html

Missouri Department of Elementary and Secondary Education. (2014a). Common Core State Standards. Retrieved from http://dese.mo.gov/divimprove/curriculum/common-core-ela.html

Missouri Department of Elementary and Secondary Education. (2014b). School data. Retrieved from http://dese.mo.gov/index.html

Missouri Department of Elementary and Secondary Education. (2014c). School Improvement Plan: Cycle 4. Retrieved from https://dese.mo.gov/quality-schools/mo-school-improvement-program/msip-4

Missouri Department of Elementary and Secondary Education. (2015a). Common Core State Standards. Retrieved from http://dese.mo.gov/divimprove/curriculum/common-core-ela.html

Missouri Department of Elementary and Secondary Education. (2015b). School data. Retrieved from http://dese.mo.gov/index.html

Missouri Department of Elementary and Secondary Education. (2015c). School Improvement Plan: Cycle 5. Retrieved from https://dese.mo.gov/quality-schools/mo-school-improvement-program/msip-5

Missouri Department of Elementary and Secondary Education. (2016a). Common Core State Standards. Retrieved from http://dese.mo.gov/divimprove/curriculum /common-core-ela.html

Missouri Department of Elementary and Secondary Education. (2016b). *Guidance for student transfers from unaccredited districts to accredited districts and charter schools*. Retrieved from https://dese.mo.gov/sites/ default/files/ Transfer_ Guidance.pdf

Missouri Department of Elementary and Secondary Education. (2016c). School Improvement Plan: Cycle 5. Retrieved from https://dese.mo.gov/quality-schools/mo-school-improvement-program/msip-5

Moody, E. & Phinney, A. (2012). Community-engaged arts for older people: Fostering social inclusion. *Canadian Journal on Aging*, *31*(3), 55–64.

Mohan, G. (2015, August 24) Brain knows how to stop thinking, start learning. *Los Angeles Times*. Retrieved from http://www.latimes.com/science/sciencenow/la-sci-sn-brain-stop-thinking-start-learning-20150405-story.html

Moore, B. H., & Caldwell, H. (2002). Drama and drawing for narrative writing in primary grades. *Social Indicators Research*, *89*(20), 100-110.

Moreno, S., Bialystok, E., Barac, R., Schellenberg, E. G., Cepeda, N. J. & Chau, T. (2011). Short-term music training enhances verbal intelligence and executive function. *Psychological Science*, *22*(11), 1425–-1433.

National Arts Standards. (2014). Kennedy Center for the Arts. Retrieved from http://www.kennedycenter.org

National Assembly of States Arts Agencies. (2006). Arts integration study. Retrieved from http://www.nasaa-arts.org/Publications/critical-evidence.pdf

National Assessment of Educational Progress. (NAEP). (2015). Arts assessment. Retrieved from https://nces.ed.gov/nationsreportcard/arts/

National Core Arts Standards. (2014a). College Board for Coalition of National Core Arts Standards: Overview. Retrieved from https://nccas.wikispaces.com/ and www.nationalartsstandards.org

National Core Arts Standards. (2014b). College Board for Coalition of National Core Arts Standards: College standards. Retrieved from https://nccas.wikispaces.com/ and www.nationalartsstandards.org

National Core Arts Standards. (2014c). College Board for Coalition of National Core Arts: College standards, Phase 1. Retrieved from https://nccas.wikispaces.com/ and www.nationalartsstandards.org

National Core Arts Standards. (2014d). College Board for Coalition of National Core Arts: Arts education standards. Retrieved from https://nccas.wikispaces.com/

National Core Arts Standards. (2014e). College Board for Coalition of National Core Arts: Framework matrix. Retrieved from https://nccas.wikispaces.com/ and www.nationalartsstandards.org

National Core Arts Standards. (2014f). College Board for Coalition of National Core Arts: McTighe on cornerstone tasks. Retrieved from https://nccas.wikispaces.com/and www.nationalartsstandards.org

National Core Arts Standards. (2014g). College Board for Coalition of National Core Arts Standards: Dance. Retrieved from https://nccas.wikispaces.com/ and www.nationalartsstandards.org

National Core Arts Standards. (2014h), College Board for Coalition of National Core Arts Standards, Music, Retrieved from https://nccas.wikispaces.com and www.nationalartsstandards.org

National Core Arts Standards. (2014i). College Board for Coalition of National Core Arts, Theatre, Retrieved from https://nccas.wikispaces.com/ and www.nationalartsstandards.org

National Core Arts Standards. (2014j). College Board for Coalition of National Core Arts, Visual Art, Retrieved from https://nccas.wikispaces.com/ and www.nationalartsstandards.org

National Endowment for the Arts. (2012). The arts and achievement in at-risk youth: Findings in four longitudinal studies. Retrieved from http://www.nea.gov/research/arts-at-risk-youth.pdf

National Endowment for the Arts. (2015). Research and analysis. Retrieved from https://www.arts.gov/artistic-fields/research-analysis

Nelson, B. (2011). "I made myself": Playmaking as a pedagogy of change with urban youth. *Research in Drama Education Journal*, *16*(20) 1–17.

Neuroeducation from the lab to the classroom, making music matters. (2014). Auditory Neuroscience Laboratory of Northwestern University. Ongoing research study. Retrieved from http://www.brainvolts.northwestern.edu/projects/neuroeducation/schoolmusic.php

Next Generation Science Standards. (2013). Retrieved from /http://www.nextgenscience.org/search-standards-.pdf

No Child Left Behind Act of 2001. (2003). 20 U.S.C.A. § 6301 et seq. Retrieved from http://www2.ed.gov/nclb/landing.jhtml

Otis Report. (2013). The creative economy of the Los Angeles region. Otis College of Art and Design. Retrieved from http://www.otis.edu/otis-report-creative-economy

Page, A. (2002). Children's story comprehension as a result of storytelling and story dramatization: A study of the child as spectator and participant (Doctoral dissertation). University of Massachusetts, 1983, revised 2002. Retrieved from http://www.artsedsearch.org/summaries/hildren%E2%80%99s-story-comprehension-as-a-result-of-storytelling-and-story-dramatization-a-study-of-the-child-as-spectator-and-as-participant

Parks, M., & Rose, D. (1997). The impact of whirlwind's reading comprehension through drama program on 4th-grade students' reading skills and standardized test scores. Unpublished evaluation. Berkeley, CA. In R. Deasy (Ed.), *Critical links: Learning in the arts and student achievement and social development* (pp. 10-11), Washington, DC: Arts Education Partnership.

Parker, K., Roraback, E., & LaMore, R. (2013, October 23). A young Picasso or Beethoven could be the next Edison. Research study. Michigan State University. Retrieved from http://msutoday.msu.edu/news/2013/a-young-picasso-or-beethoven-could-be-the-next-edison/

Paquette, K. R., & Rieg, S. A. (2008). Using music to support the literacy development of young English language learners. *Early Childhood Education Journal, 36*(3), 227–232. doi:10.1007/s10643–008–0277–9

Phillips, J., Harper, J, Lee, K., & Boone, E. (2014). *Arts integration and the Mississippi Arts Commission's whole school initiative*. A Stennis Institute study for decision-makers. Executive summary for educators and administrators. Retrieved from http://www.arts.ms.gov/programs/documents/StennisStudyExecutive-Summary-for-Educators.pdf

Pink, D. (2006). A *whole new mind*. New York, NY: Riverhead Books.

Pistone, N. (2002). *Envisioning arts assessment: A process guide for assessing arts education in school districts and states*. Ohio Department of Education. Retrieved from http://files.eric.ed.gov/fulltext/ED474414.pdf

Programme for International Student Assessment. (2015). OECD: Better policies for better lives. Organisation for Economic Co-operation and Development. Retrieved from https://www.oecd.org/pisa/

Pulitzer Museum of Fine Arts. (2015, November 3). Kota: Digital excavations in African art. Tour. Retrieved from http://pulitzerarts.org/exhibition/kotadigital-excavations-african-art

Rabkin, N., & Hedberg, E. C. (2011). *Arts education in America: What the declines mean for arts participation*. National Endowment for the Arts. Retrieved from https://www.arts.gov/sites/default/files/2008-SPPA-ArtsLearning.pdf

Register, D., Darrow, A. A., Standley, J., & Swedberg, O. (2007). The use of music to enhance reading skills of second-grade students and students with reading disabilities. *Journal of Music Therapy*, *44*(1), 23–37.

Reinvesting in arts education: Winning America's Future through creative schools. (2011). President's Council on Arts and Humanities. Retrieved from https://www.google.com/webhp?sourceid=chrome-instant&ion=1& espv=2&ie= UTF-8#q=Reinvesting+in+arts+education%3A+Winning+America%E2%80%99s+Future+through+creative+schools

Respress, T., & Lutfi, G. (2006). Whole-brain learning: The fine arts with students at risk. *Reclaiming Children and Youth, 15*(1), 24–31.

Riley, S. (2012, November 30). Use arts integration to enhance Common Core. *Edutopia.* Retrieved from http://www.edutopia.org/blog/core-practices-arts-integration-susan-riley

Rockwood School District. (2013). Matched pairs in Rockwood School District. Internal study. St. Louis, MO. Rockwood School District

Roden, I., Kreutz, G., & Bongard, S. (2012). Effects of a school-based instrumental music program on verbal and visual memory in primary school children: A longitudinal study. *Frontiers in Psychology*, *3*(572). doi: 10.3389/fpsyg.2012.00572

Rome, N., & McClanahan, K. (2015). Waving goodbye to No Child Left Behind. Americans for the Arts. Retrieved from http://blog.americansforthearts.org/2015/12/02/%E2%80%9Cwaiving%E2%80%9D-goodbye-to-no-child-left-behind

Ross, J. (2002). Art and community: Creating knowledge through service in dance. In R. Deasy (Ed.), *Critical links: Learning in the arts and student achievement and social development* (pp. 12-13), Washington, DC: Arts Education Partnership.

Ruppert, S. (2006). Critical *evidence: How the arts benefit student achievement.* Arts Education Partnership. Retrieved from http://www.nasaa-arts.org/Publications/critical-evidence.pdf

Ruppert, S. (2009, September 23). The arts education effect: Why schools with arts programs do better at narrowing achievement gaps. *Education Week*, *29*(5). Retrieved from http://www.edweek.org/ew/articles/2009/09/23/05ruppert.h29.html

Scheuler, L. (2010, March). *Arts education makes a difference in Missouri schools: What works*. Missouri Alliance for Arts Education. Retrieved from https://www.missouriartscouncil.org/graphics/assets/documents/b657d9f1adfc.pdf

Scholastic Aptitude Test. (SAT). (2005, 2008, 2012, 2015). College Board. Retrieved from https://collegereadiness.collegeboard.org/sat?navId=gh-sat

Scripp, L., & Paradis, L. (2014). Embracing the burden of proof: new strategies for determining predictive links between arts integration teacher professional development, student arts learning, and student academic achievement outcomes. *Journal for Learning through the Arts: A Research Journal on Arts Integration in Schools and Communities, 10*(1). 1–17.

Shanahan, T., Callison, K., & Carriere, C. (2010). *Improving reading comprehension in kindergarten through 3rd grade: IES Practice Guide*. NCEE 2010–4038. Retrieved from http://files.eric.ed.gov/fulltext/ED512029.pdf

Slater, J., Tierney, A. & Kraus, N. (2013). At-risk elementary school children with one year of classroom music instruction are better at keeping a beat. *PLoS ONE, 8*(10), 1–9.

Spencer, D. (2000, October 13). Arts make you a better pupil. *Detail Times Educational Supplement*, (4398), 6.

St. Louis Public Schools. (2013, March 20). Personal communication, E. Desmond Lee Fine Arts Collaborative.

St. Clair, T. (2014). The effect of an integrated music curriculum on reading achievement outcomes of kindergarten students. (Doctoral dissertation). Lindenwood University. Retrieved from http://pqdtopen.proquest.com/doc/1647766117.html?FMT=AI

STEM to STEAM. (2014). STEM to STEAM. Retrieved from http://stemtosteam. org/ proquest.com/docview/735591054?accountid+12104

STEM to STEAM. (2015). STEM to STEAM. Retrieved from http://stemtosteam. org/ proquest.com/docview/735591054?accountid+12104

Stevenson, L. M. (2011). Creating destiny: Youth, arts and social change. (Unpublished doctoral dissertation). Stanford, CA: Stanford University Retrieved from http://purl.stanford.edu/bf113xh2911

Stornelli, D, Flett, G. L., & Hewitt, P. L. (2009). Perfectionism, achievement, and affect in children: a comparison of students from gifted, arts, and regular programs. *Canadian Journal of School Psychology*, *24*(4), 267–283.

Strait, D. L., Parberry-Clark, A., O'Connell, S., & Kraus, N. (2013). Biological impact of preschool music classes on processing speech in noise. *Developmental Cognitive Neuroscience*, *6*(2013). 51–60.

Telesco, P. J. (2010). *Music and early literacy*. Forum On Public Policy Online. (5). Retrieved from http://files.eric.ed.gov/fulltext/EJ913034.pdf

Theatre Communications Group. (2013, December*). Special report on education 2012: Arts education at the core.* Retrieved from https://www.tcg.org/pdfs/education/ Special_Report_Education_2012.pdf

Tierney, A., Krizman, J., Skoe, E. Johnston, K., & Kraus, N. (2013). High school music classes enhance the neural processing of speech. *Frontiers in Psychology*, *6*(4). 1–7.

Tishman, S., MacGillivray, D., & Palmer, P. (2002). Investigating *the educational impact and potential of the Museum of Modern Art's visual thinking curriculum: Final report*. Museum of Modern Art, 1999, reprinted 2002. Boston, MA: Harvard Project Zero

Tobias, T. (2015, August 23). Arts education in Missouri. PowerPoint. Retrieved from https://dese.mo.gov/sites/default/files/STEAM.pdf

Turr, K. (2013, May 1). Principal fires security guards to hire art teachers — and transforms elementary school. *NBC Nightly News.* Retrieved from http://dailynightly.nbcnews.com/_news/2013/05/01/18005192-principal-fires-security-guards-to-hire-art-teachers-and-transforms-elementary-school

Tsang, C. D., & Conrad, N. J. (2011). Music training and reading readiness. *Music Perception*, *29*(2), 157–163. Retrieved from http://search.proquest.com/docview/911787389?accountid=12104

U.S. Department of Education. (2013). Arts education. Department of Research and Statistics. Retrieved http://www.ed.gov/rschstat/landing.jhtml

U.S. Department of Education. (2015). Arts education. Department of Research and Statistics. Retrieved from https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2015085

Vaughn, K. (2002, Fall–Winter). Music and mathematics: Modest support for the oft-claimed relationship. *Journal of Aesthetic Education*, *34(*3-4), pp. 149–-66. Retrieved from http://eric.ed.gov/?id=EJ658282

Vaughn, K., & Winner, E. (2000). College-bound seniors: Total group profile report. The College Board, 2005, Table 3–3; SAT scores of students who study the arts: What we can and cannot conclude about the association. Retrieved from http://docplayer.net/7369347-Total-group-profile-report.html

Vaughn, K., & Winner, E. (2010). College-bound seniors: Total group profile report. The College Board, 2005, Table 3–3; SAT scores of students who study the arts: What

we can and cannot conclude about the association. Retrieved from http://doc player.net/7369347-Total-group-profile-report.html

Visual literacy. (2006). 21st-*Century Learning* blog. Retrieved from http//21st century learnuing.typepag.com/blog/2005/10/visual_literacy.html

Walker, E., Tabone, C., & Weltsek, G. (2011). When achievement data meet drama and arts integration. *Language Arts*, (88), pp. 365–372. Retrieved from http://umsl. summon.serialssolutions.com/link/0/eLvHCXMwTZ07DgIxDERTcAWouUCkO HacbI1YUSAKFG2f-HP_IxAhCi4x700xmhCuwMrDPIEbFZKam6Yss4qXSu7f3 fArH-9y9Pb8S_P9HPp-77dH_P0ARFuwjmyloqAY0vIP1ZpHS1anFCP2xJsoApk CLpaOCe7TGcVl2QvhULiE06rS9gEh4yZ9

Winner, E., & Cooper, M. (2000, Fall). Mute those claims: No evidence (yet) for a causal link between arts study and academic achievement. *Journal of Aesthetic Education*, *34*(3/4), 11–75.

Winsler, A., Ducenne, L., & Koury, A. (2011). Singing one's way to self-regulation: The role of early music and movement curricula and private speech. *Early Education and Development, 22*(2), 274–304.

Wilhelm, J. D. (2002). Reading is Seeing: Using visual response to improve the literacy reading of reluctant readers. *Journal of Reading Behavior*, *27*(4), 467–503.

Young, L.; Cordes, S., & Winner, E. (2014, May 7). Arts involvement predicts academic achievement only when the child has a musical instrument. *Educational Psychology, 34*(7), 849–861.

Appendix A

Permission Letter from Ferguson-Florissant School District

FERGUSON-FLORISSANT SCHOOL DISTRICT
Administration Center
1005 Waterford Drive
Florissant, MO 63033
www.fergflor.org
Office of Secondary Education
Phone: 314.506.9085
Fax: 314.506.9088

November 13, 2013

To Whom It May Concern:

Please be advised that Douglas Erwin, Ferguson-Florissant School District Teacher, has been granted permission to access and use the District Twelve School District's data regarding student ACT scores and Fine Arts enrollment/coursework.

The purpose of collecting and using the data is for the completion of the research project titled: *The Relationship and Effect of Fine Arts Courses on Student Achievement Measured by the ACT Among African-American students in a Midwest Secondary Setting*.

If you have any questions regarding his permission, feel free to contact me. Thank you.

Sincerely,

Nicole Whitesell

Nicole Whitesell
Director of Secondary Education.

Appendix B

Certificate of Completion (NIH)

Certificate of Completion

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

Date of completion: 02/28/2012

Certification Number: 872820

Appendix C

Permission E-mail from Angela Burton

From: **Burton, Angela L** <alburton@illinois.edu>
Date: Tue, Mar 8, 2016 at 11:16 AM
Subject: RE: Permission to reprint table on SAT by Kathym Vaughn and Ellen Winner
To: Douglas Erwin <derwin@fergflor.org>

Dear Douglas Erwin,

Thank you for your email. On behalf of the University of Illinois Press, I grant one-time, non-exclusive permission to use Tables 2 and 3 from Kathyn Vaughn and Ellen Winner, "SAT Scores of Students Who Study the Arts: What We Can and Cannot Conclude about the Association," *Journal of Aesthetic Education*, vol. 34, no. 3-4 (Autumn-Winter), 2000, in your dissertation. We would appreciate a citation to the journal article in your bibliography.

Please let me know if you need further assistance.

Many thanks,

Angela

Angela L. Burton
Rights & Permissions/Awards Manager
University of Illinois Press
1325 S. Oak St., Champaign, IL 61820
PH: 217-300-2883 FX: 217-244-8082
alburton@illinois.edu, http://www.press.uillinois.edu

UIP Fall 2015 catalog / UIP Spring 2016 catalog

Vitae

Douglas Erwin earned a Bachelor of Arts in Communication: Speech/Theatre focus, with additional areas of concentration in Vocal Music and English, from Truman State University in 1991. After earning this degree, he was one of six students approved for the full-year internship program through the Master of Arts in Education program at Truman, teaching theatre, journalism, and English at Troy Buchanan High School/Troy Junior High while completing his Master of Arts in Theatre Education in 1992, and earning 7–12 teaching certification in English, speech, and theatre.

He then taught competitive speech, English, and journalism at Washington High School From 1992–94, while completing his journalism certification from the University of Missouri St. Louis in 1994. Erwin then moved to Riverview Gardens Middle School to instruct theatre from 1995–1999. While at Riverview Gardens, he completed middle school certification through Truman State University in 1996. Erwin was named "Outstanding Secondary Teacher of the Year" for the Riverview Gardens School District in 1998. He then taught theatre, music, and art for Parkway South Middle School from 1999 to 2001 before returning to Riverview Gardens in 2001 to instruct English, theatre, and speech at the high school level.

Erwin then took a position teaching English and theatre at McCluer High School in the Ferguson Florissant School District where he has instructed since 2002. In 2003 his position became full time theatre due to program expansion, and he has expanded the program to include three theatre teachers at McCluer High School. Erwin has traveled internationally with students to England, Scotland, France, Belgium, the Netherlands, Italy, Greece. and Turkey. He was named to "Who's Who Among America's Teachers"

in 2005 and has been featured in the publication three times. In 2008 Erwin was selected as one of the 20 teachers participating in the Japan Memorial Fulbright Program. Erwin was the last educator from the State of Missouri to be selected during the eleven years of the program. While in Japan, Erwin was trained in the Japanese theatre form of Karuda, a theatre form predating Noh. Erwin is the only American to have been trained in this art form. He completed additional coursework in theatre through The University of Nevada: Las Vegas and New York University, studying on Broadway with designers and directors of then-current Broadway productions. Erwin began instructing a "Saturday Scholars" ACT Prep program in District Twelve from 2009–2012, finding an average increase of four cumulative points on the ACT for students participating in the program.

In 2010 Erwin was named K–12 Fine Arts Content Leader for the Ferguson Florissant School District, supervising curriculum and instruction in ACT Prep, band, dance, general music, orchestra, theatre, visual art and vocal music. He continues to hold this position while still instructing four theatre courses daily. He serves as an adjunct professor for High School Advanced Credit courses in theatre and speech for both the University of Missouri St. Louis and Lindenwood University. Erwin is also active in professional theatre in the St. Louis area and serves as a professional vocalist.

Erwin was named "Arts Educator of the Year" by the Arts and Education Council of St. Louis for the year of 2016 (winners announced in fall of 2015). Alumni of his theatre program have performed on Broadway and in Las Vegas. Theatre students who have studied under Erwin at McCluer High School have earned over $2 million in college theatre scholarships. Erwin is the co-founder and chair of the Fine Arts Regional

Consortium, a professional learning network for arts educators, and serves on the Learning Advisory Committee of EdPlus.

In 2015 Erwin earned an Educational Specialist Degree in Educational Administration from Lindenwood University. Erwin has also been working toward earning an Educational Doctorate from Lindenwood University, with an anticipated graduation date of December 2016.