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The dissertation of Kathleen Panagopulos entitled *Closing the Achievement Gap Through Arts Integration* submitted to the School of Education in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Instructional Leadership for Changing Populations at Notre Dame of Maryland University has been read and approved by the Committee.

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Closing the Achievement Gap

Through Arts Integration

by

Kathleen Panagopulos

A Dissertation

Submitted in Partial Fulfillment of

The Requirements for the Degree of Doctor of Philosophy

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Abstract

As educators grapple with the issue of eliminating achievement gaps that exist among student groups, instructing for students' diverse learning needs while effectively meeting the demands of the curriculum can be a daunting task. Arts integration (AI) is a research-based strategy that has been demonstrated to lead to positive effects in student achievement with the greatest effect being among students who qualify for federal meals benefits (FARMS) (Deasy, 2002; Catterall, 1999; Rabkin & Redmond, 2006). This mixed-methods study evaluated state mandated reading assessment data for a cohort of grade three students for the years 2011, 2012, and 2013 within one school district in Maryland using a formula developed by the Maryland State Department of Education to determine student change scores. While analysis of covariance (ANCOVA) of AI and change scores for FARMS and non-FARMS students did not yield a positive relationship, further qualitative analysis of principal and teacher interviews and classroom observations at five public AI elementary schools revealed perceptions among educators of a positive relationship of AI to student achievement. Utilizing a grounded theory approach to examine emergent themes, a theory of effective models of arts integration was developed to include the elements of: shared vision, student engagement, rigorous instruction and teacher capacity. This study provided information regarding the optimal method of delivering arts integrated instruction that may lead to student achievement and reduce the achievement gap between FARMS and non-FARMS students.

Dedication

This work is dedicated to my husband, Jerome, whose patience, kindness, understanding and endless support through this lengthy project sustained me through the many challenges. Thank you for being the wind beneath my wings! It is also dedicated to my parents, Joseph A. Kennedy, Jr. (1919-1984) and Frances Kennedy Loh, whose unconditional love and clear values have been my guiding force. Finally, I dedicate this work to my pride and joy, my beautiful children and grandchildren, Annmarie, Alan, Nicholas, Marissa, Lisa, J. R., Christopher, Bari, Hannah, Abigail, Isabella, Sophie, Genevieve, Galileo, Cassian and Madelyn. You light up my life! Acknowledgements

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I would like to thank Dr. Melissa Morris, whose suggestion that I pursue a doctoral degree kindled a dormant interest and whose encouragement throughout the years has filled me with hope. Appreciation also goes to Dr. Kevin Maxwell, former AACPS Superintendent, and Dr. Dawn Lucarelli, Regional Assistant Superintendent, for selecting my school to embark on the arts integration initiative. Arts integration provided another

lens for understanding teaching and learning in the 21st century, and helped our teachers and students grow academically and culturally.

Finally, I would like to thank the principals and teachers who generously welcomed me into their classrooms to observe the power of arts integration and its effects on student engagement, teaching and learning. Their hard work and passion for creating a student-centered learning environment was undeniable!

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List of Abbreviations

ADHD	Attention Deficit Hyperactivity Disorder
AEMS	Arts in Education in Maryland Schools
AI	Arts Integration
ANCOVA	Analysis of Covariance
CAPE	Chicago Arts Partnership in Education
ELL	English Language Learners
ESEA	Elementary and Secondary Education Act
FARMS	Free and Reduced Meals Students
IB	International Baccalaureate
MATI	Maryland Artist Teacher Institute
HSA	High School Assessment (Maryland State)
MSA	Middle School Assessment (Maryland State)
MSDE	Maryland State Department of Education
NCLB	No Child Left Behind Act
PARCC	Partnership for Assessment for Readiness for College and Careers
PBA	Performance Based Assessment
PCAH	President's Committee on Arts and the Humanities
PLC	Professional Learning Community
PTA	Parent Teacher Association
SLO	Socioeconomic status
SPED	Special Education

Chapter I

INTRODUCTORY CHAPTER

Introduction

The fifth grade students animatedly discuss with their teammates how they will dramatize their assigned stanza of Longfellow's *Midnight Ride of Paul Revere*, deciding who will climb the North Tower and how they will depict the startled pigeons of the belfry and the moonlight casting a glow on Concord below. The teacher directs, "Action", and the students strike their practiced poses in a tableau to the enjoyment of their classmates. The students self-assess how well their representation communicated important elements of the poem, the historical context, as well as the elements of drama. The students have synthesized several texts, including primary source documents, about the events leading to the Revolutionary War prior to this lesson and have examined art works of this historic period. Reflecting upon and reacting to a piece of text physically, visually and orally creates a relevancy of the literature and deepens students' appreciation of its capacity to inform their lives. Using creative drama to act out what they have read, students can better comprehend not only what they have read and acted out, but they can better comprehend what they have not acted out, suggesting transfer of learning (DuPont, 1992; Pellegrini & Galda, 1982). Infusing drama strategies into language arts enables students to have a clearer idea of both characterization and the perspective of the speaker and audience thus helping to generate ideas for writing (Walker, Tabone & Weltsek,

2011). After the tableau, the students will write an essay from the point of view of a loyalist or patriot to persuade the reader to their cause and even the most reluctant writer will be able to write extensively and score well on this assignment.

The type of instruction described above is an example of arts integration (AI), an inclusive instructional strategy that infuses the fine arts of music, visual arts, theater and dance into the core content areas of reading, math, social studies and science. AI provides multiple avenues for students to express understanding of the content through their creative capabilities. Arts integration is defined as an "interdisciplinary partner with other subjects" (Rabkin & Redmond, 2004, p.8) and as "an instructional strategy that brings the arts into the core of the school day and connects the arts across the curriculum" (Rabkin & Redmond, 2006, p. 60). Arts that are infused throughout the curriculum in a meaningful way have the potential to positively impact learning and foster the development of critical thinking skills which aids transfer of learning across subject domains (Appel, 2006; Booth, 1987; Burton, Horowitz & Abeles, 1999). Students who struggle with reading and writing can express their learning through movement, song, or visual arts which leads to a deeper understanding of the content (Deasy, 2002; Hoyt, 1992).

While most articles published in peer-reviewed journals are advocacy pieces for AI, a review of the literature revealed a few published studies conducted at the elementary level that link arts integration and student achievement in reading (see Table 1). If, as the research suggests, AI is a brain-based instructional strategy that engages learners in the development of critical thinking skills, then might it lead to increases in reading achievement, particularly among disadvantaged students? This study sought to

determine if there is a relationship between AI and student growth with standardized reading scores of a grade three cohort of students. In particular, the study focused on the change scores of disadvantaged students to determine if there is a positive effect of AI for this group of students as suggested by the literature (Rabkin & Redmond, 2006; Catterall, et al., 1999; Ingram & Reidel, 2003).

Historical Context

The major purpose of the 2001 reauthorization of the Elementary and Secondary Education Act (ESEA), known as the No Child Left Behind Act (NCLB), was to eliminate achievement gaps that persist among student groups by mandating that all students achieve proficiency in reading and math by the end of the 2013-2014 school year. Recognizing the rigidity in NCLB, the U. S. Department of Education granted flexibility from some conditions of NCLB to states applying for waivers, provided that the states can demonstrate progress across all student groups with mandated assessments and strengthen educator evaluations by including student growth measures based on student performance on state mandated assessments. On May 29, 2012 Maryland was granted said flexibility and revised teacher and principal evaluations to include student growth measures based on student performance on the Maryland School Assessment (MSA). Full implementation in 2013 of the Maryland Common Core State Curriculum led to changes in state-mandated assessments beginning in 2015. However, the value-added model of teacher evaluation remains. With this accountability in mind, educators interested in increasing student growth measures must consider instructional strategies that increase student engagement and academic achievement. Arts integration is an instructional strategy that can increase student engagement and lead to improvement with

academic achievement (Catterall, Chapleau & Iwanaga, 1999; Catterall & Waldorf, 1999; DuPont, S., 1992; Respress & Lutfi, 2006). What effect does arts-integrated language arts curricula have on the achievement of elementary students? Can quality arts integration lead to student growth with standardized assessments, particularly with underachieving student groups?

Benefits of Arts Integration

To focus on teaching the skills necessary to ensure progress with standardized state assessments, subjects other than reading and math have often received short shrift and the fine arts have often been seen as dispensable (Manner, 2002; Eisner & Powell, 2002). The focus on arts in education has waxed and waned throughout recent decades depending upon the political, economic and social issues of the day. Teachers often feel pressured to teach only skills necessary to pass standardized tests, leading to boredom and disenfranchisement among students (Wooten, 2008). Educators note that "treating our students as measurable data quickly lets them know how little, as a society, we value them as complex and multifaceted human beings" (Wooten, 2008, p. 192).

Instruction in the arts contributes significantly to student growth and cognitive development (Wolfe, 2001). Recent research into the way the brain learns indicates that the mind and body work in concert and one cannot instruct the mind without involving the whole person, physically, emotionally, and intellectually. Brain-compatible learning calls for educators to "weave math, geography, social skills, role-play, science and physical education together, along with movement, drama, and the arts" (Jenson, 2005, p.66). Schools that embrace the whole child approach to learning understand that each student learns differently and that a variety of instructional modalities need to be

employed in order to engage students of diverse learning styles and multiple intelligences. Making connections across subject areas supports the brain's search for meaning by making learning relevant to students (Caine & Caine, 1991). Learning through an integrative approach requires complex thinking skills and fosters creativity. Students who develop whole-minded aptitudes and work collaboratively on teams to find creative solutions to complex problems will have the advantage in a globally competitive society (Pink, 2005). In fact, without a significantly comprehensive arts program it is "difficult to address the range of intelligences exhibited by students and teachers" (Gardner, 1993, p. 148).

Researchers and educators have found that arts integration can support improvements in academic achievement (Catterall, 1998; Catterall, Chapleau & Iwanaga, 1999; Catterall & Waldorf, 1999; DuPont, 1992; Respress & Lutfi, 2006). Music, dance, drama, and visual arts provide an emotional hook which maintains student attention and allows students to express emotions, strengthening neural pathways to support long-term memory and learning (Jensen, 2008; Wolfe, 2001). Physical changes occur in the brain when exposed to music and the arts and these changes can transfer to the study of academic subjects, such as mathematics (Burton, Horowitz & Abeles, 1999; Hardiman, Magsamen, McKhann, & Eilber, 2009). In fact, studies have demonstrated that this impact is seen especially among students whose socioeconomic status (SES) ranks in the lowest quartile (Rabkin & Redmond, 2006).

Integrating content areas creatively maximizes resources for the efficient delivery of curriculum and "demands higher order connection making and synthesis that promote real, long-term learning" (Jacobs, 1989, p. 43). The benefits of an integrative approach to

curriculum are well-documented by a considerable body of research and do not need to be replicated (Wagner, DeGreef, Keenan & Pereira, 2006). The challenge for educators and the purpose of this study was to determine the optimal approach for integrating the arts so as to produce the greatest student growth in standardized measures, particularly among economically disadvantaged students, and ultimately, to determine models of AI that will lead toward the elimination of the achievement gap between and among student groups. This study investigated instructional practices in AI that lead to the greatest student growth measures to determine relationships that may exist between these factors.

Table 1

Compilation of Research: Arts Integration and Reading Achievement

Author(s)	Title of Study	Population	Methodology	Findings
Burger, K., & Winner, E. (2000)	Instruction in visual art: Can it help children learn to read? *Journal of Aesthetic Education*	Students in pre-school – grade 5 participating in arts intensive instruction	Meta-analysis of assessment scores of remedial readers.	Inconclusive results: marginal support for a positive relationship between reading improvement and integrated arts/reading lessons
Catterall,J., Chapleau,R., & Iwanaga, J. (1999)	Involvement in the arts and human development: General involvement and intensive involvement in music and theater arts. *University of California at Los Angeles.*	10-year study of 25,000 students in grades 8 – 12	National Educational Longitudinal Survey (NELS:88) analysis	Students with high involvement in arts performed better on reading proficiency assessment than low involvement students; Low SES, high-arts students out-performed low SES low arts involvement students.

Catterall, J. & Waldorf, L. (1999)	Chicago arts partnerships in education: Summary evaluation	6-year study of 17 CAPE schools & 17 non-CAPE schools; grades 3, 6, 8, 9, 10, 11.	Iowa Test of Basic Skills reading data analysis	Percentages of 6th grade students scoring above grade level higher in reading for CAPE students.
DuPont, S. (1992).	The effectiveness of creative drama as an instructional strategy to enhance the reading comprehension skills of fifth-grade remedial readers.	3 groups of 17 students in each group of 5th graders: one group incorporated creative drama into remedial reading lessons.	MAT6 (Metropolitan Achievement Test) used as pre- and post-assessment.	Group using creative drama scored significantly higher than comparison groups on tests of reading comprehension skills.
Ingram, D., & Riedel, E., (2003).	Arts for Academic Achievement: What does arts integration do for students? University of Minnesota: Center for Applied Research and Educational Improvement, College of Education and Human Development.	Students in grades 3 – 5 participating in AAA (Arts for Academic Achievement) program.	Three sets of multiple regression models were used to measure the effects of AI on student achievement based on standardized assessments.	Third-grade and fourth-grade reading growth scores were reliably higher for students whose teachers integrated the arts into Reading lessons. The effect of AI was strongest for low SES students (those in the free- and reduced-price lunch program) and ELL students. Greater achievement scores were found with increased implementation.
Pellegrini, A. & Galda, L. (1982).	*The effects of thematic-fantasy play training on the development of children's*	108 children in grades K – 2 in Georgia.	Criterion-referenced test	Kindergartners and first graders who participated in thematic-fantasy play

	story comprehension. American Educational Research Journal, 19 *(3), 443-452.*			scored higher in story comprehension, sequence recall, and answering judgment questions than control groups.
Respress & Lufti (2006)	Whole brain learning: The fine arts with students at risk	66 at risk African-American middle school students participating in HEARTS program.	Quasi-experimental; WRAT III (wide-range achievement test) pre-test/post-test ANOVA	Significant for spelling achievement compared to non-participants.
Walker, E., Tabone, C. & Weltsek, G. (2011).	When achievement data meet drama and arts integration. *Language Arts*, 88(5), 365-372.	Students in grades 6 – 8 participating in theater arts integrated classrooms vs. traditional classrooms	Random effects logistic regression; covariates were type of language arts setting, gender, and SES; based on student performance data on the N.J. State Language Arts Proficiency Assessment.	Passing rate for states' language arts proficiency assessment was significant: 56% (AI) to 43% (non-AI).

Models of Arts Integration

The practice of AI has been criticized for a misunderstanding of the meaning of integration leading to a superficial application and little in-depth learning within the arts or discrete subjects (Bresler, 1995; Brophy & Alleman, 1991; Russell-Bowie, 2009). An integrated curriculum can be of various types and levels and can mean different things to different educators. In a non-integrated model of curricular delivery, students are taught

discrete learning outcomes specific to the subject area with separate materials of instruction and move from one subject to another without making connections between and among the content areas. An integrated curriculum has been called interdisciplinary, cross-disciplinary, multidisciplinary and trans-disciplinary with slight variations in meaning depending upon the relationships of the content areas and purposes for which subject matter is used to achieve lesson outcomes (Bresler, 1995; Hope, 1995). Learning outcomes in the arts and content areas are given equal importance in a co-equal cognitive integration style of AI. Using common resources, outcomes are achieved in both the arts and content area and learning is enhanced by allowing students to make relevant connections among subject areas and to learn and express their understanding through a variety of modalities (Bressler, 1995; Gardner, 1993). Optimal arts integration lessons occur when teachers address big ideas or concepts in a meaningful way through the integration of the fine arts with science, math, language arts, and/or social studies so that students are actively engaged with using critical thinking skills of problem solving, analysis, evaluation, and synthesis (Bresler, 1995; Russell-Bowie, 2009). An example of such a synergistic lesson could involve solving a real world problem, such as constructing a model of a Green School to meet environmental standards. This lesson could incorporate language arts, technology, social studies and science outcomes in researching about the need for buildings to meet standards to conserve energy and protect the environment. Visual arts outcomes can be addressed through the study of architecture and design and math and engineering outcomes in the building and construction of the model. Naturally, not all lessons lend themselves to an arts integrated approach and it

should be used only when appropriate and authentic connections can be made among the content and arts areas (Russell-Bowie, 2009).

The Maryland State Department of Education (MSDE) encourages the integration of fine arts across the curriculum as a complex and real-life process that supports the development of communication skills and critical thinking skills, such as synthesis, analysis, and reasoning. At the writing of this study, in the State of Maryland, fifty-seven public elementary schools in twelve school systems are actively using AI strategies to meet their students' diverse learning needs and improve student performance. Currently, there is limited empirical research, however, on the status and impact of AI in Maryland public schools. This study sought to examine the relationship of AI to student achievement by examining the student growth scores of a grade three cohort of 344 students at five Maryland AI public elementary schools. A control group of a grade three cohort of 383 students at five Maryland non-AI public elementary schools was included for comparison purposes. Data were collected from intensive observations of AI programs in eleven AI classrooms at the targeted schools and semi-structured interviews with fifteen teachers and five principals at the identified AI schools were conducted to determine the various practices of AI and the relationship of AI practices with student growth, particularly among economically disadvantaged students as identified by qualification for the federal free and reduced meals benefit (FARMS).

Purpose of the Study

This study had two purposes. The first purpose was to determine the effectiveness of AI programs in five Maryland public elementary schools by examining student growth change measures of a grade three cohort across a three year time span as

measured by the Maryland School Assessment (MSA) reading standardized assessment compared to a control group of student scores from five non-AI schools with similar demographics. The second purpose was to examine AI practices through classroom observations and teacher and principal interviews to determine if a perception exists of a relationship between certain instructional practices and student achievement with standardized measures. Student growth change scores on MSA reading for students qualifying for the free and reduced meal benefit (FARMS) at the same five schools were compared to the growth change scores for non-FARMS students to determine if the effect, if any, was greater for this group of students as documented by research. A study of reading scores of low-socioeconomic (SES) students in grades eight and ten found that low-SES students with high arts involvement, defined as participation in arts-related classes, outperformed students with a minimal arts involvement (Catterall, Chapleau, & Iwanage, 1999). Could similar results be found at the elementary level?

Significance of the Study

This study was important in that it examined three years of MSA reading change score data (2011, 2012, 2013), as well as classroom observations and teacher and principal interviews to ascertain an impact of AI on student achievement, and in particular, the achievement of FARMS students. The study samples were selected from the five identified arts integration (AI) schools (n=344). Each of the five AI schools is in the same school system and have been designated as AI schools for six years. For comparison purposes, five non-AI schools with similar demographics were randomly selected to be included in the study. Student change scores for a grade three cohort (n=383) for the years 2011, 2012, and 2013 were examined to determine if schools

demonstrated positive student change. Twenty educators from each of the identified AI schools were interviewed and eleven classroom lessons were observed to determine effective models of arts integration practice. This study enhanced the body of research about AI as an instructional strategy by providing information about models of AI that may lead to student growth with reading curricular standards. Recommendations to educational leaders were provided for creating and maintaining a quality AI program that may lead to a high performing school. Ultimately, the study sought to identify how creative processes were being taught in Maryland schools and which features of arts integration programs may lead to student growth with standardized reading assessments.

Research Questions

This research addressed the following questions:

1. What were the student change scores on MSA reading for non-FARMS and FARMS students over a three year period for a grade three cohort at five AI schools in Maryland?
2. What were the student change scores on MSA reading for non-FARMS and FARMS students over a three year period for a grade three cohort at five non-AI schools in Maryland?
3. Was there a significant difference in student change scores on MSA reading between non-FARMS and FARMS students at AI schools?
4. Was there a significant difference in student change scores on MSA reading between non-FARMS and FARMS students at non-AI schools?

5. Was there a significant difference in student change scores on MSA reading between non-FARMS and FARMS students at AI schools compared to non-AI schools?
6. Which features of AI were perceived by educators to be most effective in supporting student achievement on standardized reading assessments?

Definition of Terms

Arts integration (AI): an approach to teaching in which students construct and demonstrate their understanding through an art form. Students engage in a creative process which connects an art form and another subject area and meets evolving objectives in both. (John F. Kennedy Center for the Performing Arts, 2008, p. 3).

Attention Deficit Hyperactivity Disorder (ADHD): common childhood disorder the symptoms of which include difficulty with paying attention and staying focused (http://www.nimh.nih.gov/health/topics/attention-deficit-hyperactivity-disorder-adhd)

Cross-disciplinary: refers to imposing the fundamental principles of one discipline on another discipline (Hope, 1995).

Elementary and Secondary Education Act (ESEA): law passed in 1965 during the Johnson administration with the goal of quality and equality in education for all students (Webb, 2006).

Free and Reduced Meals Students (FARMS) – those students who meet the criteria for receiving the federally funded school breakfast and lunch program for free or at a reduced price depending upon income level.

Integrated curriculum: curriculum that seeks connections between diverse subject areas by emphasizing unifying concepts that enables learners to recognize how diverse concepts, contents, and/or processes are interrelated (Lee, 2007).

Interdisciplinary: refers to the interaction among two or more different disciplines, which may range from simple communication of ideas to the mutual integration of concepts, methods, procedures, etc. (Hope, 1995).

Maryland School Assessment (MSA): standardized assessment administered annually to students in grades three through eight in Maryland.

Multidisciplinary: the juxtaposition of a variety of disciplines with no apparent connection among them (Hope, 1995).

No Child Left Behind Act (NCLB): Reauthorization of the Elementary and Secondary Education Act (2001).

President's Committee on Arts and the Humanities (PCAH): established in 1982 during the Reagan administration, the PCAH promotes arts and humanities in education (PCAH, 2012).

Professional Learning Community (PLC): group of individuals, usually educators, with an interest in student learning (DuFour, 2004).

Socioeconomic status (SES): social standing or class of an individual or group measured as a combination of education, income and occupation (APA, 2012).

Trans-disciplinary: a common system of axioms for a set of disciplines (Hope, 1995).

Delimitations

1. This study considers only those students attending one school system in Maryland.

2. This study considers only MSA reading results for three years as a measure of student growth.

Limitations

1. The present study might not be generalizable to other school systems in Maryland, particularly if they offer different types of AI.

2. Due to extraneous variables, a student might not be performing at his or her best; therefore, the MSA score might not be indicative of true reading ability.

3. The MSA may not be the best measure of changes in student performance accounted for by AI.

3. Only AI schools were included in the classroom observations and principal and teacher interviews.

4. Major curriculum changes have occurred in the state of Maryland during the course of this study.

Chapter II

REVIEW OF LITERATURE

Introduction

This chapter is organized by a review of the literature on the history of the arts in education; an examination of students of poverty and academic achievement; and the exploration of characteristics of high performing schools, such as student engagement, cognitive rigor and teacher capacity, and their relationship to AI. Finally, models of AI are discussed.

Arts in Education

Horace Mann was one of the first American educational leaders to recognize the benefits of the arts in education as he insisted that visual arts and music be included in the curriculum of common schools as an enhancement to learning. Mann argued that vocal music promoted physical health, enhanced classroom management, and was an intellectual exercise due to the mathematical relationships to music (Cremin, 1957, p. 11).

The notion of an integrated curriculum is not new. John Dewey espoused a progressive philosophy of education that promoted child-centered, active learning to enhance the child's emotional growth and personality development. In progressive schools, content areas were integrated to make learning more meaningful to the student

and the problem-solving process of creating fine arts was considered a vital learning experience (Dewey, 1934

Throughout the years, American educational leaders' interest in arts in schools has shifted with the social, economic, and political climate. The President's Committee on the Arts and the Humanities (PCAH), created during the Reagan administration in 1982 and currently chaired by First Lady Michelle Obama, consists of members from the private and public sector who advise the White House on cultural issues, conduct research and analyze policies to strengthen our democracy by contributing to the country's rich arts legacy. In his foreword to the committee's 2011 report, *Reinvesting in Arts Education,* Arne Duncan, Secretary of Education, makes a compelling case for arts in education, stating, "Education in the arts is more important than ever. In the global economy, creativity is essential" (PCAH, 2011, p. 1). Reinforcing the notion of arts integration as an effective instructional strategy for supporting academic achievement among disadvantaged students, Duncan noted:

> Today's curriculum fails to spark student curiosity or stimulate a love of learning…the arts significantly boost student achievement, reduce discipline problems and increase the odds that students will go on to graduate from college. It demonstrates that arts education can play an important role in narrowing the achievement gap between racial minorities and whites (PCAH, 2011, p. 3).

Maryland educators have a crucial stake in utilizing instructional strategies that can lead to the elimination of the achievement gap between and among student groups because student growth measures are a factor in the revised teacher ratings. Students who live in poverty comprise a student group that consistently underachieves in academic measures (Brooks-Gunn & Duncan, 1997). This group is determined by the students whose families have applied for and qualify for federally-funded free and reduced meals

(FARMS). If the arts can play a role in eliminating the achievement gap, as noted by the Secretary of the U.S. Department of Education, then which models are most effective in closing this gap? This study seeks to determine the optimal delivery of AI instruction as determined by student growth change scores with standardized assessments and perceptions of educators at AI schools that may lead to the reduction and eventual elimination of the achievement gap between FARMS and non-FARMS students.

Low-SES Students and Academic Achievement

Socioeconomic (SES) status is a major predictor of student success. Children of poverty consistently underachieve due to myriad factors (Brooks-Gunn & Duncan, 1997). Low-income children have poorer health due to lack of preventative medical care and have higher rates of school absenteeism (Brooks-Gunn & Duncan, 1997). Economic uncertainty raises family stress levels and forces families to move often. A transient lifestyle leads to a lack continuity of instruction (Smith, Fien & Paine, 2008). Parents of poor children have fewer resources to provide stimulating experiences at home through interactive toys, books, or musical instruments. (Duncan & Brooks-Gunn, 1999). Economically disadvantaged children are not read to as often as their middle class peers and are not as likely to be exposed to complex language systems and large vocabularies. As a result, children of poverty often enter schools without the prerequisite language skills necessary for reading readiness (Duncan, Yeung, Brooks-Gunn & Smith, 1998; Kraus, 2008; Rothstein, 2008). Children with even mild reading deficiencies have been found to have impaired emotional health (Casey, Levi, Brown, & Brooks-Gunn, 1992).

Educational researchers agree that:

> Learning to read is critical to a child's overall well-being. If a youngster does not learn to read in our literacy-driven society, hope for a fulfilling, productive life diminishes. In short, difficulties learning to read are not only an educational problem, they constitute a serious public health concern (Lyon, 1998, p.13).

This study sought to provide evidence that integrating arts across content areas broadens access to the curriculum for students of poverty through the motivating learning activities and the option to demonstrate knowledge not only through reading and writing, but verbally and kinesthetically, which can foster the development of language skills.

Characteristics of High Performing Schools

A research review of best practices that lead to student achievement suggested that positive academic differences can be found in schools that possess a clear and shared focus; school-wide ethic of high expectations; caring, respectful relations between stakeholders; a strong academic and instructional focus; regular assessment of individual students; collaborative decision-making structures; strong, non-authoritarian leadership; high faculty morale and work ethic; and focused professional development; and high levels of community involvement (Barth, 1990; DuFour & Eaker, 1998; Kannapel & Clements, 2005; Marzano, Pickering & Pollock, 2001; Schmoker, 1999). Schools that embrace and sustain these characteristics have had success with reducing the achievement gap for struggling learners, such as low SES students (Carter, 2000; Kannapel & Clements, 2005). The schools referenced in these studies are not necessarily including alternative instructional techniques, such as AI, in the curriculum and not all schools with these characteristics have been successful in eliminating the achievement gap for students of poverty. This study sought to determine the presence of these characteristics in AI schools and if including AI could enhance the culture and

institutionalized practices of a school and support increased student achievement with standardized measures.

Arts Integration and Student Engagement

To learn anything, the brain must first pay attention to the stimuli being presented. Instruction in the arts engages attention, allows students to express emotions, and strengthens neural pathways to support learning across the curriculum (Jensen, 2008). Research indicates that the documented positive cognitive effects of AI improve student performance on standardized measures of academic achievement, particularly among economically disadvantaged students leading to a narrowing of the achievement gap (Deasy, 2002; Catterall, 1999, Rabkin & Redmond, 2006).

Brain research has supported the importance of building students' background knowledge so that readers can make sense of the new stimuli by making connections to prior experience and stored memories. Children who have had rich language experiences since birth, such as reading books, singing nursery rhymes and other language play, have an advantage upon entering school in that they have developed a fuller vocabulary and a sense of print (Lyon, 1998, p.17). Children most at risk of having difficulty learning to read are those who lack these early literary experiences, usually children of poverty and speakers of other languages. "Visual stimuli do not become meaningful until sensory perceptions are matched with previously stored cognitive associations" (Wolfe, 2001, p.34). A cross-curricular approach helps students to make meaning and build connections among subject areas to deepen understanding of the new concepts being taught (Lynch, 2007).

Researchers argue that if teaching "basics" is the goal of intervention programs, what could be more basic than the arts? Children learn to sing and dance much earlier than read and write (Varnon, 1997). Burger and Winner (2000) explored the effects of three reading intervention programs that employed techniques in visual arts as a means for students to express learning to determine the relationship between arts integration and academic achievement in reading. An examination of the pre and post test data for students participating *Learning to Read Through the Arts* (LTRTA), *Children's Art Carnival* (CAC), and *Reading Improvement Through the Arts* (RITA) indicated that all three of the programs were effective in improving reading skills in remedial readers. To test the hypothesis that arts integration improves the readiness skills of remedial readers, researchers conducted a meta-analysis of the effects of ten arts integration programs and found that the arts instruction did have an effect on reading readiness scores due to the engaging nature of the learning activities (Burger & Winner, 2000).

Literature suggests that cognitive advantages occur when students are emotionally engaged in learning and when multiple areas of the brain are involved in the learning activities (Eisner, 2003; Jensen, 2008; Rabkin & Redmond, 2006; Respress & Lufti, 2006; Wolfe, 2001). Arts integration involves using many areas of the brain which strengthens neural connections leading to an increase in long term memory (Jensen, 2008; Rabkin & Redmond, 2006; Respress & Lufti, 2006; Wolfe, 2001). Whole brain learning was the topic of a study of the fine arts with students at risk in which 66 at-risk African-American middle school students participated in an AI program. Pre and post-test data from an administration of the Wide-range Achievement Test (WRAT III) indicated significant

results for spelling achievement of AI students compared to non-AI students (Respress & Lufti, 2006).

Arts Integration and Development of Critical Thinking Skills

Often in classrooms today an experiential approach to instruction is neglected in lieu of having students memorize facts, resulting in students graduating from high school without having developed the essential critical thinking skills of "problem solving, critical and creative thinking, dealing with ambiguity… and the ability to perform cross-disciplinary work" (President's Committee on the Arts and Humanities, 2011, p. 28). Teaching students to analyze visual arts using the elements and principles of art helps students to organize information for learning. Thoughtful interpretation of visual images can be fostered through attention to the elements of art, such as line, shape, color, form, texture, value and space. (Vituli & Santolli, 2013). Teachers in AI schools incorporate the vocabulary and practices of the elements of the arts into content lessons across the curriculum, increasing the opportunity for students to develop higher level thinking skills, such as analysis, synthesis, and creative problem solving (Catterall& Waldorf, 1999; Catterall, Chapleau, & Iwanaga, 1999).

Reinforcing the notion of AI as a brain-based instructional strategy that can lead to the development of improved critical thinking and reading comprehension skills, students in grades three and four who participated in an AI program, *Arts for Academic Achievement,* demonstrated reliably higher reading growth scores on pre- and post-measures of the standardized assessments as compared to a control group. The relationship between AI and achievement was strongest for FARMS students (Ingram & Riedel, 2003).

Analysis of standardized reading scores for students participating in the Chicago Arts Partnership in Education (CAPE) arts integration project showed strong and significant achievement effects of CAPE at the elementary level especially by sixth grade (Catterall & Waldorf, 1999). Teachers in schools involved in the CAPE project worked with teaching artists to plan and implement instruction in which both content and arts outcomes were taught simultaneously and explicit connections between the curricular areas were a focus. For example, students in grades 3 and 4 composed a musical piece based on the history of Chicago. In a comparison of the students involved in the CAPE project (high-arts) and students attending traditional schools (low-arts) in grades 8 and 10, the high-arts students consistently outscored low-arts students in measures of academic performance. Comparing all students versus low socioeconomic status (SES) students, the high-arts students consistently outscored low-arts students in measures of academic performance (Catterall & Waldorf, 1999).

In another study involving low SES students, researchers evaluated Learning Through Music (LTM), a program of the Music-in-Education National Consortium that is implemented in the Ramsey International Fine Arts Magnet K - eight school in the Minneapolis Public Schools. A diverse population of 968 students with 65% qualifying for the meals benefit program, Ramsey's focus is music. Music is integrated throughout the curriculum, supporting the arts and academic standards as well as the social-emotional goals of the school. Through a case study of the effects of music on sight word fluency, pre and post tests indicated an impressive increase in fluency scores and all LTM students met grade level standards by the middle of the academic year (Hornbacher, Lipscomb & Scripp, 2008).

Classrooms in which AI lessons occur tend to be positive, nurturing and stimulating with opportunities for peer interactions that foster self-regulation (Baum, Oreck & Owen, 1997), creativity and the development of critical thinking skills (Respress & Lufti, 2006). Performing in the fine arts involves critical thinking skills and collaborative efforts that instill responsibility in students (Rabkin & Redmond, 2006). High-arts students, those who participated in fine arts more frequently than their peers, have consistently scored higher than low-arts students in habits of mind, such as creative thinking, originality, risk-taking, elaboration, and fluency (Deasy, 2002).

Educators are challenged to tailor instruction to meet the needs of struggling readers. Can the positive cognitive effects of arts integration translate into improved student progress with standardized reading measures? This study attempted to determine if infusing the arts into the reading curriculum will increase the performance of FARMS students on standardized reading assessments more than non-FARMS students.

Arts Integration and Student Achievement

The literature supports AI as a strategy that can improve students' standardized assessment scores. New Jersey state standardized assessment data for reading and math were analyzed to compare groups of students in grades six through eight who participated in a theater arts program to those who received traditional instruction. Students who participated in the theater arts group had significantly higher passing rates on the language arts assessment than those who did not participate in the theater arts group (Walker, Tabone & Welstek, 2011).

An analysis of the National Educational Longitudinal Survey (NELS:88) of 25,000 students from grades 8 – 12, determined that students with high involvement in

the arts, such as music and theater arts, performed better on reading proficiency assessments than their peers with low involvement in the arts. In addition, high-arts, low-SES students outperformed the low-arts, low-SES students on measures of grades and standardized test scores. These differences became more pronounced over time, with greater ranges in 10th grade compared to 8th grade. It is interesting to note that by 10th grade the low-SES students did not outperform their high-SES peers, despite the high involvement in the arts. The authors noted a limitation of the study was the possibility that the high-arts students may have attended better schools than the low-arts students and suggested further research on the topic (Catterall, Chapleau, & Iwanaga, 1999).

In another longitudinal study, the Chicago Arts Partnerships in Education (CAPE) program conducted an analysis of the Iowa Test of Basic Skills reading assessment for students in grades 3, 6, 8, 9, 10 and 11 finding that percentages of 6th grade CAPE students who scored above grade level was higher than for non-CAPE students. These findings did not translate to the other grade levels (Catterall & Waldorf, 1999).

At the elementary level, multiple regression models were used to analyze the effects of AI on reading growth scores for students in grades 3 – 5 and were found to be higher for students participating in the Arts for Academic Achievement program in which teachers integrated arts into reading lessons. The relationship of AI and reading achievement was strongest for the low-SES students and ELL students and increased implementation were correlated with the strongest gains, although the information about frequency of AI was based on teacher self-reports. (Ingram & Riedel, 2003).

Creative drama has been found to be effective as an instructional strategy to enhance the reading comprehension skills of fifth-grade remedial readers (DuPont, 1992).

The Metropolitan Achievement Test (MAT6) was administered pre and post treatment to three groups of grade five students. The group using creative drama scored significantly higher than comparison groups on tests of reading comprehension skills.

Researchers in Georgia studied the effects of participation in thematic fantasy play training on story comprehension among 108 students in kindergarten and grade 1 using a criterion-referenced test. Positive effects of the arts training were found in story comprehension, sequence recall and answering judgment questions for the arts students compared to the control group (Pellegrini & Galda, 1982).

Not all of the reviewed studies resulted in empirical evidence in support of AI. In a meta-analysis of reading assessment scores of remedial readers in arts intensive instruction in grades pre-school through 5, results were inconclusive for a positive relationship between AI and reading improvement (Burger & Winner, 2000). Studies that link AI to reading achievement are few and more research is needed to determine the effectiveness of AI as an instructional strategy that leads to academic gains at the elementary level (Catterall & Waldorf, 1999; DuPont, S., 1992; Fiske, 1999; Ingram & Reidel, 2003; Pellegrini & Galda, 1982; Respress & Lufti, 2006; Walker, Tabone & Welstek, 2011). (See Table 1).

Building Teacher Capacity with Arts Integration

Champions of Change: The Impact of the Arts on Learning (Fiske, 1999) is a compilation of seven major studies of AI across the nation. One of the findings of these studies is that arts integration not only levels the playing field by improving academic performance of all students, but transforms learning environments by energizing teachers with new and creative methods of instruction that reach underperforming students.

Most non-arts teachers understand the value of arts in education yet have had little training in the arts. A lack of experience and skill in AI leads to teacher reluctance to implement in-depth AI lessons regularly (Purnell, 2004; Russell-Bowie, 2009). Successful AI programs require rigorous, ongoing training that builds teacher capacity for collaboratively creating and implementing quality AI lessons. Professional development can occur through workshops or with a resident artist. The resident artist model requires the teacher and artist to share their expertise and both are enriched by the experience of learning "other ways of knowing and reflecting knowledge" (Burnaford, Aprill & Weiss, 2001, p. 9). Through the resident artist experience, effective arts integration, in which outcomes are addressed in both the arts and the content area can be achieved (Russell-Bowie, 2009).

Marshall (2006) is a teaching artist who employs an inquiry-based approach to integrating the arts that supports a synergistic AI model (Russell-Bowie, 2009) in which exemplary art education is a synthesis of many processes. Through this approach, critical thinking skills are employed to examine a concept, theme or essential question in greater depth using the medium of the fine arts. An inquiry-based approach emphasizes process over product and allows for the development of the metacognitive skills of reflection upon the learning process leading to a deeper understanding of the outcome (Marshall, 2009).

Models of Arts Integration

This study sought to expand the scope of research on the relationship of AI to student achievement by examining student progress with state mandated assessments among student groups, particularly among FARMS students, to determine which models of arts integration contain elements of high performing schools. Establishing a successful arts integration school is culturally transformative in that such change requires administrative and staff commitment to the program, ongoing professional development in an atmosphere of collaboration between and among the arts specialists and non-arts teachers, and community involvement (Cuban, 1990). How have the arts schools involved in this study been able to accomplish this cultural transformation? Through school visits, classroom observations and interviews with principals and teachers, data was collected that provided information as to the most effective models of arts integration that can lead to improved performance with standardized reading measures, particularly for disadvantaged students.

Summary of the Literature

A review of the research suggests that arts integration is an instructional strategy that results in increased student engagement and improved cognitive effects, such as enhanced long-term memory of essential skills (Eisner, 2003; Jensen, 2008; Rabkin & Redmond, 2006; Respress & Lufti, 2006; Wolfe, 2001) and the development of critical thinking skills (Catterall & Waldorf, 1999; Catterall, Chapleau, & Iwanaga,1999; President's Committee on the Arts and Humanities, 2011; Rabkin & Redmond, 2006; Respress & Lufti, 2006), When implemented with fidelity, AI supports student achievement on academic measures (Burger & Winner, 2000; Catterall & Waldorf, 1999;

DuPont, 1992; Fiske, 1999; Hornbacher, Lipscomb & Scripp, 2008; Ingram & Reidel, 2003; Pellegrini & Galda, 1982; Respress & Lufti, 2006; Walker, Tabone & Welstek, 2011). These effects have been particularly significant for underprivileged or underperforming students (Burger & Winner, 2000; Catterall, et. al., in Fiske, 1999; Deasy, 2002; DuPont, 1992; Ingram & Reidel, 2003). Positive effects of AI occur not only for students, but for teachers in increasing teacher capacity (Burnaford, Aprill & Weiss, 2001; Fiske, 1999).

This study examined evidence collected through analysis of standardized reading test scores, teacher and principal interviews and classroom observations in the identified AI schools to provide an explanation of the AI practices that were perceived to lead to student progress with academic assessments.

Conceptual Framework

The conceptual framework of the researcher was based on concepts documented in the literature that indicated (a) positive effects, particularly for disadvantaged students, on student achievement when content outcomes and art outcomes were linked in instruction (Ingram & Reidel, 2003); (b) positive effects, particularly for disadvantaged students, on learning due to the differentiated nature of AI (Caine & Caine, 1991; Wolfe, 2001; Jensen, 2008); and positive effects for teachers in building capacity through additional professional development in AI strategies due to the energizing nature of the instructional activities (Fiske, 1999). This conceptual framework is central to determining effective models of AI that may lead to student achievement and closing the achievement gap. Arts integration is a hands-on interactive instructional strategy that involves students of all learning styles by incorporating elements of visual arts, dance,

theater and music into content lessons. This experiential approach to learning involves multiple areas of the brain which leads to long term memory (Caine & Caine, 1991; Wolfe, 2001; Jensen, 2008). While MSA reading does not assess hands-on interactive instructional strategies, other standardized assessments do assess long term memory and the ability to apply critical thinking skills and concepts which can be enhanced through an experiential instructional approach, such as AI.

Chapter III

RESEARCH METHOD

Purpose of the Study

The purpose of this mixed-methods study was to examine the relationship of a variety of models of AI on student growth change scores for a grade three cohort of FARMS and non-FARMS students on standardized reading assessments, in particular, the MSA reading assessment, in five Maryland public AI elementary schools and five non-AI schools. The study sought to provide information regarding the effectiveness of AI models as an instructional strategy that promoted student progress with standardized measures, particularly among economically disadvantaged students, that may ultimately lead to the reduction of the achievement gap.

Research Questions

This research addressed the following questions:

1. What were the student change scores on MSA reading for non-FARMS and FARMS students over a three year period of a grade three cohort at five AI schools in Maryland?
2. What were the student change scores on MSA reading for non-FARMS and FARMS students over a three year period of a grade three cohort at five non-AI schools in Maryland?

3. Was there a significant difference in student change scores on MSA reading between non-FARMS and FARMS students at AI schools?
4. Was there a significant difference in student change scores on MSA reading between non-FARMS and FARMS students at non-AI schools?
5. Was there a significant difference in student change scores on MSA reading between non-FARMS and FARMS students at AI schools compared to non-AI schools?
6. Which characteristics of AI were perceived by educators to be most effective in supporting student achievement on standardized reading assessments?

Research Design

This mixed methods study compared student change scores on state mandated reading assessments of a grade three cohort (n=344) from five Maryland public elementary AI schools of non-FARMS students and FARMS students at the same schools to determine the relationship of AI on student achievement. Student growth scores on state mandated assessments of a grade three cohort (n=383) from five Maryland public elementary non-AI schools of non-FARMS and FARMS student at the same schools were included in the study as a control group and point of comparison to determine if differences in student reading change scores exist between AI and non-AI schools. Student reading growth data were collected using an existing data source, MSA reading scores for 2011, 2012 and 2013. Qualitative data from intensive classroom observations and semi-structured teacher and principal interviews at the five AI schools examined features of AI to determine which AI practices may be perceived to be related to student achievement in reading.

Description of the Population

Participants in this study were students, principals and teachers of a grade three cohort of approximately 344 students attending school for three consecutive years at the five AI public elementary schools in one school system in the state of Maryland. Additionally, a grade three cohort of approximately 383 students attending the school for three consecutive years at five non-AI public elementary schools of similar demographics formed a control group. These schools were located in diverse localities in the Washington-Baltimore corridor. Some of these schools were in relatively affluent areas while some were in high poverty areas. Some of the schools were more racially and ethnically diverse than others. The comparison schools were chosen based on similarity of demographics, location, and percentage of FARMS students to the AI schools.

Description of the Instrument / Validity and Reliability

Data for the study were collected from an existing data source, the MSA, which was found on the MSDE website for school improvement that contained links to MSA data for each school in the state. This data can be obtained at the website *www.marylandreportcard.org.* Reading and math assessment data for grades three, four, five, six, seven and eight were available and disaggregated for various student groups based on race, FARMS, Limited English Proficiency (LEP) and services such as special education. Trend data from 2011 – 2013 were available for each grade level tested. Individual student scores were not available to the public and were obtained with permission from the school system's Research and Accountability Department. Student names were omitted and identification numbers were used for grouping students into the schools and FARMS categories.

Test developers and researchers at MSDE have conducted the following analyses on MSA test items to determine the validity of the assessment: field test analysis, classical item analysis, differential item functioning (DIF) analysis, and item response theory (IRT) analysis. These analyses were conducted in 2007 and compared to measures in 2003 to ensure reliability of the test items. Test items are dropped from the assessment if they do not meet the rigorous standards of measures of difficulty or cultural bias. Content related evidence, evidence of internal structure, and unidimensionality were analyzed to ensure validity of MSA. Harcourt Assessment, Inc. quality assurance programmers duplicated all data independently to ensure accurate interpretation of expected test results (MSDE, 2007).

Calculating Student Growth

MSDE (2012) has defined student growth as the change in student performance for an individual student between two or more points in time as described in Table 2.

Table 2

Three types of change over time (MSDE, 2012)

No change	Student maintained expected growth from year to year. Student performed at the same level as the prior year.
Improvement	Student exceeded expected growth from year to year. Student's performance increased from prior year.
Decline	Student fell short of expected growth from year to year. Student's performance declined from prior year.

To determine student progress, MSA scale scores were divided into nine sub-scores, ranked into three ranges in each category of Basic, Proficient, and Advanced. Growth for individual students was calculated by comparing scale scores and performance scores from two years. According to this model (See Table 3), a student scoring 524 in grade four would have a performance score of eight. The same student scoring 568 in grade five would still have a performance score of eight. When both scores are compared the growth score equals zero which means that the student performed at the same level as the previous year and maintained expected growth from year to year.

Table 3

Example one for determining student progress (MSDE, 2012)

Student	School Year	Grade	MSA Reading Scale Score	Performance Score
Pierre	2011	4	524	8
Pierre	2012	5	568	8

	Advanced		
Grade	7	8	9
4	433-504	505-576	577-650
5	453-518	519-584	585-650

2012 Performance Score		2011 Performance Score		Growth Score
8	-	8	=	0

Table 4 shows an example of a student whose performance increased from the prior year and has exceeded expected growth from one year to the next.

Table 4

Example two for determining student progress (MSDE, 2012)

Student	School Year	Grade	MSA Reading Scale Score	Performance Score
Sue	2011	4	410	4
Sue	2012	5	446	6

Proficient

Grade	4	5	6
4	392-411	412-431	432-452
5	396-412	413-429	430-446

2012 Performance Score		2011 Performance Score		Growth Score
6	-	4	=	2

The student in Example 3 (Table 5) fell short of expected growth from one year to the next. This student's performance declined from the prior year.

Table 5

Example three for determining student progress (MSDE, 2012)

Student	School Year	Grade	MSA Reading Scale Score	Performance Score
Mike	2010-2011	4	358	3
Mike	2011-2012	5	304	2

Basic

Grade	1	2	3
4	240-292	293-342	343-395
5	240-292	293-342	343-395

2012 Performance Score		2011 Performance Score		Growth Score
2	-	3	=	-1

To calculate growth scores for each school, the counts of students for the growth categories of *No Change* and *Improvement* are divided by the counts of students for the growth categories of *Decline* + *No Change* + *Improvement* (See Tables 6 & 7).

Table 6

Example Data for Student Growth Score and Change Categorization (MSDE, 2012)

Student	Growth Score	Category
Pierre	0	No Change
Sue	2	Improvement
Mike	-1	Decline

Table 7

Example of Calculating Growth Scores for Each School (MSDE, 2012)

Counts of students at				
No Change + Improvement categories	=	Growth Percentage		
Decline + No Change + Improvement				
1 + 1	=	2	=	66.7% growth
1 + 1 + 1		3		

Quantitative Methods and Data Analysis

The researcher submitted a proposal to conduct a research study to the Notre Dame University of Maryland Institutional Review Board (IRB) and obtained permission to proceed in October 2013 (Appendix G). An application for permission to conduct research in the local targeted school system was submitted to its Board of Education and approved in December 2013. The application and approval letter were not included in the appendices to maintain confidentiality of sources. A meeting with an analyst in the Research and Accountability department was scheduled and data were obtained to conduct the quantitative analysis. The data included the MSA reading scores for 2011, 2012, and 2013 for the identified grade three cohort of students at the five AI schools and the five comparison non-AI schools.

The quantitative section of the study was conducted using a quasi-experimental, causal-comparative design. Causal comparative is also known as ex post facto. Causal comparative or ex post facto designs rely on observation of relationships between naturally occurring variations in the presumed independent and dependent variables; thus, the treatment is not manipulated. The intent of the study was to compare student growth

change scores for non-FARMS and FARMS students for three years (2011, 2012, & 2013) for a cohort of 344 students at five AI schools and a cohort of 383 students at five non-AI schools to determine if differences exist in student growth change scores between and among groups. The change scores were calculated using the MSDE model described previously.

The student groups of FARMS and non-FARMS were independent covariates for each school. The other independent variable was implementation of AI. The independent variables were not able to be manipulated and group assignment cannot be randomized, therefore, experimental design would not have been suitable for this study.

Analysis of covariance (ANCOVA), a hypothesis-testing procedure which is used to evaluate the mean differences between two or more populations, was used to draw general conclusions about the 20 populations, reading change scores for non-FARMS and FARMS students at each of the five AI schools and reading change scores for non-FARMS and FARMS students at each of the five non-AI schools. Using ANCOVA test, the researcher was able to determine if there were differences between the sample means. ANCOVA provided a way of statistically controlling which scores on the dependent variable (2011 student growth scores) were adjusted according to scores on a related variable, or covariate (2010 student growth scores). This research design had two factors: one factor used student groups (non-FARMS versus FARMS), and the second factor was implementation of AI.

The test of analysis of covariance, ANCOVA, compared scores on differences between groups to differences within groups. To determine this difference, the F-ratio was computed to measure variability between groups to variability within groups. An

independent measures t-test was used to evaluate the mean differences between the groups of scores.

Qualitative Methods and Data Analysis

The qualitative phase of this mixed-method study employed a grounded-theory approach with the intent to generate a theory, "an abstract analytical schema of a process" (Strauss & Corbin, as cited in Creswell, 2007, p. 63) regarding arts integration and its relationship to student achievement. The theory was developed using a construct oriented approach, which provides some flexibility in including individual's values, beliefs and ideologies in the data analysis process (Charmaz, 2006).

A qualitative research study contains the interactive components of goals, conceptual framework, research questions, methods and validity (Maxwell, 2005). The elements in this model were interdependent in that each component has implications for the others and the components have the flexibility to change as the study proceeded depending upon the environmental circumstances of the study.

Goals

The goals of this study were to examine and explain models of AI utilized at five public arts integration elementary schools in a single school district and the perceived relationship of features of AI to student progress with standardized reading measures with a focus on FARMS students. AI is currently practiced in many Maryland schools. To better understand the importance of AI as an instructional strategy that can improve student performance as suggested by the literature, the information from the qualitative phase of the study informs educators as to effective implementation models for AI and

constructs a grounded theory of optimal characteristics of AI that may lead potentially lead to increased academic performance across the curriculum and to student achievement.

Research Questions

The qualitative component of the study sought to answer these essential questions:

- Did teachers and principals at AI schools perceive that arts integration makes a positive difference to the academic achievement of students, and in particular, to the academic achievement of underperforming students, such as FARMS students?
- Which features of AI did teachers perceive are aligned with characteristics of high performing schools and have the greatest impact on student achievement?

The teacher and principal interview questions (Appendix E & Appendix F) were designed to elicit information related to the themes presented by the research review, particularly those related to the characteristics of high performing schools (Barth, 1990; DuFour & Eaker, 1998; Kannapel & Clements, 2005; Marzano, Pickering & Pollock, 2001; Schmoker, 1999). These themes included the relationship of AI to student engagement, the development of critical thinking skills, academic achievement and implications for underachieving students, and increased teacher capacity. Through this component of the study, the following related questions were addressed:

1. What were the implications of arts integration for student engagement?
2. What were the implications of arts integration for the development of critical thinking skills?

3. What were the implications of arts integration to student achievement on standardized measures?
4. What were the implications of arts integration for underachieving students?
5. What were the implications of arts integration for increasing teacher capacity?

Features of AI were deciphered through a detailed analysis of observation data and teacher and principal questions related to the processes involved with AI instruction, such as:

6. Describe your experiences with AI.
7. Describe the planning process, frequency and type of AI lessons.
8. Describe professional development in which you have participated and how it has changed your practice.

Principals were also asked to describe the vision for AI at their school.

Participants

Using purposive sampling, the researcher identified teachers and principals at the five targeted Maryland arts integration public elementary schools to participate in the study. To gain access to the participants, permission was obtained from the school system Department of Research and Accountability (Appendix H). Principals at each of the five targeted AI schools were contacted through email by the researcher to explain the purpose of the study and to request their participation. The principals were the gatekeepers to the other participants; however they were all known to the researcher as colleagues in arts integration schools. Once the principals granted access to their schools and provided names of teachers who were interested in volunteering for the study, the researcher contacted the teachers by email to explain the study and the value of their

contributions to understanding AI as an effective instructional strategy. Participants were offered a ten dollar gift card for volunteering their time for the study. A mutually convenient date and time for the classroom observation and interview was arranged between the teachers and researcher. At the time of the face-to-face interview, the researcher explained procedures to all participants to include potential risks and benefits and provisions for confidentiality (Appendix A). Participants signed an informed consent form and legal release form to indicate their understanding of the implications of the study (Appendices B & C). The researcher collected contact information through a participant data sheet (Appendix D).

A teacher's time is valuable as he/she is called upon to participate in myriad instructional, curricular, and community activities while planning and monitoring instruction for students. During the time of this study, in particular, teachers felt under stress as they were grappling with understanding and implementing a new curriculum based on the Common Core Standards as well as developing and monitoring student learning outcomes (SLOs) for value-added teacher evaluation instruments. Therefore, depending upon the time available to teachers, some teachers participated in classroom observations as well as interviews, while some were able to only do the observation or the interview. The principals participated in interviews only. Eleven AI teachers participated in the observations, ten females and one male, ages unknown. Participants in the interviews consisted of three males and 17 females, five of whom were principals, and 15 of whom were teachers, ages unknown. Years of experience with arts integration for all participants ranged from less than one year to six years.

Table 8 describes the participants (N=11) in the observation part of the study. Information was categorized by school, grade, teacher and number of students participating in the observed lesson. Table 9 describes the participants in the interviews (N=20). Information has been categorized by school, educator, grade and years practicing AI. Only the first initial of last name of the participants was used to maintain confidentiality.

Table 8

Participants in Classroom Observations

School	Grade	Teacher	Students (N)
01	3	F	21
01	3	S	22
02	K	C	19
02	1	N	25
02	4	L	23
02	4	H	22
03	4	D	24
03	1	P	24
04	K	A	14
05	3	E	21
05	5	S	16

Note. The capital letter identifier for Teacher indicates the first initial of the last name.

Table 9
Participants in Interviews

School	Principal	Teacher	Grade	Years of AI
01	K		K-5	2
01		F	3	4
01		S	3	4
02	B		K-5	6
02		W	1	4
02		C	K	6
02		N	1	4
02		L	4	5
02		H	4	5
03	R		PK-5	4
03		D	4	3
03		C	PK	2
03		P	1	2
04	T			4
04		B	K	2
04		K	4-5	4
05	P		K-5	1
05		S	5	1
05		E	3	4
05		B	1	5

Description of the Setting

The five original arts integration schools in one Maryland public school system were targeted for this study. The schools are located in the Baltimore-Washington corridor in a diverse school system consisting of high performing, high SES schools and lower performing, low SES schools. One of the targeted arts integration schools is a Title 1 school with a FARMS rate of over 70% while two schools have FARMS rates of less than 10%. Non-AI schools that acted as a control group were determined based on similar demographics to the comparison AI schools, specifically that they were in the same feeder system and had a similar FARMS population. Table 10 contains information about the AI schools in the study. Table 11 provides information regarding the schools in the control group.

The AI schools had been designated as arts integration schools in 2007 and the school system has provided ongoing professional development to the principals and their staff on AI practices. An arts integration resource teacher was hired by the Board of Education in 2012 to provide additional AI planning support to teachers. The school communities have embraced and support the arts integration model by participating in arts-related activities and providing funding for cultural arts programs for the enhancement of the general curriculum.

Table 10

Arts Integrated Public Elementary Schools (9/13)

School	Enrollment	Grade 3 Cohort	FARMS
01	424	64	8.6%
02	624	105	5.3%
03	731	63	70.8% (T1)
04	335	45	33.4%
05	305	46	41.4%

Note. T1 indicates Title 1 in the FARMS column.

Table 11

Control Group: Non-AI Schools /Similar Demographics (9/13)

School (Comparison AI school)	Enrollment	Grade 3 Cohort	FARMS
06 (01)	753	97	11.8%
07 (02)	563	95	6.3%
08 (03)	252	30	64.4%(T1)
09 (04)	566	90	30.7%
10 (05)	661	86	40.6%

Note. T1 indicates Title 1 in the FARMS column.

Procedures

All field methods of ethnography, to include observation, interviewing and artifact collecting, were employed in this study to understand the social phenomena of the AI classroom and to determine the models of AI used at each school and if certain AI practices can lead to student growth with standardized assessments. Through detailed data collection and description of personal interactions and processes involved in arts-

integrated lessons and participants' reports and perceptions of AI practices, the researcher revised questions as indicated from experiences in the field, analyzed the data and was able to inductively explain the phenomenon of arts integration in Maryland classrooms. Data collection for the qualitative part of the study occurred over the period of one month.

Classroom Observations

Introduction

The purpose of the classroom observation of arts integration was to collect data regarding the models of arts integration that are used in each classroom and to determine instructional implications that may be of benefit to educators. While specifically looking for AI best practices based on research (Bogdan & Biklen, 2007), the researcher collected data using field notes (Appendix F). The researcher also made notes of the number of students in each classroom and general appearance and atmosphere of the classroom.

Participants

With permission from their principals, 11 classroom teachers from five AI schools, agreed to participate in the observation of an AI lesson in their classrooms. The researcher contacted the teachers to arrange a mutually satisfactory time for the observation. Each participant was given an explanation of the study (Appendix A), an informed consent form (Appendix B), a legal release form (Appendix C), a participant data sheet (Appendix D), and a copy of the interview questions (Appendices E and F). All lessons were planned based on Common Core Curriculum standards, which are consistently used for planning instruction in this school system as well as MSDE arts standards. This was the first year for full implementation of the Common Core curriculum standards in Maryland.

Upon entering the classroom, the researcher typically chose a seat at the back of the room so as not to disturb the flow of the lesson and cause a distraction to the students. In some classrooms, the teacher requested that the researcher introduce herself so that the students would understand her presence. In those situations, the researcher introduced herself as a teacher who was interested in learning more about how students are learning with arts integration. In one classroom the researcher asked students to raise their hands if they like the arts. Every hand shot up!

Method

The classroom observations of AI lessons lasted for approximately one hour. Observations gave the researcher a first-hand look at how an integrated arts lesson is planned and implemented and the level of teacher and student involvement in the lesson. Using a low-inference observation system, the researcher recorded the frequency and duration of specific events and behaviors observed in the AI lesson to determine patterns of implementation of arts integration (Wiersma & Jurs, 2009; Hatch, 2002). Field notes consisting of a detached open-ended narrative combined with reflective notes were collected throughout the observation (Creswell, 2007) (Appendix G).

The researcher developed a research protocol and collected field notes on a laptop computer during the classroom lesson. The field notes were reviewed for accuracy by the researcher and teacher immediately after the observation. The field notes contained descriptions of location, time, people, and interactions that occurred during the lesson along with the researcher's interpretations of the notes. If possible, photographs of the students' products were taken to include in the analysis. Codes were pre-determined to assist with a focused observation. The goal of coding in qualitative research is to arrange

the data into categories that aids comparisons between observed phenomena and supports developing theoretical concepts.

Interviews

Introduction

The purpose of the person-to-person interviews was to collect information regarding the arts integration practices that are in place at the five AI schools. The advantage of face-to-face interviews is that the researcher has the opportunity to experience the emotions expressed in the information imparted through observation of facial expressions and vocalizations. To develop rapport with the participants, the researcher strove to maintain an informal and conversational tone with the open-ended questions that encouraged reflective responses. Questions were developed based on the elements of effective instruction and characteristics of high performing schools (Barth, 1990; DuFour & Eaker, 1998; Kannapel & Clements, 2005; Marzano, Pickering & Pollock, 2001; Schmoker, 1999). Sample questions are attached in Appendix F, however the researcher often expanded upon these questions, with a probing, "Tell me more about that" type of inquiry depending upon the type of information imparted.

Participants

The principals of each of the five AI schools and 15 teachers working at the AI schools agreed to be interviewed for this study. The principals served as gatekeepers and the researcher obtained permission from the principals to contact the teachers. Principals were asked to suggest teachers who might be willing to participate in the study and the principals supplied the names of teachers that they recommended for participation. All of the participants were cordial and enthusiastic when speaking about AI. This is likely due

to the fact that the principals were known as colleagues to the researcher and the teachers had volunteered for the study, indicating their interest in the topic and willingness to share information about AI practices with the researcher.

Procedures

The researcher contacted the principals and the teachers to arrange for a mutually satisfactory time for the interview. Many of the teachers who agreed to be interviewed had also agreed to participate in the classroom observation. Teachers and principals provided permission for their participation in the interviews by signing an informed consent form (Appendix B) and legal release (Appendix C). These documents allowed the researcher to collect interview data through audio recordings, which would be transcribed by the researcher shortly thereafter. The semi-structured interviews with principals and teachers at the participating AI schools were conducted by the researcher to include open-ended questions that encouraged flexibility in responses and encouraged more thoughtful responses in explaining the participant's viewpoint of their school's AI practices (Appendices E & F). The researcher participated only as an observer and interviewer. The interviews lasted approximately thirty minutes. The study took place over a period of one month.

Open-ended questions were developed to encourage free expression of the teachers' responses (see Appendix F). The interviews were conducted at the school at a time of the teachers' choice. The researcher tape recorded the interviews for later review. The researcher was prepared to use active listening skills to discern meaning structures in respondents' answers and ask connected follow-up questions. The interview process followed the constructivist paradigm in that the researcher and informant collaborated to

construct meaning and interpretations from the informant's responses (Charmaz, 2006). The interview is standardized in that the same predetermined questions were asked in the same order to all respondents for comparison purposes. Interview responses were recorded with the permission of the informant and transcribed at a later date (Hatch, 2002). Specific questions addressed a description of the AI planning process, including how the arts and content outcomes are addressed in lessons, level of student engagement, the development of critical thinking skills and attainment of the learning outcomes. Additional questions provided information about the frequency and type of AI, amount and type of professional development and its implications for building teacher capacity; the implications of AI for student achievement, particularly for under-achieving students. Information gathered from the interviews may be determined to be pertinent to the discussion of the study.

During the first interview, the researcher took notes, did not vary from the questions and asked few clarifying or probing questions. Upon reflection and using analysis in the field, the researcher felt that the technique of paraphrasing and probing would elicit deeper responses and a decision was made to use these techniques in the next interview. As suspected, the following interviewers did provide more substantial responses. This could be due to the researcher's technique and/or due to the teacher's enthusiasm toward the topic.

Gathering and Recording Methods

Data were collected by observation, interview and artifacts over the course of two months at the end of the 2013-2014 school year. All data were collected by the researcher personally with one-on-one interviews and first hand observation of classroom lessons. Throughout the study field notes were archived and all forms of communication with participants were documented electronically.

Transcribing the taped interviews was the first step in data analysis. Data gathered from audio-recorded interviews were transcribed to the researcher's password-protected personal computer, filed electronically and backed up on a USB flash drive using first names only so that confidentiality was maintained. Printed copies of participants' consent forms were kept in a secure location.

Methods of Review and Reflection

The audio-recorded interviews were replayed to ensure the accuracy of each transcription. Transcripts were sent to each participant for accuracy checks, but there were no requests for changes. In order to generate data, each transcript was reviewed thoroughly and reflected upon for nuances of meaning. Listening to the interviews and reading over the transcripts and notes, patterns of responses were identified and meaningful categories began to emerge.

Participants' responses were catalogued according to the research questions proposed in this study using highlighting for effect. A color coding system was used to highlight all text that referred to different categories of responses. Once these data were identified, themes were further sorted into codes in the analysis process, which led to the

development of a grounded theory of AI as an effective instructional strategy that may lead to the development of characteristics of high performing schools and may support the academic achievement of disadvantaged students.

Validity

Data from observations and interviews were analyzed using a grounded theory approach to include open coding of responses, then axial coding in order to identify relationships between and among themes. Codes were categorized to explain the existing phenomena. The researcher collected student artifacts from the lessons and maintained a field journal of notes collected during the study in order to triangulate all data sources and form valid conclusions (Hatch, 2002; Orcher, 2005; Wiersma & Jurs, 2009).

Using a grounded theory approach, the researcher sought to discover patterns in the data collected through interviews, observations and artifacts. Glaser and Strauss referred to grounded theory as to that which is developed inductively during the course of the study and "in constant interaction with the data from that study" (as cited in Maxwell, 2005, p. 42). Through this study, the researcher constructed a substantive theory of features of AI that have the potential to support under-achieving students in making academic gains across the curriculum.

The data collected and analyzed through this study provided an explanation of the AI practices currently implemented in some schools. The data were subject to researcher and participant perceptions, interpretations, and philosophical assumptions of the phenomenon of arts integration.

Grounded Theory

Researchers have employed grounded theory studies to investigate and understand phenomena in educational settings to include parent involvement in education (McKenna & Millen, 2013); co-teaching in physical education (Grenier, 2011); the role of teacher education on STEM teachers' career paths in high-needs schools' (Kirchoff & Lawrenz, 2011); raising attainment and enjoyment of reading (Butterfield, 2009); student decision-making in design and technology education (Mettas & Norman, 2011); and mental mathematics and metacognitive prompts (Hoffman & Spatariu, 2011). Using the search terms, "grounded theory in arts in education", few peer-reviewed studies based in an educational setting were found that were pertinent to this study. The grounded theory approach was used in studies of the arts in education to include sociocultural factors impacting the therapeutic songwriting process (Baker, 2014).

A grounded theory approach is not sequential in that the steps of gathering data, note taking, triangulation of data, identification of codes or themes from the data, and writing results are often revisited as the researcher ascertains an emergent theory based on the experience (Charmaz, 2006; Wiersma & Jurs, 2009).

Methodological Assumptions and Limitations

This study was based on several assumptions. It was assumed that all students' test scores reflect their true reading ability and best effort on the MSA reading assessment. It was assumed that the participants in the interviews will respond honestly and accurately to the interview questions. Data analysis was assumed to be impartial.

The following limitations are noted for this study. Participation was limited to schools within one school district in Maryland. The observations and interviews

occurred only at AI schools. Therefore, the extent to which findings can be generalized to other school systems is uncertain. The purposive sampling may decrease the generalizability of the findings; therefore this study may not be generalizable to all public schools in the state of Maryland and in other areas

An AI program can vary from school to school depending upon various factors, such as teacher capacity, administrative support, collaborative atmosphere, and frequency of AI lessons. These factors were taken into account in the discussion of qualitative measures.

An additional limitation to this study relates to the non-experimental design. Cause and effect cannot be determined in a non-experimental study. It is possible that the AI schools have other initiatives and programs in place, besides AI, that have an effect on student achievement. Finally, the researcher had been an administrator at a participating AI public school, which may be perceived as a conflict of interest. In an attempt to address the concern of a conflict of interest, the researcher adhered to all guidelines outlined by the IRB.

Chapter IV

RESULTS AND ANALYSIS

The data gathered through the study were analyzed in this chapter and presented by: (1) MSA reading change score data results and quantitative analysis; (2) observation data results and qualitative analysis; and (3) interview data results and qualitative analysis. Through a synthesis of the quantitative analysis of the data collected from MSA reading change scores for the participating schools and the qualitative analysis of the data gathered from interviews and observations, a theory of the relationship of AI to student achievement will be developed.

The study sought to provide information regarding the effectiveness of AI as an instructional strategy that promotes student progress with standardized reading measures, particularly among economically disadvantaged students, that may ultimately lead to the reduction of the achievement gap in reading. The intent of the study was to compare student change scores on MSA Reading for non-FARMS and FARMS students for three years (2011, 2012 and 2013) for a cohort of 344 students at five AI schools and a cohort of 383 at five non-AI schools to determine differences in student change scores between and among groups. In addition, data collected from interviewing teachers and principals and conducting observations of AI lessons at designated AI schools was analyzed and synthesized.

Ten public elementary schools in one school district in Maryland were involved in the study. Five of the schools had been designated as AI schools by the district and five were comparison traditional schools. The five AI schools received professional development support from an AI resource teacher. Tables 12 and 13 depict the AI and non-AI schools involved in the study, the enrollment, number of students in the cohort and percentage of students qualifying for FARMS. The Title 1 school is represented by the T1 indicator.

Table 12

Arts Integrated Public Elementary Schools (9/13)

School	Enrollment	Grade 3 Cohort	FARMS
01	K-5/424	n=64	8.6%
02	K-5/624	n=105	5.3%
03	PK-5/731	n= 63	70.8% (T1)
04	K-5/335	n=45	33.4%
05	K-5/305	n=46	41.4%

Table 13

Control Group: Non-AI Schools /Similar Demographics (9/13)

School (comparison AI school)	Enrollment	Grade 3 Cohort	FARMS
06 (01)	K-5/753	n=97	11.8%
07 (02)	K-5/563	n=95	6.3%
08 (03)	PK-5/252	n=30	64.4%(T1)
09 (04)	K-5/566	n=90	30.7%
10 (05)	PK-5/661	n=86	40.6%

MSA Change Score Data Results and Quantitative Analysis

This section of the study was conducted using a quasi-experimental, causal-comparative design. Scores from the 2011, 2012, 2013 MSA reading tests were analyzed. To determine student change, MSA scale scores are divided into nine sub-scores, ranked into three ranges in each category of Basic, Proficient, and Advanced. Growth for individual students was calculated by comparing reading scale scores and performance scores from two years (See Chapter 3 for a more detailed description). The analysis of covariance (ANCOVA) statistical method was employed for identifying statistically significant differences of growth change scores from 2011 to 2013 between and among the FARMS and AI groups. The student change scores served as the dependent variable in the ANCOVA analysis. The student groups of FARMS and non-FARMS were one independent variable and implementation of AI was the other independent variable. In addition, an independent samples t-test was used to evaluate the mean differences between the groups (FARMS versus non-FARMS, AI verses non-AI) of scores.

Change Score Mean Data and Analysis

The mean change scores of non-FARMS and FARMS at AI and non-AI schools are presented in Table 14. The change scores were positive, although small and most less than one point in eight out of the ten groups. In all five AI schools, the mean change for FARMS students exceeded mean change for non-FARMS students, while this was the case for three out of five non-AI schools. Figure 1 graphically depicts in box plot form the mean change scores for the four populations in the study. Outliers are represented by circles and extreme outliers are represented by a star.

Table 14

Mean Change Scores for non-FARMS, FARMS, non-AI, and AI Groups, 2011-2013

Group	School	Non-FARMS	Non-Farms n	FARMS	FARMS n
AI	01	0.17	90	0.25	7
	02	-0.35	95	0.67	3
	03	-0.77	27	0.09	56
	05	0.19	29	0.46	27
	04	0.19	34	0.21	18
Non-AI	07	0.32	103	0.64	12
	08	0.21	81	0.00	6
	06	0.72	15	1.08	15
	10	-0.18	61	0.21	26
	09	0.43	65	0.00	45

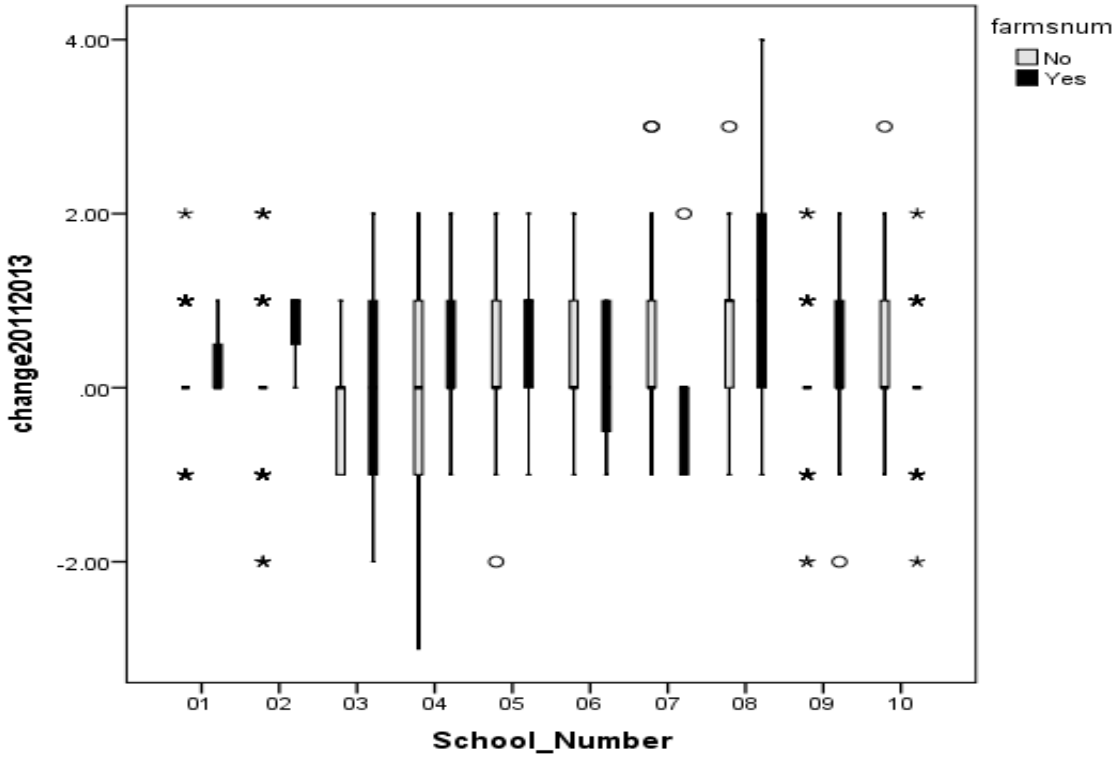

Figure 1. Box Plots of Change Scores by FARMS Group at Each School, 2011-2013

AI Students' Reading Change Scores Data and Analysis

The differences in MSA reading change scores from 2011 to 2013 between non-FARMS and FARMS at the five AI schools were analyzed using the ANCOVA statistical procedure for the data from each school. Table 15 presents the ANCOVA results revealing that there were no statistically significant differences in MSA reading change scores between non-FARMS and FARMS students. The shared variance R^2 values for all schools were very low, all less than .03, indicating that less than three percent of the variance in the change score can be explained by FARMS status.

Table 15

ANCOVA Results for AI Schools

School	Mean	r	R^2	F	ANCOVA p-value	FARMS t-score	FARMS p-value
01	.174	.03	.001	0.07	.79	0.27	.77
02	-.011	.15	.023	2.06	.16	1.44	.16
03	.027	.82	.007	0.48	.49	0.69	.49
04	.130	.06	.003	0.14	.71	0.37	.71
05	.314	.15	.023	1.16	.29	1.08	.29

Non-AI Students' Reading Change Scores Data and Analysis

Separate ANCOVA tests were conducted for each of the five non-AI schools using the MSA reading mean growth scores from 2011 to 2013 as the dependent variable and non-FARMS and FARMS as the independent variables to determine differences. Table 16 presents the ANCOVA results revealing that there were significant differences between non-FARMS and FARMS at one non-AI school, using the conventional $p < .05$

to establish statistical significance (Mean difference=24; F = 5.37; df= 93, 1; p = .023). The t-test of the slope shows the negative direction of the impact of FARMS identification on change scores. In the one statistically significant difference non-FARMS students showed larger gains than FARMS students.

Table 16

ANCOVA Results for non-AI Schools

School	Mean	r	R^2	F	ANCOVA p-value	FARMS T-score
07	.302	.07	.005	0.56	.46	-0.75
08	.200	.07	.004	0.33	.57	-0.57
06	.913	.14	.019	0.41	.53	0.64
10	.051	.12	.015	1.2	.28	1.10
09	.24	.23	.055	5.37	.023*	-2.32

*Significant Difference $p < .05$

AI and non-AI Students' Reading Change Scores Data and Analysis

The ANCOVA statistical analysis was used to determine differences in mean student growth between non-FARMS and FARMS students at AI schools compared to non-AI schools (See Table 17). The participating schools' scores were aggregated to form two groups and no significant differences were found in the change score. The t-test of the slope of direction of the relationship of the co-variables is included in Table 17.

Table 17

ANCOVA Results for non-AI, AI Schools and All schools

School	Mean	r	R^2	F	ANCOVA p-value	FARMS t-score
Non-AI	.25	.03	.001	0.24	.623	-0.49
AI	.11	.08	.007	2.44	.119	1.56
Total	.18	.025	.001	.445	.505	0.67

Mean reading change scores for the grade 3 cohort of students showed that students in AI schools outperformed students in non-AI schools during the year that they were in grade 3 (2011). This trend did not continue through grades four and five. By the conclusion of the study in 2013, the non-AI schools met and/or surpassed the MSA reading scores of the AI schools. At the school level, no schools in the AI group and one school in the non-AI group showed significant gains in the MSA reading growth change scores from 2011 to 2013 for FARMS students compared to non-FARMS students.

Overall Reading Change Scores Data and Analysis

An independent samples *t*-test for equality of means revealed a greater mean change score for non-AI schools compared to AI schools (t= -2.44, F=1.4; df =719, $p<.05$). The effect size was.18, below small by Cohen's (1988) criterion. The results were not statistically significant since the outcome was contrary to the relationship of AI and academic achievement as suggested by the literature (Table 18).

Table 18

Change Scores Independent Samples t-Test

	AI	N	Mean	Std. Deviation	Std. Error Mean
change20112013	yes	340	.0971	.83754	.04542
	no	381	.2520	.86117	.04412

Summary of Quantitative Data and Analysis

Although a positive relationship between AI and student growth on MSA reading change scores for FARMS and non-FARMS students was not found in the longitudinal study of grades 3, 4, and 5, the AI students outperformed non-AI students in grade 3. Confounding variables may be at play impacting change scores for students in grades 4 and 5. There was no significant difference in change scores determined between FARMS and non-FARMS students, as suggested in the literature (Catterall, et. al., 1999; Ingram, D. & Riedel, 2003).

Additionally two different change scores were calculated to insure that the results found here were not dependent upon using a change score consistent with the practice established in the State of Maryland. A simple gain score was calculated in which the MSA score in 2011 was subtracted from the MSA score in 2013 and divided by the MSA score in 2011. To determine the elasticity of change the following formula was developed: [(MSA score in 2013-MSA score in 2011)/MSA score in 2011+ MSA score in 2013]. The results from these two different gain scores, while more sensitive to small increases in performance, showed substantially the same result as the change score suggested by the State of Maryland.

Quantitative data analysis revealed no statistically significant differences in reading change scores between students in AI and non-AI schools, nor between FARMS

and non-FARMS students at these schools. The results of the quantitative analysis do not imply that arts integration cannot be a useful and effective means of instructional delivery. Therefore, qualitative analysis of data collected from teacher and principal interviews and classroom observations at the identified AI schools provided additional information to determine AI practices that may support student learning. When instruction is decomposed into its element tasks of planning, student engagement through purposeful learning activities, and outcome attainment, a more nuanced story emerges that has potentially important implications for instructional practice.

The strength of a mixed-methods study is that through the synergy of the quantitative and qualitative results educators may develop an understanding of the unique characteristics and benefits of an arts-integrated curriculum for all students. Ultimately, the study sought to identify how creative processes were being taught in schools and which features of arts integration programs may lead to student growth in reading.

Classroom Observation Data and Qualitative Analysis

Data collected from eleven (N=11) classroom AI lesson observations of AI practices is reviewed and analyzed herewith. Table 19 depicts the observations (N=11) categorized by AI school, grade level, teacher, subject area(s), and number of students.

Table 19

Distribution of Observations by School

School	Grade/Teacher	Subject(s)	Students
01	3F	Writing/ Visual Arts	21
01	3S	Reading/History Visual Arts	22
02	KC	Reading/Drama/ Visual Arts	19
02	1N	Reading/ Science/Drama/ Visual Arts	25
02	4L	Reading/Writing/ Science/Visual arts	23
02	4H	Reading/Writing/ Science/Visual arts	22
03	1P	Math/Visual arts	24
03	4D	Reading/Writing/ Visual arts	24
04	KB	Reading/Drama/ Visual Arts	14
05	3E	Reading/Writing/ Social Studies/ Visual Arts	21
05	5S	Reading/Writing/ Visual Arts	16

Each of the observed lessons involved the language arts and visual arts. Some lessons incorporated outcomes from social studies or science and other art forms, such as drama.

Language arts includes standards in oral and written communication to include speaking, listening, reading and writing. Visual arts include art forms such as painting, drawing, design, crafts, ceramics, and photography. Visual arts outcomes include an understanding and appreciation of art elements such as line, space, shape, form, texture, value and color.

Data were collected using field notes categorized by descriptive notes and reflective notes. Analysis included focused coding for four broad areas: school climate, classroom environment, instructional delivery, and student performance. These four broad areas were further disaggregated into subcategories as described in this section.

(1) Observation Data and Analysis Pertaining to School Climate

A visitor to a school can ascertain the values of the school community from careful observation of the environment for learning. This coded area included observations of the physical features of the school and interactions with school staff. A review of this grouping revealed the following focus areas of study:

- Communication of AI
- Celebration of arts
- Quality learning environment
- Positive social interactions

Evidence of *communication of AI* was noted in each school through posters, signage, parent newsletters, social media, and vision statements. Schools displayed

student art works in the hallways and honored students as artists. *Celebrations of the arts* occurred with special performances throughout the school year and community events. Figure 2 depicts an example of recognition of student performance in the arts.

Figure 2. AI school hallway display featuring students engaged in the arts.

Quality learning environment refers to the physical features of the schools and the atmosphere for learning. This focus area included lighting and use of color and child-friendly messages to enhance the surroundings. Field notes included observations of posters, banners, photographs of students with positive messages, and student work on display. *Social interactions* at each school were positive and welcoming. Office staff and teaching staff were polite, friendly, and helpful and smiled at visitors.

2) Observation Data and Analysis Pertaining to Classroom Environment

An important part of the observation section of this study was the opportunity to experience the climate for learning in the classroom. Important information about the culture of the classroom can be ascertained from hearing the teachers' and students' voices; seeing firsthand the processes and activities of learning; and feeling the atmosphere of the classroom.

Analysis of environment data revealed the following focus groupings:

- Positive, respectful social interactions
- Neat and organized
- Varied learning situations
- Procedures
- Performance expectations
- Access to instruction
- Encouragement
- Teacher confidence

The data contained evidence that *social interactions* in observed classrooms were mutually respectful and positive. Teachers called students by name, made frequent eye contact with students, smiled often, and used a friendly tone of voice. Students interacted respectfully with peers and adults.

The physical features in the classroom were *neat and organized* for learning. Classrooms had clearly designated locations for a reading center, writing center, and group learning center. Signs designated locations of various materials of instruction. The classrooms had adequate lighting, comfortable air temperature, and were attractive and conducive to learning. Many classrooms featured a carpeted area where students gathered to sit closer to the teacher and each other and to have a closer view of art works and/or to hear a story. These areas often had selections of literature and comfortable chairs to encourage reading. Plants were noted in several of the classrooms. In every classroom, student work was on display.

Classrooms contained *varied learning situations* for students. Students were seated at tables or grouped into teams of desks. Students were often given a choice of workspace when working independently or with a partner. Some chose to sit on the floor, on large exercise balls, or stand to complete assignments.

In each classroom *procedures* were clearly in place to support learning activities. Behavioral expectations were posted and teachers reviewed the expectations as needed. Students appeared to understand routines and behavioral expectations and followed procedures to ensure a safe learning environment.

Performance expectations were explained, modeled, and reinforced by teachers and practiced by students. Teachers clearly stated the objective of the lesson at the beginning and sometimes, throughout, the lessons. Teachers modeled activities, circulated to assist students as needed, and consistently reinforced the learning expectations with reminders before moving to the next activity.

All students in the classrooms had *access to the instructional activities*. Most classrooms included students with learning challenges, such as ADHD. Some students were English language learners (ELL). Yet, the nature of the instructional activities allowed all students to fully participate. Lessons contained visuals, kinesthetic movement, as well as oral language.

Teachers in each classroom *encouraged* student performance by positively reinforcing expected behaviors with specific praise, such as, “Using the salt medium was a good idea for adding texture.”

Reflective notes indicate that *teacher confidence* was apparent in the practice of integrating arts and content areas. They were capable of weaving the vocabulary of

elements of the arts into descriptions of the learning activities. It was assumed that regular practice of AI strategies led to a high comfort level with this type of instruction.

3) Observation Data and Analysis Pertaining to Instructional Delivery

While every lesson contained effective instructional practices, such as modeling and coaching, the data coded for the Instructional Delivery category revealed instructional strategies that may be atypical in traditional instruction and particular to the nature of AI lessons. Analysis of the data revealed the following focus areas:

- Clear focus
- Relevance
- Modeling
- Guided practice
- Coaching
- Differentiation
- Engagement
- Cognitive demand
- Questioning

Field notes indicated that lesson objectives were posted and explained by the teacher in each classroom establishing a *clear focus* for the lesson. In some cases, teachers referred back to the objective throughout the lesson to maintain focus.

Relevance of the lesson objective was established by teachers connecting the new learning to previously learned material or experience. Teachers *modeled* the expected learning behaviors through demonstration and/or think aloud strategies. Through *guided practice* students had an opportunity to practice the new skills while the teacher

circulated the room, assisting or re-teaching as needed. *Coaching* occurred when the teachers led students through a process of learning by using encouragement, positive reinforcement, or questioning to guide their thinking.

Multidisciplinary connections were in evidence in each lesson. Table 20 depicts the subject outcomes in evidence. Connections between and among the content areas were relevant and appropriate.

Table 20

Distribution of Lesson Content Objectives by Subject and Grade

Grade	Reading	Writing	Math	Sci.	Soc. Stud.	Visual Arts	Drama
K	2					2	2
1	1		1	1		2	1
3	2	2			2	3	
4	3	3		1		3	
5	1	1				1	
Total	9	6	1	2	2	11	3

The next focus area, *differentiation*, was in evidence in each classroom. The variety of the instructional materials and activities led to a natural *differentiation* of content, process, and product so that all students had access to the curriculum. Lessons involved activities that were auditory, visual, kinesthetic, and interpersonal, which appeals to different learning styles (Gardner, 1993). Technology was integrated in most classrooms as teachers used Smart Boards to present and organize information. Laptop computers were used by students in grades four and five. Materials of instruction

included traditional text books and works of literature, papers and pencils, as well as a variety of art materials, such as painting and drawing supplies and prints of art works.

Another focus grouping, *engagement,* was noted consistently for each observation. Field notes indicated that occasionally a student was off-task when the teacher was talking. Off-task behaviors were generally not disruptive and consisted of looking for something in the desk or talking quietly to another student. During the learning activity, such as analysis of art works, performing a tableau, painting or writing poetry, all students actively participated and were able to perform the assigned tasks. Data revealed that teachers were also highly engaged in the instructional delivery.

Cognitive demand was another area of focus in the AI lessons. Figure 3 depicts Bloom's Taxonomy, which is a classification of levels of intellectual behaviors that are important to learning critical thinking skills. Questioning and learning activities at high levels of Bloom's Taxonomy can support the development of critical thinking skills and student success with challenging tasks.

Figure 3. Bloom's Taxonomy. (Overbaugh & Schultz, 2014). Source: Retrieved from http://ww2.odu.edu/educ/roverbau/Bloom/blooms_taxonomy.htm

Questioning took place throughout the lessons. Questions were used to guide student thinking and lead the students to draw conclusions about a topic or skills. Many of the teachers' questions were open-ended and began with *How* or *Why* which encourages students to extend their thinking through a more detailed explanation than simply recalling information. Teachers often asked students to explain their thinking or understanding of processes with questions such as, "How do you know?" or "How can we check our predictions?" Some questions were asked to individual students as the teacher was circulating, checking for understanding, and may not be included in the final analysis. Analysis of data pertaining to cognitive demand shows a pattern of tasks and questions at high levels of the taxonomy. Table 21 describes the frequency and level of cognitive demand observed in lessons either through teacher questioning or learning activity.

Table 21

Level of cognitive demand by frequency of questions and activities

Thinking Skill	Question	Total	Activity	Total
Creating	Arrange/assemble (2); compose (2); construct (2) create (4); design (2); develop (1); explain (3); formulate, generate, plan (3); synthesize (3); write (5).	27	Design a habitat(2); create self-portraits in pop art style (1); create movement in art works with multimedia(2); develop a project with multiple components(2); write poem(2); write explanatory text(1); write autobiography(1);	11
Evaluating	Appraise/assess (2); compare/contrast (4); describe (3); discriminate (1); evaluate (1); interpret (5); predict (1); support (1)	18	Compare/contrast styles of writing/art (5); evaluate performance(3); write an argument/opinion(1)	9
Analyzing	Analyze (5); differentiate/distinguish (2); examine (5); identify (5); illustrate (4); infer (7) question (5); sequence (2)	35	Analyze a character's effect on plot (1); examine characteristics of an art work (5); infer character's motives (3); sequence events(2); determine meaning of unknown words(1); make inferences(4); analyze art(7); discern patterns(2); dramatize the characters and events in a story(3); illustrate an animal habitat(2); questioning(4)	34
Applying	Demonstrate (2); dramatize (3); interpret (5); predict (3); show (1); solve (1)	14	Characterization(3); use personification to make predictions(3)	6
Remembering	Classify (3); describe (3); discuss (7); distinguish (5); explain (6); extend (3); give examples (4); recall/review (2); summarize (2)	35	Classify words/animals/plants (4); describe characters, action, events(3); discuss (7)	14

Analysis of the frequency of questioning and learning activities by cognitive demand domain revealed 35 questions and 14 activities at the remembering level; 14 questions and 6 activities at the applying level; 35 questions and 34 activities at the

analyzing level; 18 questions and seven activities at the evaluating level; and 27 questions and seven activities at the creating level for a total of 80 questions and 54 activities in the eleven classrooms at the top three levels of cognitive demand.

4) Observation Data and Analysis Pertaining to Student Performance

Student performance was another category of observation data that included student behaviors during instruction and the observed response to the instructional activities. Further disaggregation of this category of data revealed the following focus groupings:

- Make connections
- Involvement
- Cognitive demand
- Apply learning
- Intercommunication
- Achievement

Field notes indicate that students were able to *make connections* of previously learned concepts to the new content. This understanding was demonstrated by student responses to teacher questions. Student *involvement* in the learning activities was consistently noted in all observations. Each lesson involved movement around the classroom at some point. Physical activities noted included jumping, running in place, crawling, acting out emotions, crawling, drawing, cutting, pasting, writing, vocalizing, and keyboarding.

Another focus grouping in the category of student performance was *cognitive demand.* In these lessons, students made inferences, analyzed art works, created habitats,

synthesized several media sources to write explanatory text, among other skills. These activities were explained previously in Table 21.

Students demonstrated that they were able to *apply learning* through their mediums such as oral discussions, performances, writing, drawing, and painting. Notes indicated that students were able to achieve the objective of the lesson or were in the process of achieving the objective.

Intercommunication was another focus grouping that was evident in each classroom. Opportunities for students to talk with peers and teachers were included in the lessons. The observer noted that student conversations were mainly focused on the subject matter and learning activities.

The data indicated that *achievement* of learning objectives was another focus grouping. All students in the observed classrooms had achieved the lesson objective or were in the process of completing the learning activity that would lead to achievement. When asked to self-assess, students indicated that they had performed according to expectations.

(5) Data and Analysis Pertaining to Overall Observation Themes

The field notes used to collect data of classroom observations were open-ended and allowed the researcher to record events in real time. A sample of field notes is included in Appendix G. Analysis of the observation data revealed seven major themes. These themes included shared vision, culture, structures, engagement, rigor, achievement, and teacher capacity. Table 22 describes the seven themes with supporting focus groupings.

Table 22

Themes from Observation Phase of Research

Theme	Focus grouping supporting theme
Shared vision	• Clear focus • Communication of AI • Celebration of arts
Culture	• Positive, respectful social interactions • Encouragement • Quality learning environment • Positive social interactions • Intercommunication
Structures	• Neat and organized • Varied learning situations • Procedures • Performance expectations • Relevance • Modeling • Guided practice • Coaching • Make connections
Engagement	• Involvement • Access to instruction • Differentiation • Engagement (student)
Rigor	• Cognitive demand • Questioning • Apply learning
Achievement	• Apply learning • Make connections • Performance expectations
Teacher capacity	• Teacher confidence • Quality learning environment • Engagement (teacher) • Performance expectations

Interview Data and Qualitative Analysis

The next data collection piece was a review and qualitative analysis of the data collected through interviews with principals and teachers at AI schools. A limitation of the study was that only principals and teachers at AI schools were interviewed. Five principals and fifteen teachers were interviewed. Table 23 shows the percentage of interviewees (N=20) categorized by AI school and grade level, either primary or intermediate.

Table 23

Distribution of Interviewees by School

School	Principals (n=5) (20%)	Teachers (n=15) (80%)	
		Primary (PK-2)	Intermediate (3-5)
01	4% (n=1)	0% (n=0)	10% (n=2)
02	4% (n=1)	15% (n=3)	10% (n=2)
03	4% (n=1)	10% (n=2)	4% (n=1)
04	4% (n=1)	4% (n=1)	4% (n=1)
05	4% (n=1)	0% (n=0)	15% (n=3)
		40% (n=6)	60% (n=9)

The principals were asked ten questions and the teachers were asked eight questions. Both principals and teachers were given the opportunity to provide additional information. A copy of the principal interview questions can be found in Appendix E and a copy of the teacher interview questions can be found in Appendix F. Significant responses from each question were grouped into categories according to commonality and disaggregated by the study's prescribed characteristics. Coherent patterns emerged and theoretical concepts were developed from all of the categories and were organized

into themes. In the final analysis of the overriding common themes, a theory of AI as an instructional strategy that supports student achievement will be developed using a construct oriented approach.

(1) Interview Data and Analysis Pertaining to AI Implementation

The first question was broad and open-ended in that it asked participants to describe their experiences with AI implementation. Through an analysis of the responses, statements were grouped and the following foci emerged:

- Broad implementation
- Communication
- Regular practice
- Collaboration
- Celebration of art
- Community involvement

Principals and teachers agreed that there was *broad implementation* of the arts across the curriculum in all subject areas. Respondents reported that AI is implemented "rather wide-scale" and "school-wide". The principals reported to have embraced the AI practices and encourage teachers to become more proficient in the regular integration of the arts. Two principals spoke of hiring only teachers who are interested in AI.

Schools *communicate AI values* in different ways. One school has specifically included AI in its mission statement, while others refer to AI in mission/vision statements with general terms, such as "create" or "design" or "exciting instruction". Banners displayed in some schools proclaim the AI school status.

Responses about the *regular practice* of AI lessons were consistent, to include: "all the time, every day"; "daily for some teachers"; "everyone does it daily" and, "weekly, if not daily", although the frequency often depends upon teacher comfort level and capacity. It was reported that teachers with more training had a greater comfort level integrating arts, yet some new teachers quickly embraced AI and were using it regularly. A principal said that teachers "integrate it a lot more than I even know", but felt that most teachers used AI at least weekly. Cultural arts teachers incorporate content area themes into their lessons, as well, a practice referred to by two principals as "reverse AI". Two of the principals referred to an emphasis on STEM (Science, Technology, Engineering and Math) lessons becoming STEAM lessons through an integration of arts.

Another grouping to emerge from analysis of the responses was *collaboration* among teachers. Respondents consistently remarked on the collaboration involved in AI, reporting that AI is "co-planned and co-taught". The school system provides an AI resource teacher who plans lessons with each grade group of teachers based on the curricular standards for their content area and the arts. Cultural arts teachers also co-plan with the classroom teachers and share materials of instruction. Some lessons are co-taught with the resource teacher or resident artist. Grade level teachers collaboratively plan AI lessons with support from the AI teacher liaison, a staff member who has received additional training from the school system.

Interviewees explained about regular *celebrations of the arts* in their responses, which was another meaningful category of responses. Each AI school features school-wide displays of student art works to include sculptures, collages, mosaics, painting, sketches, ceramics, and multi-media art works. It was noted that students are proud of

their products and want to show them off at celebrations, such as *Night of the Arts* and *DIG (Design, Integrate and Grow) Days* during which parents are invited to participate and enjoy performances and galleries of student art works.

According to interview data, another category of significance is increased *community involvement* with AI. Teachers reported that parent volunteerism increased during arts-centered activities and showcase events. Parents were invited to participate in a guest artist program at one school even if they have no prior experience in the arts. Community organizations, such as PTA, Young Audiences and the local Arts Council, collaborate with schools to provide resident artists who perform for teachers and students and co-plan and co-teach with teachers.

(2) Interview Data and Analysis Pertaining to Training and Support

Interviewees were asked to discuss the training and support received in order to implement AI and the impact of the training on teacher capacity. Through an analysis of the patterns of responses, statements were grouped into categories and the following foci emerged:

- Ongoing professional development
- Consultation and collaboration with educational experts and colleagues
- Consultation and collaboration with artists
- Community resources
- Materials of instruction
- Increased teacher capacity

Ongoing professional development (PD) was mentioned by every interviewee. The teachers at AI schools continue to participate in a variety of trainings since the

implementation of AI six years previously. Trainers include AI resource teachers provided by the school system, and school-based AI teacher liaisons, and resident artists. Teachers described the specific art-focused trainings in which they had participated in preparation for AI instruction, such as play writing, shadow puppets, music enrichment, drama, tableau, movement/dance, needlecraft, and assessing AI outcomes.

Consultation and collaboration with educational experts and colleagues occurs regularly to support instruction. The AI resource teacher met with every grade level at each AI school at least monthly to plan lessons with teachers. The teachers discuss the standards that they plan to teach and the AI resource teacher demonstrates how an art form can be integrated into the lesson. Each school also has an AI Liaison, who is an on-site general education teacher who volunteers to accept an AI leadership role at the school. The liaisons receive additional trainings throughout the year and act as a school-based resource to teachers. They were expected to facilitate professional development sessions at the school for the teachers based on these training opportunities and to assist with planning AI lessons. One school formed an AI committee with representatives from each grade level who collaborate with the AI specialist and liaison to plan and share instructional strategies. Cultural arts teachers join general education teachers in collaborative planning sessions to share expertise and support development and implementation of AI lessons.

The school system provided a week-long summer AI institute and teachers visit AI schools in other school systems. Trainings focus on instructional strategies incorporating dance and movement, visual arts, theater, and music. Some teachers at each of the AI schools have been certified in AI through a Towson University program

and these teachers assume AI leadership roles in their schools as AI liaisons and resource personnel.

Consultation and collaboration with local artists occur at least annually as AI schools participate in grant-funded artist-in-residence programs. Teachers also have opportunities to work with artists at training sessions outside of school. Six out of the seventeen respondents had attended a week-long AI summer institute with local teachers and artists to enhance their AI skills.

Other forms of professional development discussed by the principals and teachers *community resources*. These resources included parent involvement and local artist participation grant-funded through community organizations. Artists often collaboratively plan with teachers, perform for the student body, or co-teach AI lessons with the teachers. Participants believed that these interdisciplinary professional learning communities enhanced instructional delivery as well as student performance. Organizations, such as AEMS (Art Education in Maryland Schools), invites AI teachers to participate in regular AI-focused events which feature collaborative sessions with experts in the field.

Another aspect of support discussed was *materials of instruction*. Teachers commented on the need for a wide range of materials to support AI instruction. The school system provides each AI school with funding for an arts cart, filled with basic art supplies, digital cameras, text books, and other resources.

Principals and teachers discussed *increased teacher capacity* due to ongoing AI professional development. One principal noted that when teachers have an opportunity to engage in professional development and they realize that they can meet the needs of the

students through AI, then AI becomes the "panacea for helping underperforming students". A first year teacher said that she is developing a wider repertoire of skills. Other responses included, "AI has made me a better teacher"; "helped me realize that all students learn differently" and "changed my way of thinking about teaching and learning". Some teachers reported feeling more confident in taking risks when planning for instruction.

(3) Interview Data and Analysis Pertaining to Student Engagement

Respondents discussed the impact of AI on student engagement. Analysis of responses discovered themes to include the following focus areas:

- High levels of student engagement
- Multiple intelligences
- Impact on student confidence

High levels of student engagement were reported by each interviewee. Comments included, "The difficult to reach students will blossom and engage easily when we use AI strategies that are tapping into different areas of the brain" and, "(AI) makes for a more engaging lesson because you know they are going to be activity involved in the lesson instead of just sitting there looking at a worksheet." Teachers felt particularly pleased with the level of engagement of those students who were less involved with traditional teaching methods. Students with learning, language or behavior problems were found more likely to engage in an arts-focused lesson. Many teachers related this observation to the different learning styles of students and the motivating nature of the instructional activities, noting that "when students are actively involved cognitively, physically and

emotionally it leads to a deeper understanding of the concepts being taught." A continual thread within the engagement area was that AI lessons are fun for teachers and students.

Many responses included the connection of the high level of engagement to the fact that AI embraces *multiple intelligences,* another focus area. Remarks included: "AI appeals to students of all learning styles"; "The students love AI lessons because all of them have some strength in one of the arts where they may not have a strength in a content area"; and "(AI) targets the whole student as opposed to a literature engagement". Phrases used were, "reaching different types of learners"; "some are tactile learners, some need visuals"; "AI strategies tap into different areas of the brain"; and "Students have more options for demonstrating understanding through alternative assessments".

Teachers said that the arts "leveled the playing field" by allowing all students to participate at high levels and demonstrate what they know by means other than pencil and paper. Teachers felt that the increased participation in classroom activities, has *increased student confidence* and this increased student confidence has transferred from the arts to other content areas.

(4) Interview Data and Analysis Pertaining to Student Achievement

Review and analysis of data pertaining to perceptions of the relationship of AI to student achievement resulted in the following focus areas to be discussed further in this section:

- Increased achievement on assessments
- Critical thinking skills
- Interdisciplinary connections
- Impact on teacher and student motivation

The grouping of *increased student achievement on assessments* was reported by every participant. Some teachers completed action research projects to statistically demonstrate higher achievement when lessons are taught with an AI approach compared to traditional instruction. One teacher noted that the length and quality of student writing improved when students were introduced to a concept through a study of the arts. The principal at the Title 1 school noted improvements in skills assessments.

The development of critical thinking skills was another category of responses that became a theme. Teachers noted cognitive skills such as sequencing, analyzing, synthesizing, problem solving, questioning, justifying a response, and creating are involved in the experiential AI lessons.

Interdisciplinary connections were mentioned by the five principals with comments such as, AI is helpful in "making connections to the real world". One principal noted that AI helps students "make connections across the curriculum to help them remember concepts" and that "Science, Technology, Engineering and Math (STEM) lessons now become STEAM lessons by incorporating the arts, which makes learning more natural". At an AI school that is also an International Baccalaureate (IB) school, the principal noted that AI supports IB goals. Part of the program of inquiry is regular exhibitions of culminating activities in which students apply skills and answer four critical thinking questions. AI strategies "provide the conduit for answering those questions. Projects are more interdisciplinary and more comprehensive as opposed to meeting one academic standard. AI exceeds the standards in many cases."

Interviewees noted that increased student engagement and achievement leads to *increased student and teacher motivation*, saying, "Students love AI!" One principal

noted the interrelationship of the groupings of *student engagement*, *increased student achievement* and *teacher capacity*, explaining, "students are engaged which leads them to achieving better and leads to higher teacher efficacy because they see that they can impact student achievement. Teachers are on fire when it comes to AI!"

(5) Data and Analysis Pertaining to Overall Interview Themes

The teacher and principal interview questions used in this study were designed to elicit information related to the themes presented by the research review (Appendix E & Appendix F). From the interviews, five major themes emerged. These themes included the shared vision, engagement, cognitive rigor, achievement, and teacher capacity. Table 24 describes the five themes with supporting focus groupings.

Table 24

Themes from Interview Phase of Research

Theme	Focus grouping supporting theme
Shared vision	• Communication of AI values • Community involvement • School-wide integration of arts • Celebration of student art works • Parent involvement • Community resources
Engagement	• High levels of student engagement • Multiple intelligences • Student confidence • Teacher and student motivation
Cognitive Rigor	• Critical thinking skills • Interdisciplinary connections
Achievement	• Increased student achievement • Impact on underperforming students
Teacher capacity	• Regular AI practice • Collaboration among teachers • Consultation and collaboration with educational experts • Consultation and collaboration with artists • Continual professional development

Collective Analysis of Observation Data and Interview Responses

An examination of coherent themes that emerged from the analysis of observation data and interview responses revealed commonality among some of the themes. Table 25 presents a review of themes where alignment occurred both in the observation data and in the interview responses.

Table 25

Alignment of Themes from Observations and Interviews

Observation Themes	Interview Themes
Shared vision	Shared vision
Culture	N/A
Engagement	Engagement
Structures	N/A
Rigor	Cognitive rigor
Achievement	Achievement
Teacher capacity	Teacher capacity

Theme One: Shared vision

One characteristic of successful schools is that teachers, administration and the school community hold a shared vision or a common cause beyond oneself based on core values and shared beliefs about how students learn best (Covey, 1992). Shared values among all levels of an organization are essential to the success of any change (Jick, 1993; Covey, 1992). The AI schools in this study incorporated the principles of AI into vision and/or mission statements and school improvement plans. Each school has added the arts to STEM (Science, Technology, Engineering and Mathematics) initiatives, making it

STEAM. These shared values are communicated regularly through all available avenues consisting of daily announcements, signage, social media, parent newsletters, and verbally at parent meetings.

Signs are posted at one AI school which announce the school's shared vision of Discover, Integrate and Grow. The vision statement is announced daily during morning announcements and grade groups plan D.I.G. Days quarterly that feature interdisciplinary studies. D.I.G. Days are planned collaboratively to include interdisciplinary learning activities from across content areas along with the appropriate arts outcomes that can be taught simultaneously to achieve the objective of the lesson. Students rotate among the grade level classrooms to actively engage in a different learning experience based on a theme. The teacher went on to explain that due to the children's excitement around D.I.G. Days, parent involvement has increased. "Parents were familiar with AI and were willing to help out with volunteering on DIG days. So, it was a wonderful because of the support from the staff and parents."

The principal at the Title 1 AI school explained the connection of AI to shared vision:

> One of the things that I have noticed with AI is that it has forced us to look at school improvement and it's forced us to look at our planning time, so what we did was create a committee of teachers (PD team) with representative from every grade level who work with Pat (AI resource teacher) who works specifically with every grade level. Normally, it's school wide and everyone does it, she builds relationships and has direct access to teachers. Teachers are the cheerleaders for AI because they see immediate results.

In each of the AI schools visited by the researcher colorful displays of student art works filled the hallways. Some displayed banners that proclaimed the school to be an Arts Integration School. Collaborative works of art, such as screen painting, murals and

mosaics are focal points in the schools fostering an arts-rich learning environment where the creativity is encouraged and valued.

Each AI school in the study has seen an increase in parent participation since implementing AI. Based on parent feedback, principals report that parents are well aware of AI and are pleased with their children's excitement for learning through the arts. One teacher told that parents have expressed being 'blown away' by their child's increased vocabulary and types of inquiry:

> I've talked with parents who say their kids are now looking at pictures and asking, 'I wonder who the artist was?' And 'I wonder what style of art this is?' For a 4 or 5-year old to be thinking that way, it's amazing. The kids will come up with things that I wasn't even thinking!

Special after-school events devoted to spotlighting the artworks of the children are reported to be well attended. One principal reported that this year's *Night of the Arts* was attended by 450 people. "We have parent participation this school never had before," she proudly proclaimed.

Parent-teacher associations (PTA) often will contribute funding for arts materials and cultural arts events and performances, such as the artist-in-residence program, which can be partially grant-funded through the Maryland Arts Council. Resident artists provide co-teaching with designated teachers based on a curricular theme that teachers suggest. The lessons are collaboratively planned with the artist and delivered by both the artist and the teacher. Debriefing sessions after the lesson provide an opportunity for reflection and improvement of practice.

There are many community resources for teachers interested in integrating arts in the Baltimore-Washington area. Arts Education in Maryland Schools (AEMS), a non-profit organization dedicated to fostering arts education for all Maryland students,

provides many opportunities for collaboration and professional development for teachers. Activities are communicated through a regular newsletter send through email.

Maryland colleges and universities host arts integration conferences. The University of Maryland's annual week-long workshop, the Maryland Artist-Teacher Institute (MATI) is a popular conference attracting teachers from across the state. Local art galleries and museums have opened their doors to AI teachers for ongoing PD. The Walters Art Gallery, the Baltimore Museum of Art, and the American Visionary Museum all have programs of study available to teachers interested in learning more about how to integrate the arts across the curriculum. One such program, The Imagination Tool Box: Integration, Creativity and Innovation, is an interactive, hands-on conference co-sponsored by the Maryland State Department of Education, AEMS, and the Walters Art Museum. The AI schools in this study take full advantage of all of the community resources discussed in this section, resulting in a richer, more comprehensive PD experience for all teachers.

The artist-in-residence program is another rich community resource for AI schools. Artists typically work with several grade levels of students and sometimes, the entire student body, to co-plan and co-teach lessons leading to a collaborative work of art. Often, these collaborations are based on an interdisciplinary thematic study. Environmental literacy was the focus of one school as they pursued Green School recognition. Throughout the year, environmental literacy themes were woven into language arts, science, social studies, math, and the cultural arts of visual arts, music, drama and dance. Students learned about the Chesapeake Bay watershed and environmental issues that arise through pollution and runoff. Third graders raised

terrapins and bay grasses in the classroom, which they monitored by measuring, graphing growth and temperatures, and maintaining journal entries of daily progress along with sketches, water colors, and poetry of the grasses and terrapins. The terrapins were tagged and released at Poplar Island as part of a long-term study undertaken by the University of Maryland. The grasses were planted by the students at the community's shoreline, thus solving a community problem of shore erosion. At a Night of the Arts, students performed songs, dances, and skits about the environment and parents enjoyed a gallery of student-created art works created with recycled materials. The students worked with an artist-in-residence to create a school mosaic with recycled materials, which is proudly displayed in the main entranceway to the school. The mosaic symbolizes to all visitors that this school values the arts in education.

Figure 4. Student-created mosaic constructed with recycled materials

When principals discussed their vision for the future of AI at their schools, the consensus was to continue to build upon the successes they have experienced with AI with more teachers becoming highly effective with implementation of AI strategies,

continued collaboration, and a seamless blending of AI practices with the new common core curriculum. One principal commented, "It will be interesting to see what happens with PARCC (Partnership for Assessment for Readiness for College and Careers), which may be more closely aligned with AI."

Theme Two: Engagement

Engagement of the students and the larger school community is one of the characteristics of a high performing school (Barth, 1990; DuFour & Eaker, 1998; Kannapel & Clements, 2005; Marzano, Pickering & Pollock, 2001; Schmoker, 1999). One hundred percent of the participants in the interviews responded positively about the effect of arts integration on student engagement, using words such as, "highly engaging", "very engaging", and "increases student engagement". Researcher's notes on engagement during classroom observations also indicated that the students were completely engaged in the learning activities. Off-task behavior was noted in a kindergarten classroom in which a student, who was known to have emotional challenges, called out repeatedly and moved around the room without permission. The teacher chose to ignore most of the behaviors and praised the student when behavioral expectations were followed. This student did participate appropriately in the performing/physical response part of the lesson.

A third grade teacher noted, "Certainly you noticed that every student was engaged. And even for those students that have behavioral challenges, it's (AI) hands-on and completely engaging for every student." The researcher observed a social studies/ arts integration lesson in this classroom prior to the interview and made note of the fact that students were highly engaged in the content, collaborated to complete the learning

tasks and appeared motivated to do their best with the assignment. In this arts integration lesson, language arts, social studies and visual arts outcomes were posted and addressed simultaneously.

A third grade teacher at another school commented on the fact that teaching with arts integration is fun for the teacher as well as the students:

> Engagement is high for all students. No matter if the student has a strength area in the arts, all students love to try new things and learn in a unique way. It is also great fun for teacher who has many years in the classroom to create new, exciting ways of teaching an outcome. That enthusiasm comes through in the delivery of instruction.

Another grade three teacher commented that even students with behavioral challenges love to be able to express themselves through an art form. In an observation of a lesson in this classroom, students learned to enhance the autobiographies that they had written with a Pop Art self-portrait in the style of Andy Warhol (See Figure 5). The students actively contributed to a discussion of the Pop Art technique and eagerly created their own images in a Pop Art style.

Figure 5. Pop Art self-portrait by third grade student

A first grade teacher, confirmed what the observer had noted during classroom lessons, “I've always had students who are on task, bright eyed, excited and ready for what we're doing (with AI). I've never had a student pull back from it. It's very tactile and they very much enjoy it.”

Explaining the high level of engagement in her fifth-grade classroom, the teacher said, “The connections the kids make to learning by creating, being physically involved in learning. It’s a natural engagement.”

A fourth-grade teacher for ten years said, “Student engagement and motivation is one of the biggest things I’ve noticed since integrating the Arts. The students who normally sit back and say nothing; suddenly come alive when they are participating in an Arts Integration lesson.”

Another teacher echoed this observation saying, “Especially, this year I had eighteen ELL students; I see them so involved, like the students who aren’t usually involved, become involved.”

AI engages students by appealing to the variety of learning styles through a multimodal approach (Fisk, 1999; Gardner, 1993). The principal at the Title 1 AI school responded to the question about implications of arts integration for student engagement, “Higher student engagement, (AI involves) multiple intelligences. It targets the whole student as opposed to only a literature engagement.”

In support of the notion that AI involves students of various learning styles, the instrumental music teacher at one AI school commented:

> It’s (AI) giving them more of a chance to grasp a concept… Even if kids are doing poorly in the traditional subjects, maybe music is the place

> where they can finally succeed and finally feel good about themselves, or art is the place where they finally succeed. We see that all the time. In the lunchroom, teachers will talk about a student not doing well in this or that, and the arts teachers say, 'What? They are amazing in my class!' or, 'They are a fantastic artist!' So, hopefully, we are doing something good for the kids.

Teachers and principals were most enthusiastic in discussing the effect of AI on student engagement. Educators understand that learning can only take place when students are attending to the instructional activities (Caine & Caine, 1991). Arts integration activities are creative, experiential, and as many teachers noted, do not depend on having the 'right answer'. Through the arts, instruction is naturally differentiated as students express what they have learned through multiple modalities of drama, music, dance or analysis of visual arts. All students, even those with minimal language skills can fully participate in AI lessons.

Theme Three: Cognitive Rigor

All of the participants in the study agreed that arts-integrated instruction naturally involves critical thinking skills in the learning process to include analyzing, generating hypotheses, inferring, questioning, creating, applying and solving problems. A third-grade teacher commented, "AI has the students creating and building the 21st century skills, as far as collaboration, innovation, creation. It's having students think outside of the box."

Another third-grade teacher commented, "AI helps students develop critical thinking skills, such as analysis, which can be applied in other situations. AI helps them to experience and understand a concept in greater depth. They transfer knowledge as they make connections between what they have experienced and other learning."

As an observer of AI lessons, the researcher noted that the majority of questions asked by the teachers were at the three highest levels of Bloom's taxonomy which indicates cognitive rigor (Table 21). Lesson outcomes in most observed classrooms were written with a higher level verb, such as analyze, synthesize, and evaluate. All of the teachers that were observed posed open-ended questions that required the students to synthesize their learning and generate a thoughtful response. When comparing and contrasting more than one art work of a genre, a third-grade teacher asked, "How are they alike? How are they different?" After a discussion of the characteristics of pop art, the teacher asked, "What would you tell someone about Andy Warhol's style? Later, rather than tell students a definition of pop art, the teacher posed this question, "Can you think of a definition of pop art?" In this classroom, the lesson outcome was posed as an essential question: How can we analyze pop art and the art of Andy Warhol to create a portrait in his style?

Many AI lessons are thematic and based on an essential understanding. Due to the complex nature of the learning tasks, the activities may take place over more than one day. In a fourth grade classroom, students were completing a comprehensive report on an endangered species in its habitat. Students were required to write a seven-paragraph research report about their animal and its habitat, compose a poem about the animal, draw a scientific sketch of the animal complete with the scientific name of the animal, and create a mixed-media collage of the animal for the cover of the report. Outcomes from science, language arts, technology and the visual arts were simultaneously addressed in these lessons. The common core standards facilitate the in-depth analysis of a concept through researching by reading expository text, which was in evidence in this classroom.

Through the lesson observed by this researcher the students analyzed works of art for technique, proportion, and style while they problem-solved, synthesized and applied their knowledge of art and animals to complete an extensive assignment. All students were highly engaged in a cognitively-rigorous AI lesson. In lessons such as these, the teacher initially sets the stage for the learning activities then acts as facilitator as the students create a product. During the independent phase of the lesson, the researcher circulated, talking with students about their projects. Students willingly explained their projects and communicated a depth of understanding about the various visual art techniques used in their mixed-media collages as well as their scientific knowledge of their animal and habitat (Figure 6).

Figure 6. Mixed media collage of endangered species by a grade 4 student.

Many of the participants spoke of the connections that students made among content areas with AI that foster the relevance of new learning. "AI stretches their thinking, pushes them at times. It's an alluring process," shared a first-grade teacher. No longer were subjects taught in isolation, but were seamlessly blended to deepen the understanding of new concepts (Jensen, 2008, Wolfe, 2001).

The cultural arts teams at each AI school were trained to consult with teachers regarding their units of study so that they can incorporate these themes into their arts classes. Two principals referred to this practice as 'reverse AI'. The instrumental music teacher at one school shared an excellent example of a fully integrated lesson focused on higher level outcomes and critical thinking skills that she had conducted the prior week. The third grade students had been studying sound in science class. In order to recruit students to play instruments the following school year, third graders participated in an "Instrument Petting Zoo" consisting of several stations among which the students rotated. The fifth-grade students were trained to facilitate the learning activities at each station as the third grade students participated in the activities. Each station focused on a different group of instruments: strings, woodwinds, brass, and percussion.

At each station the students used the various instruments to create a sound. Prior to the activity, questions were posed to the third-graders such as, "What do you think is going to vibrate? How are we going to make the different pitches?" The third-graders generated a hypothesis, and then made different sounds with the instruments by changing the position of their lips on a reed or by tightening strings on a guitar. They shared their discoveries about sound with the fifth graders: "Oh, we changed the pitch by doing this." or "This is what's vibrating". Students will remember their experiences through the Instrument Petting Zoo as they made the connection that something has to vibrate to have sound and that the speed of the vibration changes the pitch.

Currently, there are seven designated International Baccalaureate (IB) elementary schools in the school system under study. IB is a non-profit educational foundation that offers programs of inquiry in schools to develop students' "intellectual, personal,

emotional and social skills to live, learn and work in a rapidly globalizing world." (International Baccalaureate, 2014). Through this experiential approach, students collaborate to problem solve, analyze, make inferences, apply information to real life situations, these are rich learning activities that develop a depth of understanding of essential concepts. One of the AI schools in the study is also an IB school. In an interview with the principal of the AI/ IB school, the principal commented:

> In a challenging, Title 1 school, our 5th graders as part of our program of inquiry are required to do exhibitions, which are really culminating activities where they are asked to apply skills and answer four critical thinking questions. Arts integration strategies provide the conduit for answering those questions, so it's interrelated. It exceeds the standards but it's kind of a bridge to answer the questions that are in our IB (International Baccalaureate) curriculum.

A teacher who incorporated elements of drama into reading lessons agreed that AI provides opportunities for the development of critical thinking skills. "Students need to communicate when they are performing...and elaborate on an idea. Collaboration – they have to work in teams. Problem solving – when they are planning how to present information to an audience."

Arts integration involves critical thinking skills in a relevant and natural way. A fourth-grade teacher phrased it this way, "The arts incorporate critical thinking skills genuinely by having the students collaborate, analyze, and interpret during an arts integration lesson."

A third-grade teacher shared her observations of the students' learning through arts integrated lessons:

> Problem solving is evident as students encounter obstacles in the process of the lesson or project. "How could you do this differently?" The artistic process allows for individual creativity instead of the one size fits all approach to construction. Students love to think about how to expand on a

> skill or concept to make it their own. This instruction leads to differentiation within the lesson itself.

In a fifth-grade classroom, the language arts and visual arts outcomes were blended to inform this lesson outcome: The students will read and use artful thinking strategies to visualize, infer and generate questions, and analyze a character's effect on a story's plot. The artful thinking strategies involve three statements that are used to have students construct meaning to new learning: I see, I think, I wonder. The 'I see' step sets the stage for thoughtful inquiry by having students make careful observations and interpretations of the phenomena. Using the 'I think' prompt allows students to elaborate on the meaning of what they are observing and justify their responses through elaboration. This process leads them to generating questions for inquiry beginning with 'I wonder'. In this lesson, the students used artful thinking strategies to analyze works of art then applied the strategies to reading a novel. Nine out of the eleven lessons that I observed used artful thinking strategies in the lesson (Figure 7).

Adapted from: Artful Thinking: Project Zero/Harvard University http://www.pz.harvard.edu/tc/routines.cfm

Routine ARTFUL THINKING	Steps/Procedure/Question	Use when you want students to:	Artwork Example	Reading/Writing Across the Curriculum	Thinking Map
Looking/ Listening 10x2 KNOWLEDGE *Good starting point for deeper thinking- can be followed by other routines.*	1. Look at a piece of art/listen to piece of music for 30 seconds 2. List 10 words or phrases about any aspect of what you see or hear. 3. Share words 4. Repeat	-Make careful observations about an object, image or work of art. -Generate/brainstorm descriptive words or phrases for a pre-writing activity	 *The Fair at Reynosa* Carmen Lomas Garza 1987	**Vocabulary:** 1.D.3.a Use context to determine the meanings of words. 1.D.3.b Use word structure to determine the meaning of words.	**Circle Map**  **Bubble Map** 
I See. I Think. I Wonder. KNOWLEDGE INTERPRETATION	1. What do you see? 2. What do you think about that? 3. What does it make you wonder?	-Make careful observations and thoughtful interpretations -Make inferences	 *Foxes* Marc Franz 1939	**Making Inferences:** 1.E.4.c Draw inferences and/or conclusions and make generalizations. **Question:** 1.E.4 Use strategies to demonstrate understanding of the text. (after reading)	**Tree Map** 
The Elaboration Game KNOWLEDGE *Good starting point for deeper thinking- can be followed by other routines.*	1. *One* person identifies a specific section of the artwork and describes what he or she sees. 2. *Another* person elaborates on the first person's observations by adding more detail about the section. 3. A *third* person elaborates further by adding yet more detail, and 4. a *fourth* person adds yet more.	-Describe. -Elaborate. -Distinguish between what they see and what they interpret.	 *Cakes* Wayne Thibeaud 1963	**Vocabulary:** 1.D.3.a Use context to determine the meanings of words. 1.D.3.b Use word structure to determine the meaning of words. **Making Inferences:** 1.E.4.c Draw inferences and/or conclusions and make generalizations.	**Bubble Map**  **Flow Map** 
What Makes you Say That? COMPREHENSION	1. What's going on (happening) in the picture? 2. What makes you say that?	-Describe what they see or know and provide evidence and explanation (evidence based reasoning) Provide text or graphic evidence for BCR thinking and writing.	 *The Port of La Ciotat*, Georges Braque 1907	**Making Inferences:** 1.E.4.c Draw inferences and/or conclusions and make generalizations. **Main Idea and Argument:** 1.E.4.a Identify and explain the main idea or argument. **Text Features:** 2.A.2.a Analyze print features that contribute to meaning. 2.A.2.b Analyze graphic that contribute to meaning. 2.A.2.d Analyze organizational aids that contribute to meaning.	**Tree Map** 
Colors, Shapes, Lines KNOWLEDGE	1. What colors do you see? Describe them. 2. What kinds of shapes do you see? Describe them. 3. What kinds of lines do you see? Describe them.	- Observe details. - Generate/brainstorm descriptive words or phrases. - prepare for analysis of Art	 *Circular Forms*	**Vocabulary:** 1.D.3.a Use context to determine the meanings of words. 1.D.3.b Use word structure to determine the meaning of words.	**Tree Map** 

Figure 7. Artful thinking strategies (Grotzer, Howick, Tishman & Wise, 1991).

A third-grade teacher used artful thinking strategies to help students develop the concept of government funded community services by analyzing photographs in the social studies text and organizing their observations, inferences and questions into a thinking map. To demonstrate what they learned about government services, students reviewed the elements of art and created a visually-pleasing collage of government services with photographs and other graphics from print sources. The social studies curriculum emphasizes skills and processes that are supported through AI, for example, "organize/evaluate/synthesize information from a variety of sources (Standard 6, Maryland State Social Studies Curriculum, 2014).

Both the social studies outcome, "Analyze the role of individual and group participation in creating a supportive community by describing community services available to citizens", and the visual arts outcome of "demonstrate the ability to organize

knowledge and ideas for expression in the production of art" were attained through the lesson as illustrated in Figure 8.

Figure 8. Grade 3 student-created collage depicting government services.

In another third grade classroom, social studies, reading and visual arts outcomes were simultaneously addressed. Screen painting is an art form unique to the Baltimore city community. Using the artful thinking strategies to analyze examples of screen paintings, the students were introduced to the concept and purpose of screen painting. Discussion centered on the urban setting and the problems posed by living in close proximity to others. Screen paintings provided privacy to residents while enhancing the environment with esthetically pleasing images. The students read text about the history of screen painting, an art form unique to the Baltimore city community. Vocabulary words were introduced through the text as students highlighted key words that provided clues to the targeted words meanings. The teacher led students on a 'field trip' through their school and pointed out a screen painting in the front window of the school that had been created by former students. Figure 9 depicts an example of screen painting.

Figure 9. Example of screen painting.

Most screen paintings portray peaceful or playful scenes of nature and settings not typically found in the city. The teacher assessed their understanding of screen paintings as an urban folk art form by asking questions such as, "Why do you think people chose these types of pictures for their screens?" Student responses included: "It helps them calm down after hearing the noisy city"; "Maybe if they're having a bad day, the pictures will help them think of something wonderful."

After formatively assessing their understanding of screen painting through higher level questioning, the teacher explained the process of screen painting and distributed art materials for students to create their own screen paintings. The materials consisted of a piece of screen stretched over a small crate, paints, and sketching paper. Every student participated in the discussion and screen painting activity (Figure 10).

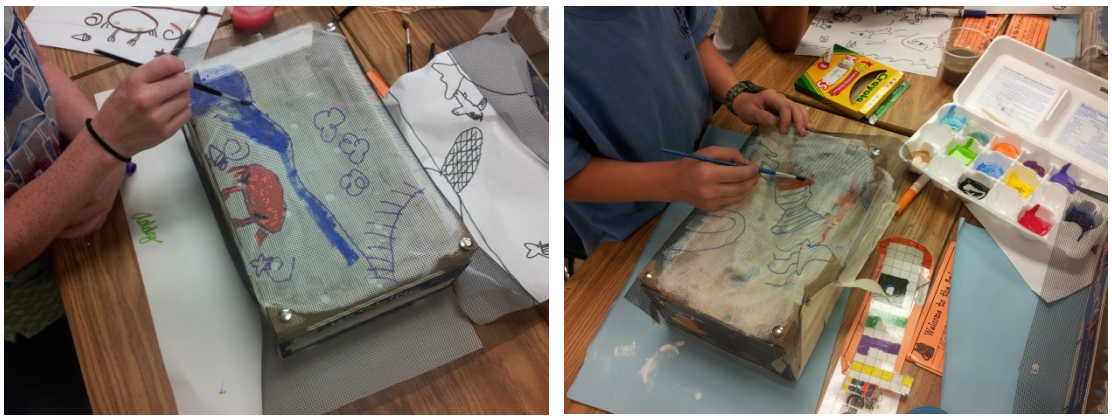

Figure 10. Examples of screen painting by third-graders.

Fourth-graders composed wind poems based on a mixed-media art work of wind created the precious day. The language arts and visual arts outcomes were posted and explained: Use details and personification to write a poem that describes the colors, movements, and feeling of their wind pictures. Students began by analyzing their art works for technique. After beginning with artful thinking strategies, the teacher asked, "How many people created movement in their pictures? What effect did you use?" Students had used sponges, sand, and toothpicks to create texture in their paintings. Holding up one painting, the teacher exclaimed, "I feel like the wind is pulling me into this one!"

The teacher led the students in developing a word bank for their poems using a tree map to organize verbs for the wind and adjectives to describe trees, sky, ferns and ground. Adjectives for tree stumps included lonely and forlorn. Personification was reviewed through questioning, "What would the wind do if it was a person? Could it skip? What do you see when you think of the wind skipping?"

After a brief discussion of the mechanics of poetry, such as line breaks, the students independently wrote their poems and excitedly shared them with a partner. The

previous week, students had created lightening poems through a similar instructional method (Figure 11). Synthesizing previous learning with their analysis of the art works, the students applied their knowledge to compose wind poems:

Wind,
You are a thief.
You howl and scream,
Whisking away.
You journey to another place,
Taking your prey.
And when you leave,
Someone has one less thing to heave.
- Megan

WIND
You blow
You gust
You skip through the sky
Twisting and turning
You curve and carve through
The air
You flow with me and follow me
You pull me with your strong and powerful force
You whip and swirl through the land
Causing all commotion
- Colin

Figure 11. Mixed-media wind and lightening paintings by fourth-graders.

Theme Four: Achievement

One hundred percent of the participants in this study believed that AI supports student achievement, particularly for under-performing students and those who lack focus or language skills, such as FARMS, Special Education (SPED), English Language Learners (ELL) and Attention Deficit Hyperactivity Disorder (ADHD) students. A teacher remarked, "I have seen underachieving students blossom with AI. They learn that if they can be successful with music or dance or theater, then they can achieve. It helps build confidence."

An instrumental music teacher commented on the impact of AI on achievement:

> I believe AI helps kids' achievement. I've always been on board with learning styles and to me AI is another way of adapting to the learning style so you're giving every child a chance to get it whether they're getting it through this medium or that medium, you are expanding the chance that they will all understand the concept you're teaching.

A principal agreed, "We have seen improvements in skills assessments. I look at the projects that are more interdisciplinary and more comprehensive as opposed to an academic standard. I think that AI exceeds the standards in many cases."

Another principal replied to the question of the effect of AI on achievement:

> Definitely, AI has a positive effect. We notice that when we talk about the difficult to reach students, they will blossom and engage easily when we use AI strategies that are tapping into different areas of the brain. (It helps students) make those connections with the real world and there is long-term learning.

Teachers shared that they noticed that students' classroom test scores and report card grades are higher since implementing AI. A third grade teacher felt that using AI had contributed to her students' achievement on standardized tests. She explained how using the elements of drama supported her students with assessments:

> On standardized tests, on the reading benchmark, for example, that we'll take tomorrow, one standard is about sequence of events. So, we did a huge play, a shadow puppet play and learned first, next, then, and when they had to write a summary of the play, the students achieved the objective because they were able to hit the main idea and the main points because they had experienced it by physically, visually, and verbally sequencing the events.

Teachers believed that using AI leads to more student success with outcome attainment. Drama is a favorite technique employed by the teachers in the study. Tableau is a form of drama in which students collaborate in a team to demonstrate their understanding of a scene in a text by assuming the role of a character and freezing in a stance that would be demonstrated by that character. After the scene, students in the group or the observers explain the actions of each character. One fifth-grade teacher shared her beliefs about the implications of this form of AI on student achievement:

> Yesterday we performed tableau and at the end of the lesson I asked the students to give me the main idea of the story. They struggled with main idea versus details until I asked them to make one pose that would be the main idea of the story. Then they were able to write about the main idea.

When speaking to the use of AI with underachieving students, a principal said, "It's very engaging and the students can make connections across the curriculum to help them remember concepts."

A third-grade teacher shared her perceptions of the connection of AI to student achievement:

> We have some evidence to this. Initially, I was very uncertain about this as the results did not seem to indicate a connection. However, last year we created geometric necklaces using clay. The necklaces had to be a repeating or growing pattern. Students were given certain guidelines. The necklaces were to be a gift for mothers. We worked with a template in math and the art teacher worked with us to paint and fire the necklaces. The end result was that there were three questions on the upcoming math test which dealt directly with these skills. The students nailed them! That is when I became a strong believer. I think you just have to really think

> about how you can make the best connection to both areas. As we become better instructors with this part, the results will reflect this.
>
> As far as the implications for underachieving students, AI levels the playing field. Underachieving students can excel at something and gain confidence that maybe the "smart" kids cannot do as well. This confidence allows these students to discover their talents and develop leadership skills as they assist peers. When they begin to see themselves as talented leaders, there is a feeling of 'I can do this, so what else can I do well?'

An AI liaison and fourth-grade teacher conducted an action research project as part of the program through Towson University. She shared the results:

> Arts Integration has contributed to student achievement tremendously. Last year I participated in an action research where I wanted to see if using visual arts with my reluctant writers would improve their writing. Not only did it improve their writing, but their comprehension scores as well. The six students I targeted went from "Proficient" to "Advanced" on their Language Arts Benchmark Assessment. The students were no longer writing 3-5 sentences…they were producing 3-5 paragraphs with 5+ sentences in each! They were asking to use paintings or photographs to write every day. These were the same students who would groan when I mentioned writing. I have noticed the biggest success in the students who are my underachieving students. I believe these students are the ones who have difficulty verbalizing their understanding. With the arts, they have so many choices to demonstrate their understanding and it gives them the confidence they need to be successful.

Most participating teachers agreed that the AI strategies supported less confident students, such as those with language deficits. A Pre-K teacher explained her experiences with AI:

> Underachieving students really embrace it, because they know there are no right or wrong answers. Art is for everyone. And they might not know 52 out of 52 letters, but they know they like that picture and they're curious about it and so everyone is engaged in participating. It builds confidence, makes them feel more part of the group. They're smiling, there are no barriers, no feeling of separation of who's smarter. With AI everyone's included, everyone's equal.

While the results of the MSA reading growth score analysis did not yield a significant difference for students in AI schools compared to non-AI schools or for FARMS students in AI schools compared to non-FARMS students, clearly the participants in the study who work daily with students in AI schools believed that their AI training and practice does contribute to student achievement, especially for underperforming students such as FARMS, ELL, SPED or ADHD students. Further studies of the effects of AI on student achievement are recommended to more fully understand the nature of the effectiveness of this instructional strategy on closing the achievement gap. This issue will be explored in the discussion section in Chapter 5.

Theme Five: Teacher capacity

Undertaking a school-wide initiative, such as AI, compels an administrator to ensure that a comprehensive PD plan is in place to motivate and support implementation. The five AI schools in this study encouraged teachers to participate in ongoing professional development to improve instructional practice to include: directive PD sessions by expert teachers, modeling, co-teaching, artist-in-residence programs, collaborative planning sessions, sharing sessions with other AI schools, and virtual learning, to include blogs and websites devoted to sharing best practices. The cultural arts teams at each school support classroom teachers by helping them to make decisions regarding appropriate arts outcomes that could be addressed along with the content outcome. In addition, the schools are supported with an expert AI resource teacher who provides mentoring, coaching and opportunities for reflection. The power of the professional learning community (PLC) formed through the focus on education through the arts is evident in the climate and the voices of the educators at each of the AI schools.

There are three stages to PD: orientation, integration and refinement (Glickman, Gordon, & Ross-Gordon, 2014). Often, programs fail because PD is not taken beyond the orientation stage. To reach the integration stage, which is the "regular and effective use of new learning" and refinement stage, which involves expert teachers continuing to evolve their practice through experimentation, ongoing professional development to include peer coaching, modeling and collaboration must be accessed (Glickman, Gordon, & Ross-Gordon, 2014, pp. 290-291). Examining nuances of themes presented in statements by teachers and principals during interviews about the intensity of PD, it is determined that each of the AI schools is in the integration and/or refinement stage, depending upon the years of experience of teachers. Studying indicators such as teacher ease with synthesizing both of the arts and content outcomes into lessons, the researcher believed that the teachers that were observed for this study were at the integration or refinement stage.

Purposeful professional development can improve student achievement (DuFour, 2004; DuFour, 2014; Sparks, 2002). Meeting the diverse learning needs of students has become an increasingly complex undertaking and one that good teachers constantly strive to understand more deeply so as to support all learners and close the achievement gap. Teachers in the study talked about the challenges of teaching low performing students, such as ELL, SPED, FARMS, and ADHD students. Participants believed that these students benefit from a hands-on, experiential approach to learning. Teachers perceived that AI training prepares them to differentiate instruction by encouraging students to actively create what they are learning, thereby increasing opportunities for raising the performance of all students and closing the achievement gap. Professional development

(PD) in AI is an essential component to its effective implementation. As with any change, some teachers will be resistant and some hesitant until they have reached an understanding of what the change means for them and their students, while some will enthusiastically embrace the concept. Providing purposeful professional development with ongoing development of teachers' skills deepens their understanding of the content knowledge and provides them with research-based instructional strategies to ease implementation. One hundred percent of the teachers in the study have participated in PD opportunities. Some training sessions are offered at the individual schools and others are offered off-site at other schools, museums, and universities. As the agents of change, the principals of the AI schools have ensured that the teachers have access to meaningful PD opportunities. All of the principals in this study projected enthusiasm when speaking of the impact of AI professional development on the teachers. The principal of the Title 1 AI school said:

> Some teachers are drawn to the arts, so it's an interest. They have an opportunity to engage in PD and if they see it's a direct correlation to student engagement and they have an opportunity to meet the needs of the students then AI becomes the panacea for helping those underperforming students. I will say that you see a stronger correlation to achievement because teachers see that their work is not in vain. (AI) sustains momentum, teachers are drawn to AI. Teachers are on fire when it comes to AI.

The school system in which the study took place values AI and provides an AI expert resource teacher who coordinates professional development (PD) programs with each of the AI schools. The resource teacher also collaboratively plans with grade groups at each AI school to demonstrate how arts outcomes will support the attainment of a content outcome and to provide instructional strategies and materials of instruction in support of the lesson. Each school has an AI liaison who meets several times during the

year with the resource teacher for intensive PD. They return to their schools and share the new information and resources with the teachers at their schools, providing demonstration lessons to model new skills.

Cohorts of teachers in this school system study AI in a post-baccalaureate certificate program developed through a partnership between the school system and Towson University. Two of the teachers involved in this study have achieved the certificate and one is currently participating in the program. The school system communicates with teachers at AI schools to inform them of PD opportunities within and outside of the county. Artist-in-residence and teaching artist programs through Young Audiences of Maryland, a nonprofit organization dedicated to arts education, collaborate with the teachers to provide rich AI learning experiences for students and teachers. An AI liaison recounted her PD experiences:

> I joined the AI cohort with Towson; participated in various workshops; 21st century (week-long AI training of teachers learning with artists), Ed AI (Education Arts Integration) camps; I've presented at workshops, Young Artist conference; New York art conference; developed the Edu Blog (a school-wide blog for sharing AI practices); facilitated inservices at school; worked individually with teachers to plan AI; visited other school systems to share best practices; and attended the Oct. 2011 state-wide conference.

Some teachers felt that their training and practice of AI has transferred to improved practice across the curriculum. Another AI liaison who is in her fifth year practicing AI shared her that her continuing education with AI has changed her teaching practice in that students now have choices to demonstrate their understanding, such as collaborating with classmates to creatively solve problems or demonstrate language arts concepts.

Many of the teachers interviewed for this study indicated that not all of the teachers at their school use AI consistently. A kindergarten teacher, who is the AI liaison

for her school, saw staff buy-in as a challenge. When teachers complain that they are not artists, she will explain that being an artist is not important. AI is about bringing out the creativity in their students. She noted that:

> Some teachers don't want to change. I try to explain that this is not a new curriculum, just a different way of teaching. We ease new teachers into AI. The ones that use it consistently love it. Like with the artful thinking, it's so easy to incorporate across the curriculum. Once they start getting to know how to do it, they love it. You can have discussions using artful thinking strategies across all content areas.

A veteran teacher who has been using AI strategies in her instruction for the past two years describes herself as a resistant teacher:

> I had been teaching for 19 years and so when new things come along, I kind of get resistant to change. But I decided, 'You know what?' For once I'm going to be a risk taker, I'm going to embrace this and see what happens. We had a PD training with the AI resource teacher and I was inspired by her training. So, I thought, 'How am I going to make this work in Pre-K?' And I thought, 'Well, I'm going to dumb it down and just maybe show them a picture and ask them to tell me what colors they see'. You know, do some artful thinking on a basic level. But, they just started taking off and I had such a low expectation that when they were exceeding the expectation way beyond what I even imagined that they could do, I thought, 'We're on to something here.' So, from that it turned into expanding to not just visual arts, but drama. And that has just been a wonderful experience. So, I combine the visual arts and drama. I have not gotten into the music part of AI yet. From what I have seen, it has been fabulous and I would encourage a teacher to try it. Our team has taken on AI as our focus this year, so our whole team has embraced it and I would encourage anyone to embrace it. To be open to it, give it a try and see what happens.

Teachers with more experience have developed a comfort level and greater ease with incorporating arts into content areas. Many reported the level of enjoyment involved with teaching with AI. The researcher noted the comfort level of the participating teachers in discussing how they incorporate arts across the curriculum. The

evidence shows that the ongoing PD and regular practice have built skills and confidence in these teachers. A third-grade teacher put it this way:

> The teachers at our school have been trained in AI strategies and we feel comfortable using AI whenever we can find a valid connection with the curriculum. For example, we use drama with puppets then the students have no difficulty writing dialogue since they have verbalized it and performed an action with the characters. They understand character development.
> We've learned how to incorporate AI across the curriculum. For example, I recently taught a wonderful lesson on tessellations in Math using the art of Escher. As a dancer, I incorporate movement into lessons as well. When students are actively cognitively, physically, and emotionally involved in learning it leads to a deeper understanding of the concepts being taught.

A first-grade teacher, who has participated in many PD sessions, reported that she enjoys the opportunities to talk with teachers at other AI schools, "A lot of times other teachers will tell you how they do AI in their classrooms and it gives me ideas and ways to get the kids involved". Another third-grade teacher described her experience with PD:

> I have taken the 21st Century class and participated in several other professional development opportunities which include play writing, shadow puppets, art outcomes, and music enrichment. I love trying to find a way to connect an outcome to the arts as the children love it and so do I. The professional development has helped me develop confidence about trying to incorporate the art outcomes. At first, I was uncertain how to relate certain skills to the arts. We had a rather extensive training last year about the art outcomes and I feel much more confident. Also, I'd like to give a salute to working with cultural arts teachers who are always approachable to lend advice or make recommendations. I wish they had separate AI planning built into their week as I always feel a little guilty taking too much planning time.

This researcher noted collegiality among the staff at each AI school visited. As a teacher mentioned, the cultural arts teachers work as a resource team to the classroom teachers. The classroom teachers universally gave praise to their colleagues on the cultural arts team for their willingness to provide support, expertise and materials. The

instrumental music teacher interviewed for this study expressed a willingness to help because she understands the pressures on the classroom teachers and wants to support them instructionally whenever possible.

Relationships of Themes from Qualitative Analysis

Triangulation of data from observations, interviews and student artifacts led to a theory of a relationship of the emerging themes and AI. The predominant themes of shared vision, engagement, rigor, and teacher capacity are characteristics of high performing schools that are associated with student achievement (Barth, 1990; DuFour & Eaker, 1998; Kannapel & Clements, 2005; Marzano, Pickering & Pollock, 2001; Schmoker, 1999). Therefore, it is theorized that a relationship exists between the incorporation of AI and the development of characteristics of high performing schools.

Although the quantitative analysis of MSA reading change scores revealed no significant relationship of AI to positive change scores over time, the qualitative analysis, supported by a triangulation of data from classroom observations, interviews, and student artifacts, brought forth perspectives that are supported by the literature as being characteristics of high performing schools. Therefore, the data suggested that these themes of shared vision, engagement, cognitive rigor and teacher capacity also are indicative of the elements of effective models of AI and are supportive of student achievement. Figure 12 is a graphic representation of the relationship of shared vision, teacher and student engagement, rigor, and teacher capacity to an effective AI model that may lead to student achievement. This relationship will be explored further in the discussion section in Chapter 5.

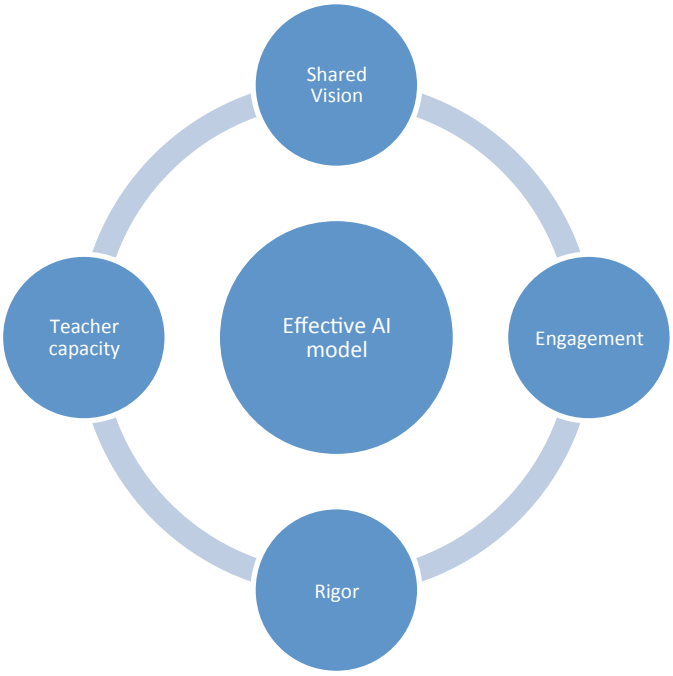

Figure 12. Relationship of the themes discussed from classroom observations, interview responses from principals and teachers, and student artifacts at AI schools.

Chapter V

CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter provides a review of the purpose of the study and a discussion and conclusions of the findings for the research outlined in Chapter Four of this study. Chapter Five also identifies study limitations and provides recommendations for practitioners in the field as well as suggestions for future research.

Purpose of the Study

This study had two purposes. The first purpose was to determine the effectiveness of AI programs in five Maryland public elementary schools by examining student growth change measures of a grade three cohort across a three year time span as measured by the Maryland School Assessment (MSA) reading standardized assessment compared to a control group of student scores from five non-AI schools with similar demographics. The second purpose was to examine AI practices through classroom observations and teacher and principal interviews to determine if educators perceive that a relationship exists among certain AI instructional practices and student growth. Student change scores on MSA reading for students qualifying for FARMS at the same five schools were compared to the growth scores for non-FARMS students to determine if the effect, if any, is greater for this group of students as documented by research.

Qualitative and quantitative studies support AI as an instructional strategy that may lead to improved student performance on academic measures (Catterall, Chapleau & Iwanaga, 1999; Respress & Lutfi, 2006). There has been much discussion about the merits of an arts-integrated curriculum for improving student achievement (Catterall, Chapleau & Iwanaga, 1999; Catterall & Waldorf, 1999; DuPont, S., 1992; Respress & Lutfi, 2006), particularly for students with poverty in their background (Ingram & Riedel, E., 2003; Rabin & Redmond, 2006). Many schools have embraced arts integration as an effective instructional tool to increase students' ability to learn and retain information. A study of reading scores of low-socioeconomic (SES) students in grades eight and ten found that low-SES students with high arts involvement, defined as participation in arts-related classes, outperformed students with a minimal arts involvement, although this difference was not maintained over time (Catterall, Chapleau, & Iwanage, 1999). The literature suggests that AI promotes student and community engagement and builds teacher capacity through ongoing professional development. Yet, an achievement gap persists between FARMS students and non-FARMS students. This mixed-methods study sought to determine if arts integration can support the achievement of FARMS students that may lead to closing the achievement gap.

Research Questions

This research addressed the following questions:

1. What were the student change scores on MSA reading for non-FARMS and FARMS students over a three year period for a grade three cohort at five AI schools in Maryland?

2. What were the student change scores on MSA reading for non-FARMS and FARMS students over a three year period for a grade three cohort at five non-AI schools in Maryland?
3. Was there a significant difference in student change scores on MSA reading between non-FARMS and FARMS students at AI schools?
4. Was there a significant difference in student change scores on MSA reading between non-FARMS and FARMS students at non-AI schools?
5. Was there a significant difference in student change scores on MSA reading between non-FARMS and FARMS students at AI schools compared to non-AI schools?
6. Which features of AI were perceived by educators to be most effective in supporting student achievement on standardized reading assessments?

Summary and Interpretation of the Findings

As a result of this mixed-methods study of AI as an instructional strategy that can eliminate the achievement gap for FARMS students, several conclusions can be drawn:

- The results from research question one revealed that in all five AI schools, the mean change for FARMS students exceeded mean change for non-FARMS students, while this was the case for three out of five non-AI schools.
- The results from research questions one through five of this study showed that there was not a significant difference in student change scores on MSA reading between non-FARMS and FARMS students at AI schools over time.

- The results from research questions one through five of this study showed that there was not a significant difference in student change scores between AI students and non-AI students on MSA reading over time.
- Teachers and principals at AI schools perceived that AI increases student engagement due to the interactive nature of the learning activities and the multimodal approach.
- Teachers and principals at AI schools perceived that AI leads to the development of critical thinking skills by including lesson outcomes and questions at high levels of cognitive demand, such as problem solving, analysis, synthesis, inferring, application, evaluation and creativity.
- Teachers and principals at AI schools perceived that AI is an effective instructional strategy for raising academic achievement of students and, in particular, underperforming students, such as FARMS, ELL, SPED and ADHD students.
- Teachers and principals at AI schools perceived that participation in ongoing PD builds teacher capacity across the curriculum.
- It is theorized that effective models of arts integration contain a synergy of the elements of a shared vision, cognitive rigor, student and community engagement, and increased teacher capacity due to ongoing professional development. It is further theorized that these elements have the potential to lead to student achievement. The five AI schools employed these elements in their AI implementation models. These elements are also characteristics of high

performing schools. Therefore, AI is supportive of the development of characteristics of high performing schools.

Limitations

The following limitations for this study have been previously noted in Chapter 1:

- This study may not be generalizable to other school systems in Maryland, particularly if they offer different types of AI.
- Due to extraneous variables, a student might not be performing at his or her best; therefore, the MSA score might not be indicative of true reading ability.
- Only AI schools were included in the classroom observations and principal and teacher interviews.
- Major curriculum changes have occurred in the state of Maryland during the course of this study.

There are limitations with any study the employs a mixed-methods approach to collecting and analyzing data. In the case of this study, quantitative results yielded no significant differences between AI and non-AI students on MSA reading change scores. These results did not support the premise of AI as an instructional strategy that could effectively increase student performance on standardized reading assessments, particularly for underachieving students. However, qualitative results determined that educators overwhelmingly perceive AI as a highly effective instructional method that leads to increases with student performance on standardized academic measures. This dichotomy raised questions discussed herewith:

- Qualitative analysis discovered patterns of responses that resulted in a theory of effective AI models consisting of a shared vision, high levels of engagement,

cognitive rigor in instruction, and increased teacher capacity, which are indicators of high performing schools (Barth, 1990; DuFour & Eaker, 1998; Kannapel & Clements, 2005; Marzano, Pickering & Pollock, 2001; Schmoker, 1999). Were these school highly performing before AI implementation or did the AI program support the development of these characteristics? While the AI schools with FARMS populations of 30% or more (AI #03, AI#04, and AI #05) showed MSA reading scores trending upward since AI implementation, historical MSA reading data indicates that the higher SES schools (AI #01 and AI #02) consistently scored from 94% to ≥ 95% proficient & advanced.

- A discrepancy existed between the literature and qualitative data that supported AI as a means of improving student achievement on academic measures and the quantitative analysis of MSA reading change scores. Perhaps MSA was not the optimal assessment for measuring student growth with reading skills, particularly in view of changing curriculum and state-wide assessment. The resulting curriculum shifts toward the Maryland Common Core State Standards have rendered the MSA obsolete and unreflective of current instructional trends (AP, 2013).

Common Core Standards and PARCC

The Maryland State Board of Education adopted the Common Core State Standards Initiative in June of 2010. The standards define what students should be able to know and do in content areas of reading and math. However, the standards do not prescribe how teachers implement standards in order to meet stated goals, granting flexibility to teachers to plan instruction utilizing myriad approaches to meet the needs of

all learners. The common core standards emphasize depth over breadth in that fewer concepts are taught so that students may delve deeper into the concepts to develop a deeper level of understanding and form connections between concepts. AI is a natural tool to differentiate instruction to meet common core standards in an effective and efficient manner. The results of this study show that participants agree that students develop critical thinking skills through AI. Study participants also noted that students are able to apply these skills to standardized assessments. This information raises the question: What would be an appropriate instrument for assessing AI's effect on student learning?

With the adoption of the common core standards, the state of Maryland has contracted with the Partnership for Assessment for Readiness for College and Careers (PARCC) to provide computer-based assessments of student mastery of the standards. PARCC is closely aligned with the common core standards and will "better measure students' critical thinking and problem-solving skills and their ability to communicate clearly" (PARCConline.org, 2013). AI supports the development of writing skills and critical thinking skills, which MSA does not assess. For grades 3 through 8, the PARCC consists of a "Performance-Based Assessment (PBA) administered after approximately 75% of the school year. The English language arts/literacy (ELA/literacy) PBA will focus on writing effectively when analyzing text. The mathematics PBA will focus on applying skills, concepts, and understandings to solve multi-step problems requiring abstract reasoning, precision, perseverance, and strategic use of tools." (Parcconline.org, 2013). Perhaps PARCC will provide a better measure of the skills developed through AI, such as

critical thinking skills of application, analysis, problem solving and writing skills. As a third-grade teacher commented:

> AI helps students develop critical thinking skills, such as analysis, which can be applied in other situations. PARCC, for example, includes many analysis type problems. AI helps them to experience and understand a concept in greater depth. They transfer knowledge as they make connections between what they have experienced and other learning.

Implications for Future Research

While the findings of the quantitative analysis of MSA reading growth change scores for students in AI schools compared to non-AI schools refute the majority of the studies examined in Chapter 2, the findings of the qualitative portion of this mixed-methods study concur with the literature in that all participants agreed that AI does make a positive difference for student achievement. The major themes that emerged from the qualitative analysis were highly aligned with characteristics of high performing schools (Barth, 1990; DuFour & Eaker, 1998; Kannapel & Clements, 2005; Marzano, Pickering & Pollock, 2001; Schmoker, 1999). Further research on AI as a catalyst for fostering the characteristics of effective schools may be indicated from this finding.

Although research has supported the use of standardized assessments for measuring effects of AI (Catterall & Waldorf, 1999; DuPont, 1992; Repress & Lufti, 2006; Walker, et al., 2011), the contrasting results of the mixed-methods study lead one to question the use of MSA reading growth change scores as an appropriate instrument for accurately measuring the phenomenon of AI. With the adoption of the Common Core State Standards in 2010, the state of Maryland has undergone rapid changes in curriculum and instruction and as a result the MSA no longer is closely aligned to the curriculum. In

fact, the 2013 MSA scores declined across the state for the first time in nearly a decade and Maryland State School Superintendent Lillian Lowery stated that she believed the implementation of the common core standards was the main reason for the drop and teachers and principals were beginning to view the MSA as a "lame duck test" (Bowie & Green, 2013).

Summary

Based on the implications of the study, suggestions for future research of arts integration include:

- Evaluate other content areas scores, such as math scores, writing scores or combined scores.
- Evaluate the effects of AI on the performance of other student groups, such as ELL or SPED students.
- Look at a longer time frame of scores.
- Conduct pre-test, post-test design for lessons prior to AI and after AI.
- Analyze student skills and performance upon entry into a school (AI/not AI) and track longitudinally whether growth (reading, math, science, writing) in AI/non-AI schools are any different.
- Conduct an analysis of characteristics of high performing schools pre- and post- AI implementation to determine if AI has an effect on overall school performance measures.

Conclusion

Pablo Picasso said, "Every child is an artist. The problem is how to remain an artist when we grow up." Has the traditional American school with its rows of desks and didactic instructional model squelched children's creativity? Some theorists believe this is so (Robinson, 1982). How then do American educators prepare their students to compete in the global society of the 21st century? By differentiating instruction to level the playing field for all learners while emphasizing the development of critical thinking, collaboration, and communication skills educators can prepare our students for successful post-secondary pursuits. Arts integration is an avenue for achieving this goal.

While the results of this study showed no significant relationship between AI and MSA reading growth change scores for FARMS students, the study contributes to the body of research on the topic of arts integration as an effective instructional strategy. The participants in the study perceived that AI increases student engagement and contributes to student achievement, particularly for challenged students with learning, attention or language acquisition issues. All of the participants in the study participated in ongoing professional development and felt that the PD opportunities improved their capacity as teachers. All of the AI schools practiced a synergistic model of a shared vision, community engagement, cognitive rigor and ongoing PD to support teacher capacity.

The strengths of the study included the clear explanation of the research process and the multiple sources of data collected and analyzed to determine a model of a successful arts integration programs. Through an in-depth analysis of the perceptions of teachers and principals at dedicated AI schools who were practicing effective models of AI across the curriculum, educators interested in this approach to differentiated

instruction can gain a fresh insight into the daily application of AI practices. Those interested in designing AI programs at their schools will do well to access the myriad resources available in Maryland and attend some of the PD offerings to immerse themselves in AI and begin by practicing simple instructional strategies, such as artful thinking routines. As a teacher in the study said, “Once you have the components in place, it’s incredible. I would encourage any teacher to try it and see what happens.”

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Appendix A

Explanation of Research to Participants

Dear Participant, Summer 2013

I am a student at Notre Dame of Maryland University in Baltimore, and I am completing the research requirements for a doctoral degree in a program called Instructional Leadership for Changing Populations in the School of Education. I am conducting academic research on arts integration in elementary schools. I am specifically looking at the benefits and challenges of arts integration and its effect on student growth scores on MSA Reading over a three-year period, particularly among FARMS students. The purpose of the study is to gain greater understanding of the relationship of arts integration to student growth with standardized reading measures and to determine if certain models of arts integration lead to greater student growth. I would like to conduct an interview with you that will last for approximately one hour. You will be asked questions about the impact of the arts integration at your school with particular emphasis on your experiences integrating the arts into content curriculum. All interviews will be audio taped. After the tapes are transcribed, they will be locked in a safe place. A follow-up interview by phone over a two-week period after the initial interview will be conducted to answer any questions or to clarify any information that you provided.

You will be given a summary of your interview and an opportunity to make additional comments or corrections. The recorded data and the transcriptions will be available to

you, the other participants in the study, the researcher, the researcher's advisor, members of the dissertation and Ph.D. committees, and possibly members of Maryland Campus Compact. Your identity, name, title and institution will be included in the study. If you are willing to participate in this study or have more questions, please contact me at 410-672-6247 or kpanagopulos1@ndm.edu. Thank you for your interest in this research.

Sincerely,

Kathleen Panagopulos, M.A., NCC, LCPC

Appendix B

Participant Informed Consent Form

This research is being conducted by Kathleen Panagopulos, M.A., NCC, LCPC, from Notre Dame of Maryland University in Baltimore. The purpose of the study is to gain greater understanding of the experiences of teachers and principals with arts integration. Both challenges and benefits will be explored. You are being invited to participate because you have been identified as a key faculty member or staff liaison who is actively involved in arts integration at your school.

The procedure requires you to take part in an interview of what has occurred in the development and implementation of arts integration at your school. The interview will last approximately one hour. You will be asked questions about your experiences as a teacher or principal and asked to share your experiences. All interviews will be audio taped. The tapes will be transcribed later. Portions of your comments will be included in the final dissertation and your identity, name, title and institution will be included in the study. The researcher, the researcher's advisor, dissertation committee, and possibly other Campus Compact members will view the transcript of the interview.

Your participation is voluntary. You can decide not to participate and you do not have to answer every question. Possible benefits of the interviews and conversations could include a greater understanding of the relationship of arts integration to academic achievement and a better understanding of the models of arts integration that are most effective in fostering student achievement from the results you will receive after the study is complete, indicating suggestions and recommendations that may enhance your program at your school.

Your signature on this form indicates that, 1). You as the narrator transfer your rights to me the interviewer after the session is complete. Your signature also indicates that 2). You are at least 18 years of age, 3). The research has been explained to you, 4). Your questions have been fully answered, 5). You agree to be recorded by audiotape, and 6). You freely and voluntarily choose to participate in the research project. 7). You understand that your name will be used in the final published dissertation.

The researcher can be reached at 443-994-9044 cell or home 410-672-6247 with any follow up questions or concerns.

Name of participant: _____

Title of participant: _____

Signature of participant: _____

Date: _____

Name of investigator: Kathleen Panagopulos, M.A., NCC, LCPC (Ph.D. candidate)

Signature of investigator: _____

Date: _____

Chair: Sr. Margaret Mahoney, SSND

Reader: Sr. Catherine Sarther, SSND

Reader: Dr. Mark Fenster, Ph.D.

Appendix C

Legal Release Form

The Institutional Review Board (IRB) recommends that participants sign a legal release form after the interview and when the interviewee has edited the transcript and has reviewed the final written copy of the taped session.

In signing this legal release you are indicating that you have read the edited final transcribed copy of the oral history you completed with the researcher, Kathleen Panagopulos, from Notre Dame of Maryland University through an audio taped interview during the fall of 2013.

In signing this release form you are giving permission to the researcher to quote you in the final publication for her dissertation and for the audio tape to be made available to others, such as members of the Maryland Campus Compact.

In addition, when signing this form, you are agreeing to sign over the rights of your interview. Without this release, this interview cannot be used legally.

Your signature below indicates that you understand and agree with the above statements.

Name of participant: _____

Title of participant:

_____

Signature of participant:

_____

Date: _____

Name of investigator: Kathleen Panagopulos, M.A., NCC, LCPC (Ph.D. candidate)

Signature of investigator:

_____

Date: _____

Chair: Sr. Margaret Mahoney, SSND

Reader: Sr. Catherine Sarther, SSND

Reader: Mark Fenster, Ph.D.

Appendix D

Participant Data Sheet

Name: _____

Title: _____

Institution and address:_____

_____

_____

_____

Faculty/Staff Member: _____

Cell phone: _____

Work phone: _____

Home phone: _____

Email address: _____

Notes: _____

_____

_____

_____

Date of Interview: _____

Place: _____

Time: _____

Appendix E

Principal Questionnaire

This interview is being conducted as part of the requirements for a degree of Doctor of Philosophy from the Notre Dame University of Maryland. The purpose of this interview is to collect information about the models of arts integration in arts integration schools and the effects of models of arts integration on student progress with standards. For the purpose of this study "the arts" refers to theater, visual arts, music and dance. Also, integration of the arts refers to the use of at least one of the arts as a tool to enhance or reinforce learning in a non-arts curricular area. Your role as instructional leader in an arts integration school is important to this study. Your input is greatly valued and appreciated.

1. How many years has your school been an AI school?
2. What is your vision for AI at your school?
3. Describe what AI looks like in your school? In what subjects are the arts integrated and how are they integrated?
4. How often are teachers integrating arts into their lessons?
5. How many teachers have participated in professional development for AI? How much professional development have they had?
6. What are the implications of arts integration for increasing teacher capacity?
7. What are the implications of arts integration for student engagement?
8. What are the implications of arts integration for the development of critical thinking skills?

9. What do you think are the implications of arts integration on student achievement on standardized measures?
10. What are the implications of arts integration for underachieving students, particularly students of poverty?

Appendix F

Teacher Interview Questions

This interview is being conducted as part of a Ph. D. dissertation for the degree of Doctor of Philosophy at Notre Dame University of Maryland. The purpose of this interview is to collect information about the models of arts integration in arts integration schools and the effects of models of arts integration on student progress with standardized assessments. For the purpose of this study "the arts" refers to theater, visual arts, music and dance. Also, integration of the arts refers to the use of at least one of the arts as a tool to enhance or reinforce learning in a non-arts curricular area. Your input is greatly valued and appreciated.

1. Describe your experience with AI.
2. As an educator at an arts integration school, describe the of AI training sessions in which you have participated. How has professional development in AI changed your professional practice?
3. Describe the process of planning for AI lessons. Describe the frequency and type of AI lessons that you plan and implement. How are learning outcomes in the arts and content areas addressed in your AI lessons?
4. In your experience, describe the level of student engagement in AI lessons.
5. What are the implications of arts integration for the development of critical thinking skills?
6. Has arts integration contributed to student achievement on standardized measures?
7. What are the implications of arts integration for underachieving students?
8. What have been the advantages and drawbacks of AI?

Appendix G

Sample Field Notes

Ellie, School 02, Gr. 4, June 12, 2014, 1:20 p.m., 22 students, Language arts and Science

Descriptive Notes	Reflective Notes
As students returned from recess, T. asked students to take out wind pictures and journals.	Students seemed prepared to learn, even though it was the end of the day a few days before summer vacation!
Classroom had an ambiance with soft lighting, green plants, writer's corner, reading corner with soft cushions on floor. Desks were arranged in 4 groups of 5-6 each – some u-shaped, some like tables, some L-shaped.	The ambiance and teacher's tone created a nurturing atmosphere.
Outcomes were posted: TSW use details and personification to write a poem that describes the colors, movements, and feeling of their wind pictures. T. posted Wind Techniques slide: Sponge: use a mostly dry sponge. Make your sky color in the lid of your paint tray, Toothpick, Paint effect, Crayon techniques. T: How many people created movement in their pictures? What effect did you use? T. held up examples of student paintings. I feel like the wind pulls me further in this one. What do you want your picture to do? Move.	AI related well to writing outcomes as it builds student interest in the topic and creates memorable experience to prompt writing. Elements of arts posters were in display.
T.: How many people felt that they wrote an awesome lightening poem? Remember you were the lightening. Now you are going to take it from another point of view. You are talking to the wind. In order to write a poem, who can explain personification? S: Things that act like a person. T. showed an example of an illustration in a book of crayons walking.	T. has a calm, approachable manner who has established a risk-free environment.
T. directed students to open journals to create a tree map titled Wind Poem to classify verbs under wind, adjectives under sky, tree stumps, ferns and ground. T. led discussion of wind. Wind can do more than blow and gust. What would wind do if it was a person. Could it skip? What do you see when you think of skipping? T. gave students 1 minute to write some verbs, while she circulated monitoring progress. T. posted examples of descriptive words on tree map. Take a look at the words I used to describe the tree stump: lonely, forlorn (discussed what that means using a forlorn tone of voice). T.: Turn to a partner to share your words. After a moment, Did you hear a good one? You can add that word to your list if it goes with your picture.	T. effectively uses questioning to probe deeper for student understanding. All students were engaged in thinking and writing. Teacher's expressiveness communicates meanings of vocabulary to students.
T: You know what's coming next. You're going to be writing a poem. Don't you think it helps to see examples of other poems? T. posted student-created Wind poems. Wind	The student-created poems were impressive!

You howl. You dance. You whip through the night sky. Wind, where do you hide when it is still? (by a Kindergartner) Wind You howl all night long. You dance through the blustery sky. You whip. You swirl. You are the wind, strong and powerful. (by a 2nd grader) T. Let's talk about some things to remember. S: They rhyme. T: Do these poems rhyme? S: No. T: What did the poets use? S: Rhythm S: They started a new line at the end of every sentence. T: Did this one? S: No T: No, they added line breaks, but not necessarily at the end of each sentence. Students had 10 minutes to write a first draft, as T. circulated talking with students about their ideas.	Students quickly and quietly moved to a comfortable writing area and got to work.
S. proudly read her poem to her teammate. T. gave positive and constructive feedback. T: Do what this made me think of? What do you think about turning this into a temper tantrum? You have a little brother at home, so you know what they look like.	This teacher is inspiring. She loves her students and communicates high expectations for them. Any student would love to be in this class!
T. gave students options for sharing poetry. She asked a student to hold up Leanna's picture while she read. T. reminded students to read clearly and slowly. Wind You knock me as I try to fly away. You blow and gust as you try to bring me down.(excerpt)	Students were attentively listening, even one girl on a large bouncing ball. This is a true community of learners!
T. reviewed outcomes and asked, "Did you guys give each other goosebumps?"	T.'s passion for the subject is inspiring!