



# Research Brief

## Art Infusion: What Every Parent and Teacher Should Know

July 2015

A growing body of research presents compelling evidence that connects student learning in the arts to a wide spectrum of academic and social benefits, including helping students to master other subjects, such as reading, math or social studies.<sup>1</sup> As well, research in the area of arts in education has indicated that students who are engaged in arts-infused instruction exhibit signs of improved cognition and self-discipline, which has translated into success in various academic areas, including mathematics and language arts.

Studies conducted by James Catterall and his contemporaries for the *Champions of Change* report have identified correlations between the study of the arts and academic achievement. Catterall found “that high arts participation makes a more significant difference to students from low-income backgrounds than for high-income students.”<sup>2</sup> He also determined that “sustained involvement in particular art forms - music and theater - are highly correlated with success in mathematics and reading.”<sup>3</sup> Catterall’s work speaks to the capacity of the arts to encourage active learning in students who are disadvantaged and otherwise not reached by the school system.

### Acknowledgements

This study, known as the *Arts Integration Project*, was implemented by Erie Arts & Culture (formerly ArtsErie) in partnership with the Union City Area School District, Crawford Central School District, Penncrest School District and Edinboro University of Pennsylvania beginning July 2010 and was fully funded through a US Department of Education Arts in Education Model Development and Dissemination Grant. It was a four-year project that integrated dance, music, visual arts and drama into existing curriculum to enhance both the quality of teaching in the classroom, as well as student academic achievement and engagement in the learning process.

The *Arts Integration Project* evaluation plan was designed, implemented, and managed by KeyStone Research Corporation of Erie, PA.

In compiling research findings for the *Champions of Change* report, Edward Fiske observed that all of the participating researchers independently concluded that the arts reach students who are not otherwise being reached. Students who are disengaged from the learning environment are at high risk of failure. Fiske reports “researchers found that the arts provided reason, and sometimes the only reason, for being engaged with school or other organizations.”<sup>4</sup> He goes on to say that the evidence strongly supports that the arts strongly connect students to themselves and to the people around them, helping to transform the learning environment into places of discovery and achievement.<sup>5</sup>

As a test of this hypothesis, the *Arts Integration Project*, a four-year project from 2010 to 2014, integrated dance, music, visual arts and drama into existing curriculum to enhance both the quality of teaching in the classroom, as well as student academic achievement and engagement in the learning process. In this research brief we present an overview of this project and the results of the effort to improve the quality of instruction and outcomes for the students.

### What is the *Arts Integration Project*?

The *Arts Integration Project* was a partnership between Erie Arts and Culture, Union City Elementary School, Second District Elementary School, First District Elementary School, Cambridge Springs Elementary School and Edinboro University of Pennsylvania. The schools were selected for participation in the *Arts Integration Project*, in part, because they served rural communities with a significant number of students from low-income families. The project was funded in full by the U.S. Department of Education Arts in Education Model Development and Dissemination (AEMDD) grant program.

The *Arts Integration Project* provided professional development for classroom teachers and teaching artists and established avenues for their collaboration to design and implement arts-infused classroom-based learning through graduate level coursework and artist-in-residence experiences. This

project engaged 966 students in arts-infused classroom-based learning through the implementation of artist residencies in each of the participating schools. The purpose of the project was to improve lesson planning and the quality of teaching; improve student engagement in the learning process and their learning habits associated with the arts; and ultimately improve the students’ achievement in math and reading.



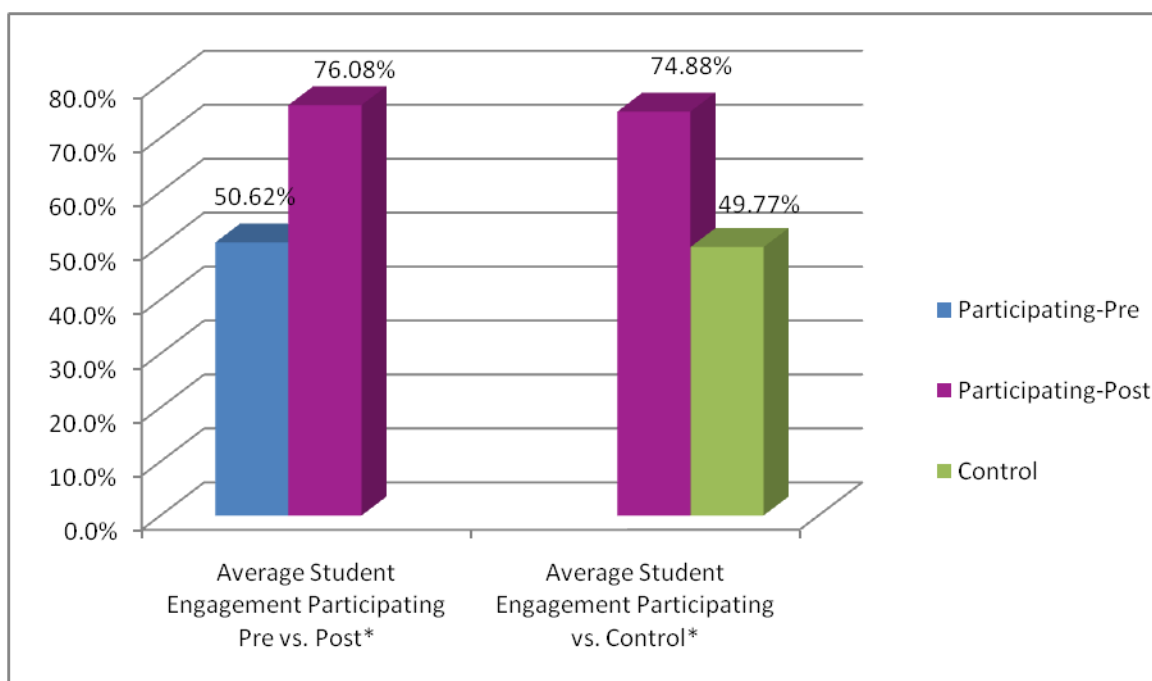
### Did the *Arts Integration Project* Work?

The *Arts Integration Project* was rigorously evaluated, comparing the outcomes for students both before and after their participation in an artist-in-residence experience, as well as comparing participating students to a control group of students who did not have this experience. The student outcomes assessed included: engagement in the learning process, learning habits relevant to the 21<sup>st</sup> Century learning skills, and student achievement in math and reading. As well, the outcomes for teachers and artists with respect to the quality of instructional practices and lesson plans were assessed. The evaluation also incorporated an assessment of the project’s implementation, to determine what worked and didn’t work as the *Arts Integration Project* evolved over the four years.

### Student Outcomes

As shown in Figure 1, *student engagement* during the classroom lesson increased significantly from 50.62% of the time before the art residency compared to 76.08% of the time at the end of the residency. Moreover, compared to the control classrooms, students in art-infused classrooms were engaged 74.88% of the time and control

Figure 1: Average Student Engagement in Participating and Control Classrooms



\*Significance at  $p \leq 0.001$

Participating Pre vs. Post: Paired Samples T-Test was performed

Participating vs. Control: One-Way ANOVA Test was performed

classrooms were engaged only 49.77% of the time, representing a statistically significant difference between the two.

*Learning habits* also improved for students in art-infused classrooms. Figure 2 shows the various learning habits assessed and the comparison from before to after a residency. The area with the most change from pre to post was “elaboration,” indicating that students showed greatest improvement with respect to:

- coming up with amazing details in their work,
- focusing on making sure that they included interesting and clear details in their work,
- learning that their work was really theirs when they put in their own details, and
- adding sensory details to their work.

Additional analysis of these data also revealed that these learning habits showed greater improvement in classrooms where the teacher had more than one art-residency, indicating

that with more experience in art-infusion, the outcomes for students are better.

The *students’ achievement in math and reading*, as assessed both via standardized test scores and report card grades, did not have consistent results. Figures 3 and 4 provide a comparison of the percentage of participating and control students that are proficient in math and reading for each year of the program. There is no consistent pattern in these data, with some instances where control students may have higher levels of proficiency and in other cases the participating students have higher levels. In no instance is there a significant difference between the participating and control students.

The target for this project was that 70% of the participating students would be proficient in math and reading, as measured by PSSA scores, after experiencing a residency. The analysis of the test score data also yielded varying results. For math, across the four years, this level of proficiency was not achieved in 2011/2012; for the other three years the proficiency levels ranged between

Figure 2: Pre-Post Assessment of Participating Students Learning Habits (N=45)

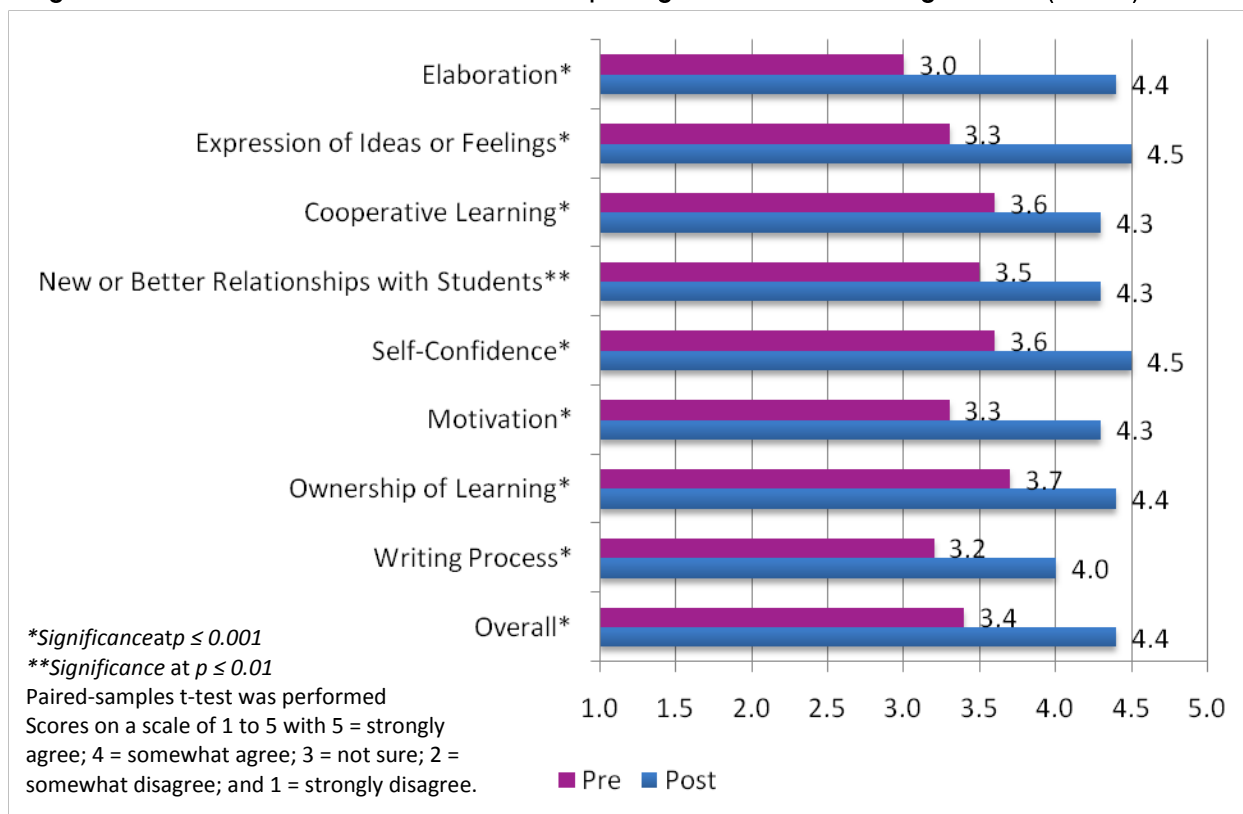
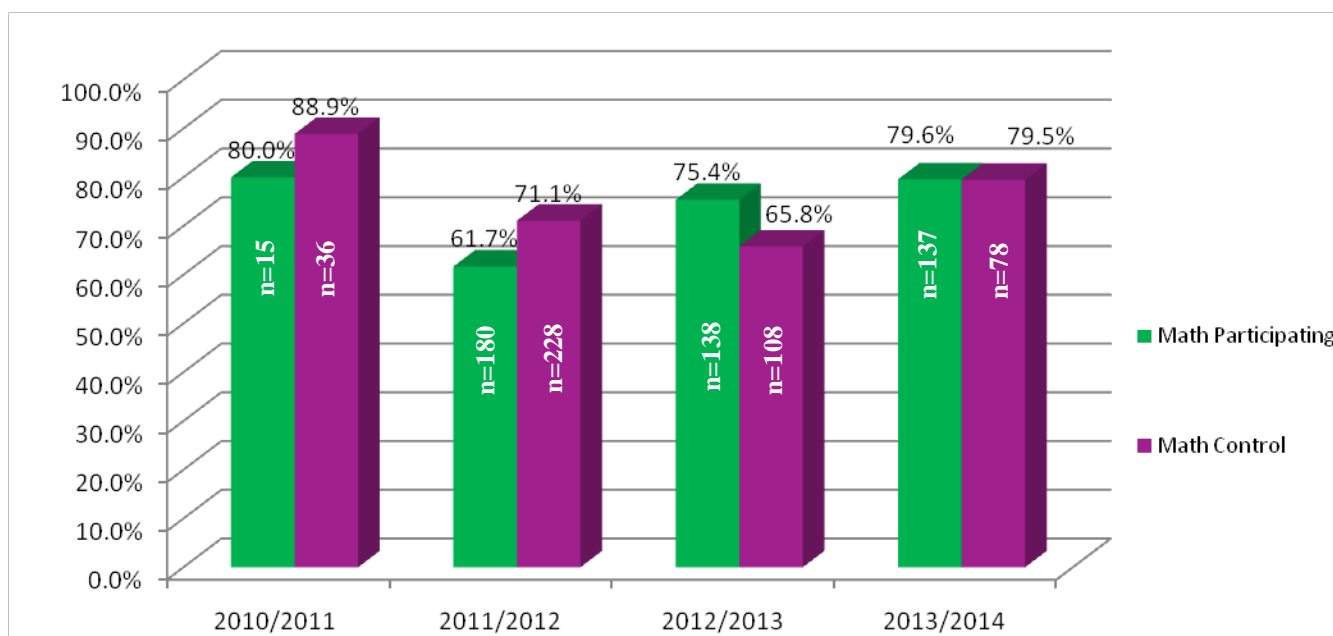


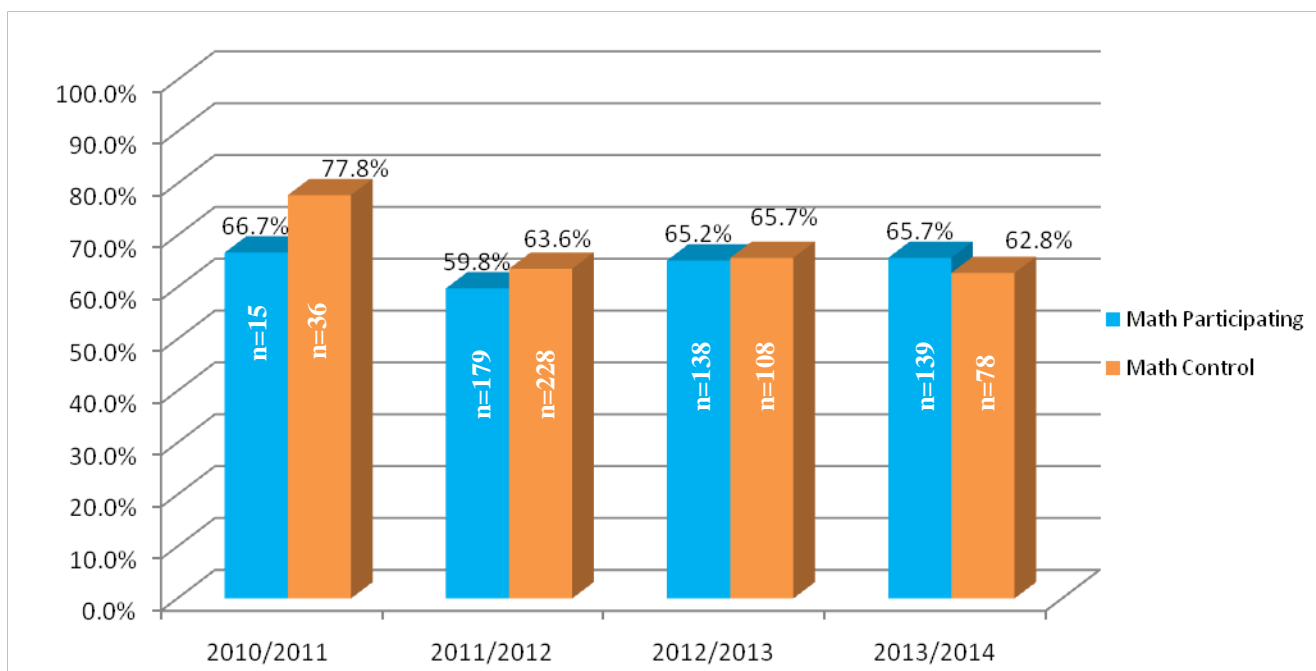
Figure 3: Percent of Students Proficient in Math: Participating vs. Control



75.4 % and 80%, thereby exceeding the target. This was not the case with proficiency levels for reading. Across all four years, the targeted 70% was not achieved in any year and the proficiency levels ranged between 59.8% and 66.7%.

The report card grades for participating and control schools compared grades from before a student's participation in a residency to after participation. As with the analysis of test scores, there is no consistent pattern to the changes in report card grades. Depending on

Figure 4: Percent of Students Proficient in Reading: Participating vs. Control



the year, the participating students may have done better than the control students in either math or reading or vice-versa. Some of the differences between participating and control students are significant, while others are not. Given this mixed set of results, there is not a substantial body of evidence to conclude that participating in the *Arts Integration Project* had a positive impact on the student's academic achievement in math and reading as indicated via report card grades.

### Teacher and Artist Outcomes

A number of instructional practices were identified as indicators of the quality of teaching. The comparison of these practices prior to participation in the *Arts Integration Project* to the observation at the end of the program and at the follow up observation revealed a number of significant improvements over time. Table 1 shows these data comparisons across all three time periods. From the pre to post time period, there was a significant increase in the frequency in which the indicators of instructional quality were observed. The changes from post to follow up were mixed, but for the most part, no significant differences were found, overall, indicating a leveling off with respect to the quality of instruction.

In addition to these comparisons over time, the quality of teaching for the classrooms participating in the *Arts Integration Project* program was compared to the quality of teaching in the control classrooms. Table 2 shows this comparison. Overall, the control classrooms had a quality score of 3.16 compared to the participating classrooms with a score of 3.58, which was a significant difference.

In addition to instructional practices, the assessment of the lesson plan was used as an indicator of the quality of teaching. The initial comparison of pre and post measures of the quality of the lesson plan showed significant improvements on all the individual indicators, as well as overall. Table 3 shows these comparisons, with an overall pre score of 2.63 compared to a post measure of 3.40, which was a statistically significant difference. A leveling off of the quality of the lesson plan occurred, as shown by the post to follow up comparison in Table 3, except for the significant decline of two items (Q5 and Q7) related to the integration of art examples and processes. However, this decline was not substantial enough to erase all the improvements in the delivery of the lesson plan over time (see Table 3).



Table 1: Overall Means of Pre, Post and Follow Up Instructional Practices

	n	Pre	Post	Follow Up
Involved all students by requesting and inviting equal participation	38	3.45**	3.84**	3.71
Used active, experiential instructional approaches	39	3.08*/**	3.87*	3.64**
Created an emotionally safe learning environment where taking risks and making mistakes is okay	39	3.49*	3.97*	3.82
Provided opportunities for students, artist, and/or teacher to collaborate and work together	39	2.51*/*	3.80*	3.49*
Demonstrated respect for all learners by encouraging individual expression, responsibility, and decision-making	39	3.44**/**	3.90**	3.95**
Connected the current lesson to students' previous learning experiences or to own personal experiences	39	2.67*/***	3.26*	3.21***
Used multiple ways to convey the lesson, including but not limited to questioning, illustration, demonstration, and modeling	39	3.00*/**	3.67*	3.59**
Provided one-on-one instruction or attention as well as group instruction	38	3.11*	3.66*	3.40
<b>Overall Average Instructional Practices</b>	<b>39</b>	<b>3.09*/*</b>	<b>3.75*</b>	<b>3.60*</b>

\*Significance at  $p \leq 0.001$

\*\*Significance at  $p \leq 0.01$

\*\*\*Significance at  $p \leq 0.05$

Repeated Measures Multi-Variate Test was performed

Table 2: Overall Means of Post Instructional Practices for Participating and Control Groups

	Participating Post (n=50)	Control (n=54)
Involved all students by requesting and inviting equal participation	3.80***	3.46***
Used active, experiential instructional approaches	3.84*	2.94*
Created an emotionally safe learning environment where taking risks and making mistakes is okay	3.92**	3.63**
Provided opportunities for students, artist, and/or teacher to collaborate and work together	3.74*	2.54*
Demonstrated respect for all learners by encouraging individual expression, responsibility, and decision-making	3.86*	3.46*
Connected the current lesson to students' previous learning experiences or to own personal experiences	3.22**	2.67**
Used multiple ways to convey the lesson, including but not limited to questioning, illustration, demonstration, and modeling	3.62*	3.02*
Provided one-on-one instruction or attention as well as group instruction	3.63*	3.13*
<b>Overall Average Instructional Practices</b>	<b>3.70*</b>	<b>3.11*</b>

\*Significance found at  $p \leq 0.001$ ;

\*\*Significance found at  $p \leq 0.01$ ;

\*\*\*Significance found at  $p \leq 0.05$ .

One-Way ANOVA Test was performed

Table 3: Overall Means of Pre, Post and Follow Up Implemented Lesson Plan Measures

	n	Pre	Post	Follow Up
Students were informed of the learning objectives of the lesson	37	3.05**	3.51**	3.41
Meaningful connections were made between/among disciplines	31	2.29*/*	3.23*	3.03*
Activities were age- and grade-level appropriate	39	3.67*/**	3.97*	3.92**
In-depth learning was promoted, e.g., “Big Ideas” were addressed	37	2.55*/*	3.16*	3.27*
Examples from the arts and other disciplines were used	35	1.97*/**	3.37*/**	2.71**/**
Terminology was appropriate	39	3.69**/**	3.95**	3.92***
The artistic processes of creating, performing, and/or responding were incorporated	39	2.08*/*	3.80*/*	3.10*/*
Assessment was ongoing throughout the lesson, with appropriate feedback provided	39	2.90*/**	3.49*	3.41**
There was a final evaluation of student learning	36	2.22	2.58	2.50
Students had an opportunity for reflection	38	1.92*/*	2.82*	2.71*
<b>Overall Average of Lesson Plan Quality</b>	<b>39</b>	<b>2.63*/*</b>	<b>3.40*</b>	<b>3.21*</b>

*In blue is significance between post and follow up measures*

*\*Significance found at  $p \leq 0.001$*

*\*\*Significance found at  $p \leq 0.01$*

*\*\*\*Significance found at  $p \leq 0.05$*

Repeated Measures Multi-Variate Test was performed

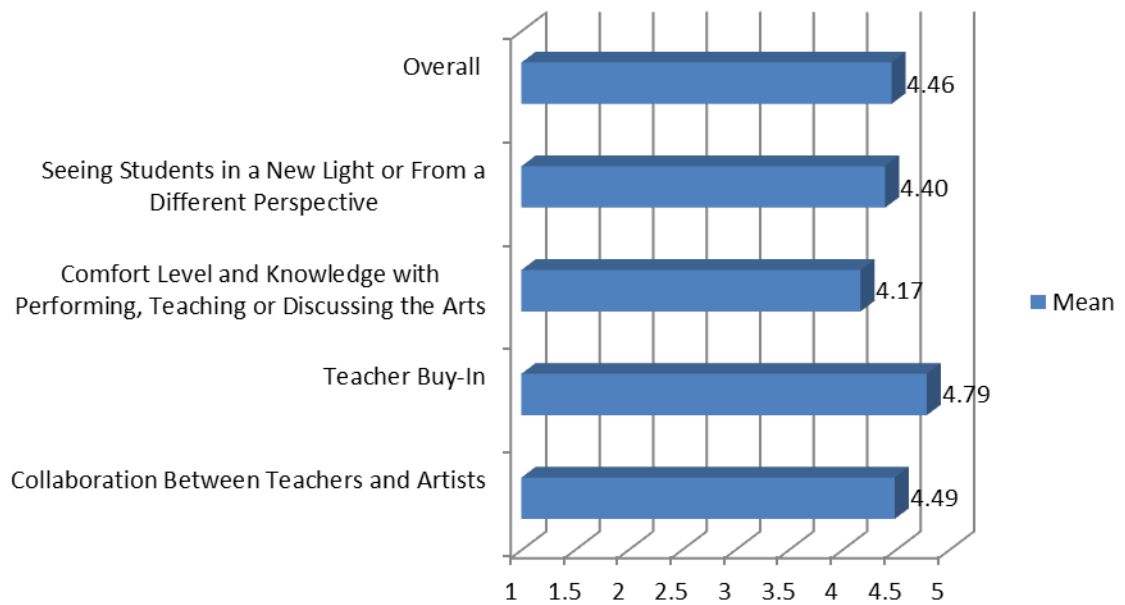
### Arts Integration Project Implementation

Other areas of success of the *Arts Integration Project* pertain to the practices put in place during implementation. First, and foremost, the collaboration and ongoing communication among members of the Advisory Team were critical in making sure any problems/issues were immediately addressed and that there was a commitment to continuously improve as the program evolved over time. There was thoughtful reflection about the different components of the program being implemented and what needed to change to ensure successful outcomes. The most relevant example of this was the change in requirements regarding teacher and artist participation in the graduate course as a prerequisite to having an artist residency. After the first year the Advisory Team realized that without the foundational knowledge provided by the graduate course, the success of the artist residency would be jeopardized.

Feedback with respect to how the *Arts Integration Project* worked or didn't work came from the Teacher Attitude Survey and Artist Attitude Survey. The surveys asked the teachers and artists to reflect on the artist residency and assess the impact it had on the teacher (from the teachers' own personal reflection and from the artists' perspective about the impact on their residency teacher). Figures 5 and 6 show the mean scores for teachers and artists. Overall, the satisfaction of both teachers and artists was high—4.46 for teachers and 4.50 for artists.

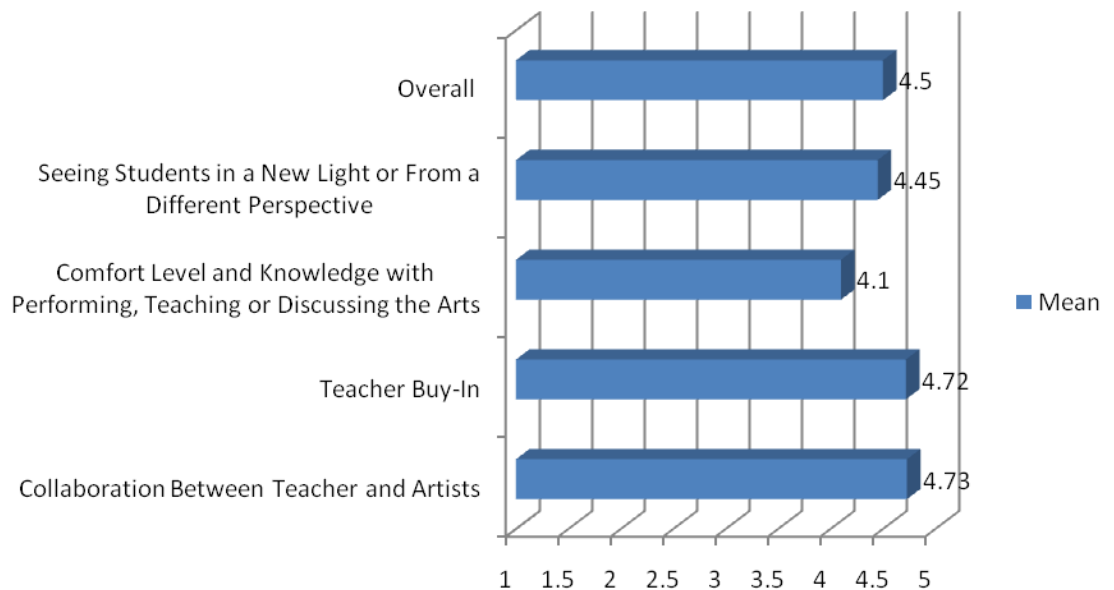
Teacher “buy-in” and “collaboration between teacher and artist” were rated the highest by both teachers and artists, although artists did have a more positive perception about the level of collaboration (4.49 for teachers vs. 4.78 for artists). The same item was rated the lowest by teachers and artists—“comfort level

Figure 5: Teacher Attitude Survey Means (N=56)



Means on a scale of 1-5; (1=strongly disagree, 2=somewhat disagree, 3=not sure, 4= somewhat agree, 5= strongly agree).

Figure 6: Artist Attitude Survey Means (N=56)



Means on a scale of 1-5; (1=strongly disagree, 2=somewhat disagree, 3=not sure, 4= somewhat agree, 5= strongly agree).

and knowledge with performing, teaching and discussing the arts” (4.17 for teachers and 4.1 for artists). Regardless, a score of 4 and above is quite positive and it reflects a high level of satisfaction for those teachers and artists that participated in the *Arts Integration Project*.

Additional feedback to assess the quality of the implementation of the *Arts Integration Project* and suggestions for improvement came from qualitative input collected from teachers,

the project director, project manager, arts specialists, and evaluators. The open-ended questions asked respondents to address strengths and challenges of the program; how challenges were addressed; and any additional recommendations regarding the project’s implementation.



## Arts Integration Project Strengths

The content analysis of the responses revealed some insightful reflections about the programs successes and challenges, viewed through the critical lens of these individuals. Figure 7 shows the categories of responses and the frequency in which they were mentioned, with respect to the strengths of the *Arts Integration Project*. The areas of strength most frequently cited were in the areas of communication (26%) and the people (26%) involved.

The following are typical comments from participants that capture the essence of each of these categories, some of which overlap with more than one category.

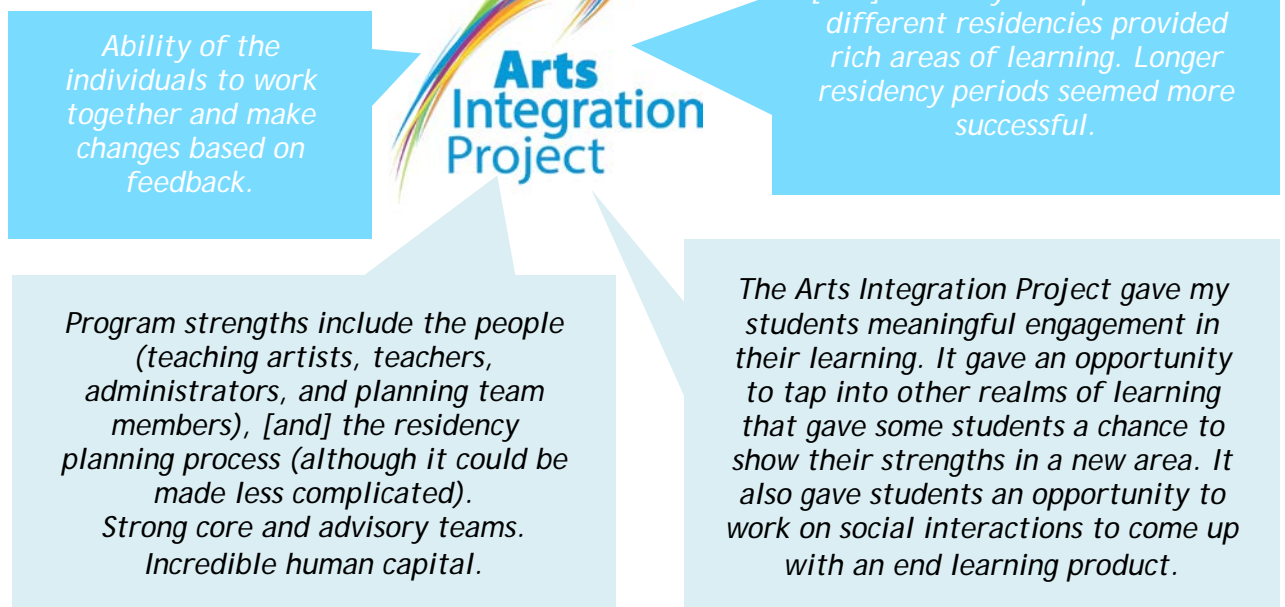
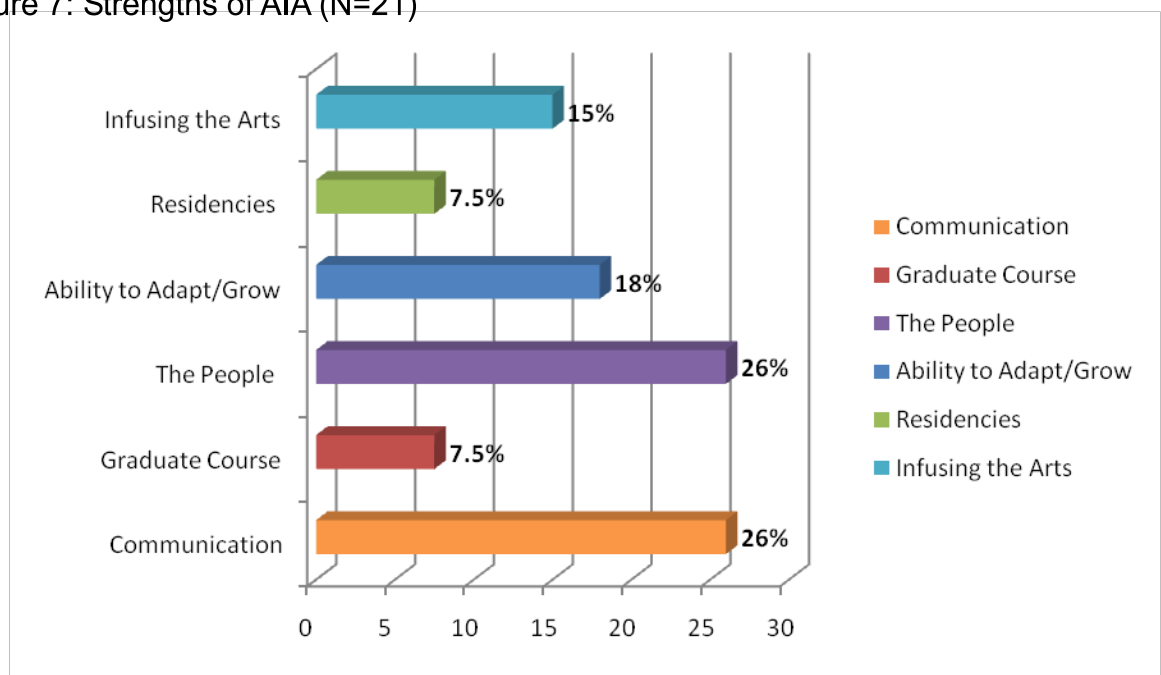


Figure 7: Strengths of AIA (N=21)



## Arts Integration Project Challenges

While there were many favorable comments regarding the *Arts Integration Project*, as a group of individuals educated in the skill of critical reflection, the respondents provided well-thought out and reasoned reflections about the challenges experienced as the program unfolded over the years. Figure 8 summarizes the areas of challenge.

The following are typical comments from participants that capture the essence of each of these areas of challenge, some of which overlap with more than one category.

*The time to meet each day with the artist to prepare subsequent lessons. Teachers have so little time to get things done during the school day.*

*Teachers that did not take the graduate class did not have the same understanding and seemed to be less enthusiastic in integrating the arts into the classroom on a more regular basis past what the residency provided.*

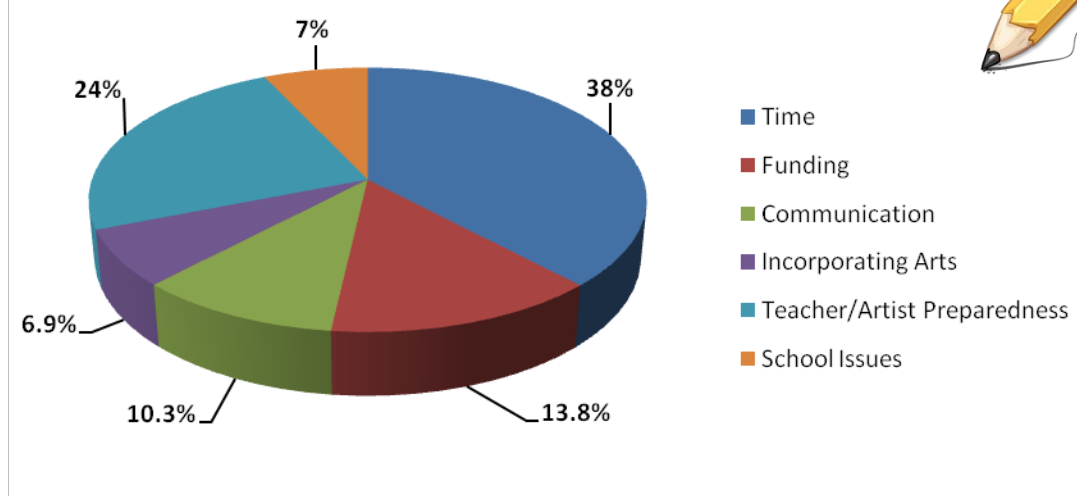
*The biggest challenge was clear communication and a clear understanding of policy and procedure. These have all greatly improved.*

*The disconnect between the artists and teachers with respect to how art can be infused in the lessons with respect to math and reading. The lack of preparation for some of the teachers (i.e., they had not taken the college course and/or participated in the other PD sessions).*

*The closing of 2nd District and having to change the school for 2011-2012 - also finding another control school. And, the commitment of Union City for this project. Lack of building administrator visibility in residency space.*

*Lack of professional development funding needed in training artists who don't have a background in education, not enough tech funding.*

Figure 8: AIA Challenges (N=21)



## Addressing Challenges

Improving communication was cited most frequently as the means to resolve the issues (31%), although many recognized that there were no solutions to some of the issues (25%). For the most part, the responses cite the need for more planning time, improving

communication, clarifying roles and responsibilities, and providing targeted professional development.

When asked about any final comments regarding the implementation of the *Arts Integration Project* and perhaps ways to improve the program, the respondents expressed a high level of satisfaction, overall (38/5%) or indicated the need to move forward (38.5%). As one teacher commented:

*I have grown as an educator because of the implementation of the arts into my teaching. I have seen/accomplished such amazing things with young kids that I never knew was possible. I am forever indebted to this WONDERFUL program. I have changed my teaching and that in turn has changed my students learning and understanding.....the effects/influence that this program has had are endless. Great program.*



### Recommendations

Although the *Arts Integration Project* has completed its programming in the schools, it is important to reflect on the experience to gain insight into the lessons learned and how future art infusion efforts may benefit from the recommendations identified below. These recommendations are not necessarily listed in any order of priority. For the most part, they are an overarching set of recommendations that are considered most important with respect to improving the impact of programs similar in nature.

#### Recommendation 1

Require a greater level of commitment from the schools and their leadership as a prerequisite for their participation in a program to infuse art into their curriculum.

Without this commitment, it is more difficult to solicit the teachers to participate in the program, for them to have the planning time they need, and for the schools to meet the requirements to provide student data for the evaluation.

#### Recommendation 2

Require both the participating teachers and artists to complete the necessary training and education before they implement a residency in a classroom. While this lesson was learned in the first year of the *Arts Integration Project*, there were still situations where the teachers and/or artists were taking the graduate class in the same term as their residency. Establishing this foundational knowledge is essential as it provides the teachers and artists with the tools and skills they need to develop an art-infused lesson that will have a positive impact on the students' learning.

#### Recommendation 3

Carve out more time for the teachers and artists to conduct residency planning. While the parties involved—teachers, artists and art specialists—all have other “jobs,” making it difficult to find the time to get together to do the required planning, knowing that this is a requirement for the residency should be made very clear. Without this time, it is difficult to feel confident about the lessons prepared and delivered in the classroom.

#### Recommendation 4

Have longer residencies. The *Arts Integration Project* residencies did have the advantage of having the teacher and artist working together to develop art-infused lessons. The intent was to develop the skill set of the teacher so that art-infusion can happen in the classroom, even when there is no resident artist. But, to get to that point, the more practice that the teacher has in doing this, particularly in tandem with an artist, the better able the teacher will be at applying this new skill set on their own.

#### Recommendation 5

Have greater clarity as to roles and responsibilities of project leadership. While having the strong planning team that

continuously communicated and engaged in problem solving was seen as a plus, there was still some confusion as to roles and responsibilities that resulted in delays. Again, as in any new program, it takes time for processes and systems to be put into place and to work out all the kinks. Therefore, as much as possible, clarity at the beginning is essential, recognizing that flexibility and adaptability are also necessary.

## Why Should Parents and Teachers Care?

As a final reflection, the *Arts Integration Project* produced a number of positive outcomes for the students, as well as for the teachers and artists who participated in the program. The evidence from the evaluation supports the potential for arts-infusion to improve the quality of teaching, engage students in the learning process, as well as build student competence in 21<sup>st</sup> century learning skills. Given this, with sustained exposure to such teaching practices, student cognition is likely to improve long term. To realize the full potential of art-infusion in classrooms, there needs to be a commitment to support the full integration of arts into lesson plans and instructional practices.

<sup>1</sup> *Critical Evidence: How the Arts Benefit Student Achievement* (www.nasaa-arts.org/publications/critical-evidence.pdf.)

<sup>2</sup> Fiske, Edward B., *Champions of Change*, 2000. p. viii.

<sup>3</sup> Fiske, Edward B., *Champions of Change*, 2000. p. viii.

<sup>4</sup> Fiske, Edward B., *Champions of Change*, 2000. p. ix.

<sup>5</sup> Fiske, Edward B., *Champions of Change*, 2000. p. ix.



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