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Eastern Suffolk BOCES Creative Classroom Collaboratives (C^3)

Year 4 (2013-2014) Findings

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Table of Contents

C³ Project Overview

Background

The Creative Classroom Collaboratives (C³) project was developed by the Eastern Suffolk Board of Cooperative Educational Services (ESBOCES), a local education agency serving public schools in Suffolk County, NY. The project was funded by a U.S. Department of Education Arts Education Model Development and Dissemination (AEMDD) grant and managed by the Arts in Education office within ESBOCES, where the Project Director and Project Coordinator are based. Project partners included the William Floyd and Riverhead Central school districts and their participating schools; the Curriculum Coordinator, a consultant with expertise in arts integration education approaches; and Metis Associates, the project evaluator.

Goals

The C³ project was designed to meet four goals: 1) to build the collaboration skills and attitudes of participating teachers and teaching artists while encouraging creative expression in their students; 2) to increase student achievement in 21st Century Skills and the core academic subjects of English Language Arts (ELA) and math; 3) to reform school planning to emphasize 21st Century Skills across the school curriculum; and 4) to share the tools and lessons learned through the project with the broader education community in New York State and across the U.S.

Activities

In each of the three implementation years, C³ project activities included: 1) an annual five day Arts Integration Summer Institute to engage teaching artists, classroom teachers, and school arts and library teachers (known as "specialists") as peer teachers and learners of arts integration practices that will enhance instruction; 2) sustained professional development, coaching, and collegial support in the school sites through quarterly day-long Peer-to-Peer (P2P) meetings; 3) collaborative development and teaching of two Units of Study (each five weeks long), based on theater and dance performances and integrating ELA curriculum standards and 21st Century Skills; and 4) documentation and dissemination of project materials and practices. The quasi-experimental and mixed-method (qualitative and quantitative) evaluation of the C³ project documented project implementation and compared outcomes of students in treatment and comparison groups.

Target Population

Seven eligible elementary schools in Suffolk County, NY (two from the Riverhead Central School district [RCSD] and five from the William Floyd School District [WFSD]), were identified as potential C³ schools based on the project eligibility criteria. These criteria included serving at-risk, Title 1-eligible student populations, including grades 2 through 4, and interest in participating in a three-year arts integration demonstration project and quasi-experimental, longitudinal study from September 2011 through June 2014.

Research Methods

Study Design

The Creative Classroom Collaboratives (C^3) study utilized a quasi-experimental design in which WFSD and RCSD schools that met eligibility criteria were selected to participate in the three-year project as treatment or comparison schools. Prior to the start of project implementation in 2011-2012, four of the seven eligible schools, three from WFSD and one from RCSD, were selected to be treatment schools (i.e., to receive the project activities and participate in the study) and the remaining three schools, two from WFSD and one from RCSD, were selected to serve as comparison schools (i.e., to not receive the project activities, but to participate in the study to provide data for comparative purposes). As an incentive for participation in the study, comparison group students were invited to attend the theater and dance performances attended by treatment group students.

Metis Associates was contracted to document project implementation and assess impacts on participating schools, teachers, and students. Metis evaluators used a mixed-methods approach in which quantitative and qualitative data on participant experiences were collected using collaboratively developed surveys, rubrics, and interview protocols, along with C^3 lesson observations and document reviews. Student achievement data were also analyzed to assess project impacts on students' ELA and math skills. The table below shows the implementation cohort groups in each of the three study years.

Table 1. Implementation Cohort Groups, 2011-2012 through 2013-2014

School Year	Staff Participants	Student Cohort
2011-2012	2nd Grade Teachers Visual Arts, Music, and Library Specialists	2nd Grade Students (Cohort 1)
2012-2013	2nd Grade Teachers (returning) 3rd Grade Teachers (new) Visual Arts, Music, and Library Specialists	2nd Grade Students (Cohort 2) 3rd Grade Students (Cohort 1)
2013-2014	3rd Grade Teachers (returning) 4th Grade Teachers (new) Visual Arts, Music, and Library Specialists	3rd Grade Students (Cohort 2) 4th Grade Students (Cohort 1)

Year 1 of the AEMDD grant (2010-2011) was used as a project planning year, during which schools were selected and evaluation instruments were developed. The 2nd grade teachers and specialists were trained during summer 2011. Project implementation began with students in treatment schools during the 2011-2012 school year, when the first cohort of student participants was in 2nd grade. The 3rd grade teachers (and any new 2nd grade teachers and specialists) were trained in summer 2012. During the

2012-2013 school year, Cohort 1 students continued participating in the project as 3rd graders and were joined by a new cohort of 2nd grade students (Cohort 2). Fourth-grade classroom teachers (and any new 3rd grade teachers and specialists) were trained in summer 2013 to serve the continuing Cohort 1 and Cohort 2 students as 4th graders and 3rd graders, respectively, during the 2013-14 school year.

After each implementation year, Metis analyzed the evaluation data to assess project impacts and identify lessons learned to inform subsequent implementation and dissemination efforts. Evaluators assessed impacts on treatment schools, teachers, and students over time, and relative to comparison school participants to determine the extent to which project goals and objectives are achieved. The research questions guiding the evaluation, presented in Table 2, were developed collaboratively by Metis evaluators and C³ project staff.

Table 2. C³ Research Questions and Expected Outcomes

C3 Study Group	Research Questions	Expected Outcomes
Treatment Students	To what extent does C³ increase student engagement in critical thinking processes and improve their achievement in critical 21st Century Skills, art, and core academic areas?	*Increase their:* • English Language Arts (ELA) skills, relative to comparison students • Mathematic skills, relative to comparison students • 21st Century Skills and National Standards for the Arts K-4 skills, relative to comparison students
Treatment School Staff	To what extent does C³ build the capacity of teachers and teaching artists in the target schools to incorporate collaborative practice in their instruction and to encourage creative expression in their students?	*Increase their:* • Use of and skill in cooperative instruction • Use of common vocabulary and skills for description, analysis, and synthesis *Improve their:* • Attitudes about collaborative instructional practices
Treatment Schools	To what extent does C³ contribute to reforms in school planning that better integrate essential 21st Century Skills across the school community through relevant engagement in the arts?	• Demonstrate greater increases over baseline in allocation of resources for arts integration than comparison schools • Increase inclusion of 21st Century Skills in School Improvement Plans by incorporating artistic activities into academic goals and indicators of achievement

Research Participants

Schools

As noted above, four schools (three from WFSD and one from RCSD) were selected to be treatment schools, and the remaining three eligible schools (two from WFSD and one from RCSD) were selected to serve as comparison schools. All treatment and comparison schools qualify for federal Title I funding

because they serve students from low-income families. As shown in Table 3, overall similar proportions of treatment and comparison school students were eligible for free or reduced-price lunch through the federal National School Lunch program.[1] Likewise, similar percentages of treatment and comparison school students were identified as having limited English language skills, with one school in both the treatment and comparison groups having a very large population of English language learners.

Table 3. Demographics of C³ Treatment and Comparison Schools

School	School District	School Demographic Data				
		Grade Levels	Title I	Total Students	% Free/ Reduced Lunch	% Limited English Proficiency
Treatment School 1	WFSD	K-5	Yes	586	81%	41%
Treatment School 2	WFSD	K-5	Yes	777	61%	2%
Treatment School 3	WFSD	K-5	Yes	763	54%	7%
Treatment School 4	RCSD	K-4	Yes	745	54%	4%
Comparison School 1	WFSD	K-5	Yes	845	67%	4%
Comparison School 2	WFSD	K-5	Yes	913	61%	8%
Comparison School 3	RCSD	K-4	Yes	396	59%	32%

*Source: New York State Education Department School Report Cards 2013-2014 (most recent available data)
Note: Data presented are for the full school populations, and not just for the grade levels served by the grant.

Students

During Year 4, the third and final year of implementation, 916 treatment students participated in the project and evaluation activities, including 426 Cohort 1 students and 490 Cohort 2 students. In the comparison schools, a total of 719 students, including 380 Cohort 1 and 339 Cohort 2 students, participated in evaluation activities but did not receive C³ instruction. Note that comparison group students and teachers were invited to attend C³ performances to incentivize participation in evaluation activities. Like treatment group participants, comparison group participants were provided with free transportation to attend the theater and dance performances inspiring the C³ curriculum units.

[1] A common proxy for low-income status

Table 4. C³ Year 4 Student Participants by Cohort and Study Group

School	Cohort 1 (Grade 4)	Cohort 2 (Grade 3)	Total Students in Year 4
Treatment School 1	91	115	206
Treatment School 2	121	132	253
Treatment School 3	95	116	211
Treatment School 4	119	127	246
Treatment Group Total	**426**	**490**	**916**
Comparison School 1	122	124	246
Comparison School 2	174	139	313
Comparison School 3	84	76	160
Comparison Group Total	**380**	**339**	**719**

School Staff

During Year 4, a total of 44 classroom teachers and nine specialists participated in C³ project activities in treatment schools. Of the 44 classroom teachers, 23 were 3rd grade teachers participating for a second year, and 21 were 4th grade teachers participating in C³ for the first time. In the three comparison schools, 28 classroom teachers (including 10 3rd grade teachers and 18 4th grade teachers) and nine specialists were invited to complete the C³ staff surveys and student and staff 21st Century Skills rubrics. The majority of participating teachers and specialists across grades 3 and 4 had at least six years of classroom teaching experience.

Teaching Artists

Four professional teaching artists facilitated the C³ units of study in treatment school classes during Year 4, each of whom continued from Year 3. Two of the artists, an experienced theater actor and a professional dancer, also taught the C³ units during Year 2. The other two artists, a theater professional and a children's book author and musician, joined the C³ project in Year 3. Together, the four teaching artists brought a substantial number of years of teaching and art making experience to the project.

Data Sources

Metis evaluators collaborated with C³ project staff during the planning year to develop school staff surveys and 21st Century Skills assessment rubrics to measure project impacts. Surveys were designed to measure teacher and specialist attitudes towards collaborative instruction and use of cooperative instruction skills. Rubrics were developed to measure students', teachers', and specialists' competencies on the four 21st Century Skills referred to as the "4Cs": *creativity and innovation*, *collaboration*, *critical thinking and problem solving*, and *communication*. A classroom observation protocol and school staff interview protocols were also developed to enable the collection of qualitative data on lesson implementation and teacher and specialist perceptions of C³ professional development activities. Finally, student demographic and achievement data were collected from the participating school districts to examine the impact of the program on student academic outcomes.

Surveys

Metis evaluators administered pre- and post-surveys to classroom teachers in both the treatment and comparison schools. Survey data were used to develop composite measures of teacher attitudes toward and use of collaborative instructional practices in order to measure progress made toward the project goals. Responses to individual survey items were also tabulated and compared between treatment and comparison group teachers to ascertain project impacts. Third-grade classroom teachers completed surveys in summer 2012 (baseline, prior to project participation), spring 2013 (at the end of Year 3), and spring 2014 (at the end of Year 4). Fourth-grade classroom teachers completed surveys in summer 2013 (baseline, prior to project participation) and spring 2014 (end of Year 4). Presented in Table 5 are the survey response rates for the 3rd and 4th grade teachers who participated in the project in Year 4.

Table 5. Teacher Survey Response Rates

Group		N (%) with Matched Data (2012-2014)	N (%) with Survey Data from:		
			Spring 2014	Spring 2013	Summer 2012
3rd Grade Teachers	Treatment (N=23)	13 (57%)	22 (96%)	22 (96%)	15 (65%)
	Comparison (N=10)	3 (30%)	9 (90%)	8 (80%)	4 (40%)
Group		**N (%) with Matched Data (2013-2014)**	**N (%) with Survey Data from:**		
			Spring 2014		**Summer 2013**
4th Grade Teachers	Treatment (N=21)	20 (95%)	20 (95%)		21 (100%)
	Comparison (N=18)	8 (44%)	8 (44%)		18 (100%)

Metis also administered pre- and post-surveys to treatment and comparison specialists, and to the four teaching artists who participated in Year 4, in order to measure progress made over time in their use of and attitudes toward collaborative instructional practices. Some specialists and teaching artists completed surveys in summer 2011 (baseline, prior to project participation), spring 2012 (at the end of Year 2), spring 2013 (at the end of Year 3), and spring 2014 (at the end of Year 4). Others who joined the project later completed surveys in spring 2012 (baseline, prior to project participation), spring 2013, and spring 2014. Presented in Table 6 are the survey response rates for the specialists and teaching artists who participated in the project in Year 4.

Table 6. Specialist and Teaching Artist Survey Response Rates

Group		N (%) with Matched Data [2]	N (%) with Survey Data from:			
			Spring 2014	Spring 2013	Spring 2012	Summer 2011
Specialists	Treatment (N=9)	5 (56%)	7 (78%)	8 (89%)	8 (89%)	5 (56%)
	Comparison (N=9)	2 (22%)	4 (44%)	7 (78%)	5 (56%)	7 (78%)
Teaching Artists	Treatment (N=4)	3 (75%)	3 (75%)	4 (100%)	2 (50%)	2 (50%)

[2] Note that the date of the baseline may vary for each participant, depending on when they started in the project.

21st Century Skills Rubrics

Metis used locally-developed rubrics to measure the 21st Century Skills (the "4Cs") of participating classroom teachers, arts and library specialists, and students. Treatment and comparison group teachers and specialists completed the staff 4Cs rubrics prior to participating in the project and at the end of each project year, resulting in three administrations for 3rd grade teachers and specialists and two administrations for 4th grade teachers and specialists. Note that specialists were included in the 3rd grade group if they completed rubrics in spring 2012, spring 2013, and spring 2014; those completing surveys only in spring 2013 and spring 2014 were included in the 4th grade group. Table 7 presents teacher and specialist 21st Century Skills rubric response rates for each time point.

Table 7. Staff 21st Century Skills Rubric Response Rates

Group	Position	N (%) with Matched Data[3]	N (%) with Staff Rubric Data from:		
			Spring 2014	Spring 2013	Summer 2012
Treatment	3rd Grade Teachers (N=23)	20 (87%)	20 (87%)	22 (96%)	18 (78%)
	Specialists (N=5)	5 (100%)	5 (100%)	3 (60%)	5 (100%)
Comparison	3rd Grade Teachers (N=10)	6 (60%)	8 (80%)	8 (80%)	5 (50%)
	Specialists (N=6)	3 (50%)	3 (50%)	4 (67%)	6 (100%)

Group	Position	N (%) with Matched Data[4]	N (%) with Staff Rubric Data from:	
			Spring 2014	Summer 2013
Treatment	4th Grade Teachers (N=21)	16 (76%)	17 (81%)	20 (95%)
	Specialists (N=4)	1 (25%)	2 (50%)	3 (75%)
Comparison	4th Grade Teachers (N=18)	7 (39%)	7 (39%)	18 (100%)
	Specialists (N=1)	1 (100%)	1 (100%)	1 (100%)

To measure change in 21st Century Skills among students in the treatment and comparison groups, classroom teachers completed the 4Cs assessment rubrics for each of their respective students at the beginning and end of each project implementation year. Response rates for the student rubrics are presented in Table 8.

[3] Note that the date of the baseline may vary for each participant, depending on when they started in the project.

Table 8. Student 21st Century Skills Rubric Response Rates

Group		N (%) with Matched Data (Fall 2011-Spring 2014)	N (%) with Student Rubric Data from:					
			Spring 2014	Fall 2013	Spring 2013	Fall 2012	Spring 2012	Fall 2011
Cohort 1 (Grade 4)	Treatment (N=426)	220 (45%)	406 (52%)	424 (99%)	370 (87%)	373 (88%)	270 (63%)	336 (79%)
	Comparison (N=380)	55 (16%)	159 (42%)	210 (55%)	203 (53%)	158 (42%)	220 (58%)	202 (53%)
Group		**N (%) with Matched Data (Fall 2012-Spring 2014)**	**N (%) with Student Rubric Data from:**					
			Spring 2014	**Fall 2013**	**Spring 2013**	**Fall 2012**		
Cohort 2 (Grade 3)	Treatment (N=490)	366 (75%)	466 (95%)	456 (93%)	422 (86%)	429 (88%)		
	Comparison (N=339)	90 (27%)	225 (66%)	174 (51%)	170 (50%)	177 (52%)		

Student records

Metis collected unit-record data files containing demographic information and state assessment data for treatment and comparison students in each of the two participating school districts. Specifically, data from the New York State (NYS) ELA and mathematics tests, which are administered annually to students in grades 3-8, were collected for students in grades 3 and 4. Additionally, data were also collected from the Grade 4 NYS Elementary-Level Science Test, and New York State English as a Second Language Test (NYSESLAT), a criterion-referenced test that is administered annually to ELL students in Kindergarten through grade 12 to assess their English literacy development. Information on the data available for C^3 treatment and comparison students is provided in Table 9.

Table 9. Students with State Assessment Data

Assessment	Group	Total N		% with Spring 2014 Data		% with Matched (Spring 2013 and Spring 2014) Data	
		Grade 3	Grade 4	Grade 3	Grade 4	Grade 3	Grade 4
NYS ELA	Treatment	514	402	427 (83%)	362 (90%)	N/A	345 (86%)
	Comparison	363	356	300 (83%)	326 (92%)	N/A	302 (85%)
NYS Math	Treatment	514	402	416 (81%)	356 (89%)	N/A	340 (85%)
	Comparison	363	356	298 (82%)	326 (92%)	N/A	300 (84%)
NYS Science	Treatment	514	402	N/A	361 (90%)	N/A	N/A
	Comparison	363	356	N/A	330 (93%)	N/A	N/A
NYSESLAT	Treatment	514	402	39 (8%)	45 (11%)	N/A	43 (11%)
	Comparison	363	356	24(7%)	28 (8%)	N/A	24 (7%)

Project Implementation in Year 4

Training

Summer Institute June 2013

Treatment school 4th grade teachers, administrators, and arts and library specialists received training on arts integration, 21st Century Skills, and Common Core Learning Standards (CCLS) to prepare them to develop and implement two five-week units of study in collaboration with teaching artists.

Peer-to-Peer (P2P) Trainings Fall 2013 and Winter 2013/2014

Three P2P trainings built on the Summer Institute by providing treatment school staff with additional information on arts integration, opportunities for unit and lesson planning with teaching artists, and time for reflective discussions and documentation of lessons learned through unit implementation.

C^3 Curriculum Units

In treatment schools, C^3 teaching artists and classroom teachers collaboratively developed units of study based on the poetry and musical performances serving as focal works of art: Charlotte Blake Alston's storytelling, the *Infinitus* musical performance, and the *Dream Carver* puppetry performances. Each grade developed and implemented two units, one in the fall and another in the winter, and each unit was comprised of five lessons taught by a teaching artist and five supporting lessons taught by classroom teachers. All lessons were designed to address student learning needs and school curriculum targets, including the CCLS. The first four teaching artist lessons were taught before the performance, while post-performance final lessons provided time for reflection and focused on reinforcing key concepts.

In addition to addressing academic skills and concepts, all units also addressed 21st Century Skills; teaching artists often engaged students in collaborative activities, including verbal and written communication tasks challenging students to think creatively. During their supporting lessons, classroom teachers also engaged students in collaborative activities, emphasizing critical thinking and communication skills.

In some schools, arts and music specialists also participated in collaborative unit planning sessions with classroom teachers and teaching artists and taught supporting lessons for C^3 students.

Fall 2013 3rd Grade Curriculum: Storytelling by Charlotte Blake Alston

- Artistic goals for the units based on Charlotte Blake Alston's storytelling included learning about posture, gesture, facial expression, and imagination and learning how to tell a story using voices and faces. Teaching artist lessons included storytelling and tableau-making activities, as well as role playing and acting out various characters.

- Academic goals for the Charlotte Blake Alston units included learning about folktales, point of view, purpose, and how culture shapes perspective. Supporting lessons taught by classroom teachers included activities such as read a louds of folktales and fables, lessons on African geography and culture, and discussions of storytelling techniques and character development.

- In November 2013, students in both treatment and comparison schools attended Charlotte Blake Alston's performance at their individual schools.

Fall 2013 4th Grade Curriculum: *Infinitus*

- Artistic goals for the *Infinitus* units included understanding the fundamental elements of music, such as patterns, rhythm, mood and movement, learning about empathy and compassion through music, and learning about simple machines through music and dance. Some teaching artist lessons focused on patterns and rhythm in music (e.g., beatboxing). Others focused on the moods of empathy and compassion conveyed by music, and still others used music and dance to teach the elements of simple machines.

- Academic goals for the *Infinitus* unit included exploring patterns, rhythm, rhyme, and mood as it pertains to literature and music, gaining an increased understanding of empathy through literature and music, and developing academic vocabulary and writing from sources. Supporting lessons taught by classroom teachers included close reading of "In a Sentimental Mood" by Duke Ellington, lessons on onomatopoeia and patterns in math, discussions of empathy and compassion demonstrated by book characters, and lessons on simple machines, energy, and the laws of motion.

- Goals for 21st Century skills included responding to reflection questions, defending ideas, discussing creations (communication), working collaboratively in groups (collaboration), creating art (creativity), and reflecting and commenting on each other's work (critical thinking).

- In November and December 2013, students in both treatment and comparison schools attended the *Infinitus* performance at their individual schools.

Winter 2013/2014 3rd and 4th Grade Curriculum: *Dream Carver* and *The Day it Snowed Tortillas*

- Based on the award-winning children's book, the bilingual *Dream* Carver musical puppetry performance tells the story of a young boy named Mateo who carves his dreams into wooden toys that come to life. C³ units based on the *Dream* Carver focused on understanding Latin American cultures and Spanish language vocabulary and making connections between home and school

through student interviews about parent cultural backgrounds. Teaching artist lessons focused on puppetmaking and learning the performance elements of place, character, object, problem-solving, and motivation. Activities were designed to highlight similarities and differences between cultures, in addition to teaching vocabulary. Students performed in plays they had developed over the course of the unit, using their puppets as characters.

- To connect the unit to the classroom curriculum, many 3rd grade teachers taught lessons about Latino culture, language, geography, food, and animals. Others connected the Dream Carver unit to lessons on the ecological environments of land, sea, and air, and many engaged students in poetry writing. Some 4th grade classroom teachers had students develop storybooks about their family histories, engaging them in informational text writing. Other teachers had students engage in character studies related to the Dream Carver. Still others taught lessons about food chains and food webs, to address the science topics of primary and secondary consumers, or the water cycle.
- In January 2014, the *Dream Carver* was performed in some of the treatment and comparison schools. In other schools, performances were cancelled due to inclement weather, and could not be rescheduled. In these schools, students instead attended the puppetry performance of *The Day it Snowed Tortillas*, which has similar themes to the *Dream Carver*.

Successes and Challenges of Implementation

In each implementation year, Metis evaluators conducted focus groups with participating teachers and students to learn about the successes and challenges of the project. The paragraphs below describe the findings from the final year of implementation.

Units of Study and Direct Student Work

- In Year 4, treatment school teachers felt that they were able to collaboratively plan quality units that were well aligned to the school curriculum. Most teachers thought that the C3 lessons effectively addressed the academic, artistic, and 21st Century Skills they were designed to address. They reported that teaching artists engaged students in innovative and engaging activities that successfully taught the concepts they had outlined during planning sessions. Teachers also reported implementing supporting lessons to connect the teaching artist's lessons to the classroom curriculum as planned, although in a few cases a lack of time prevented them from teaching all planned supporting lessons.
- Interestingly, a few teachers felt that their units were "over-planned" and too detailed and prescriptive for the teaching artists. Others had learned from the prior year not to make the teaching artist lesson plans too detailed and to allow the artists the flexibility to address the chosen topics in their own way. They felt that the teaching artists did a good job of developing appropriate and engaging lessons on their own, without much instruction from the teachers. Thus, the findings indicate that many of the teachers learned to trust the teaching artists as educators and to cede some control of the lessons to them over time. The exception was with one teaching artist who was described as doing too much of the same thing and not coming up with a sufficient number of different activities to teach the topics chosen by the teachers; the teaching artist's perspective was

that the teachers did not provide enough direction, perhaps indicating that artists preferred different amounts of autonomy and collaboration to guide their work.

- Most lessons were designed to address Common Core Learning Standards (CCLS), according to unit plans and to teacher comments in focus groups. Teachers felt that the C³ units had to be developed to address the school curriculum because of the large amount of material that must be taught during the limited time provided each school year. However, a few teachers described designing units that did not directly address the CCLS, but focused more on arts skills and knowledge, including how to behave at a live performance, which students would otherwise not be exposed to. They felt that the arts skills and knowledge were still important and beneficial for students, despite the fact that they were not part of the school curriculum. A few teachers also expressed their disappointment that the arts are not an explicit part of the CCLS.

- As in prior years, teachers consistently reported that the teaching artists were highly successful at engaging all students, and particularly those who are less academically successful and tend to have a hard time focusing during regular classroom lessons. Teachers were pleased that teaching artists were also able to support the participation of less outgoing students by making them comfortable and finding roles for them in the various music, dance, and theater activities. Several teachers agreed that students were more excited about the teaching artist lessons than about their regular classroom lessons, and they suspected that students were more likely to come to school on "C³" days so as not to miss any of the fun.

- Teachers serving special education students noted that the teaching artists were successful at structuring the lessons and making both planned and impromptu modifications for students with disabilities. For example, one teacher shared that the teaching artists would use physical actions and facial expressions to engage all students and introduce vocabulary and concepts.

- A few teachers commented that the lessons were particularly engaging for English language learners (ELLs) because they generally included physical and non-verbal activities designed to encourage student expression. Teachers noted that the *Dream Carver* lessons were particularly engaging for some ELLs because of their focus on learning Spanish vocabulary and connecting to students' home cultures. A few teachers thought that ELL students were empowered by the opportunity to help their peers learn about their culture and background.

- As in prior years, teachers supported teaching artists by assisting with lesson preparations, taking photos or videotaping lessons, and providing feedback on lesson sequencing and modification plans. During lessons, teacher roles included modeling participation and redirecting students to keep them on task. Some teachers commented that their own modeling of participation in the lesson activities often made the students more comfortable and encouraged them to participate. Some teachers were less comfortable modeling participation in lessons, and a few others reported that they could not participate because they needed to use the C³ lesson periods to prepare for other lessons.

- Many teachers reported learning new and engaging teaching techniques from the teaching artists. While they were not confident they could use all strategies—particularly those involving a lot of movement—in their own classrooms, they planned to incorporate some of the strategies into their own lessons to make them more engaging, particularly for struggling students and ELLs and to address the needs of students with more kinesthetic learning styles.

- While teachers described themselves as engaged in the C³ program, they would have liked to have had more time to devote to it. They felt that they devoted a relatively large amount of time to attending the day-long P2P meetings and to implementing and developing lessons, even doing lesson planning on their own personal time. However, they felt pulled between the program and their regular classroom teaching duties and they would have liked to have had more support from administrators in the form of more dedicated time for the program. A few teachers felt that the lessons would have been even more beneficial for students if they were longer or more frequent.
- Teachers felt that the students benefitted greatly from the lessons in multiple ways. Not only did the lessons make school more enjoyable and engage students who are not always successful in the regular classroom, the lessons also taught students both artistic and academic concepts, as outlined above. They helped students learn new concepts in new and innovative ways and addressed a broader variety of learning styles than traditional classroom lessons. Teachers were pleased with the focus of the units on the 4Cs, and they felt that the program activities brought out students' creativity. They also emphasized how much opportunity for collaboration and communication was provided by the units. As one teacher noted, the program "gave students a chance to actually apply what they were learning and to work together collaboratively." A few teachers felt that the lessons also helped students develop critical thinking skills by engaging them in reflections on the arts performances and on their own work. However, a few teachers felt that the lessons could have been more challenging for students and pushed them to learn even more.
- Many teachers were frustrated by the cancellations and rescheduling of performances caused by inclement weather. Several also noted that although they enjoyed having performers come to their schools, they would have liked students to have had the opportunity to attend a performance at a professional venue, particularly given that some students do not have such opportunities in their home lives.
- In student focus groups, students reported looking forward to the C³ lessons and making sure not to miss them. They enjoyed the teaching artists' personalities and had a lot of fun during the various activities. Their favorite activities included the movement-laden warm-ups, making their own puppets, and acting like simple machines or like characters in the performances. They also reported that they enjoyed working together with their peers during the lessons. A few students reported that they liked it when their teachers participated in the activities with them. Students not only found the lessons fun and engaging, they also learned many things related to the arts and to the academic curriculum. Students reported learning about the water cycle, simple machines, Spanish vocabulary and Latino culture, animals, ecosystems, and how to make puppets and put on a performance. They also learned how to behave during a live performance, and they enjoyed watching the performances, interacting with the performers, and asking them questions about their art. A few said their participation made them want to be a performer when they grow up, and they expressed interest in ongoing opportunities to act and perform.

Training & Unit Planning

- Teachers were pleased that the P2P meetings provided ample time to develop lesson plans. Third-grade teachers were glad that the meetings were revised to include more planning time and fewer

arts integration training activities, as they should focus first and foremost on supporting the collaborative unit development of the teachers, teaching artists, and, in some cases, specialists. A few teachers felt that the P2P meetings were too long and that the time could have been used more efficiently to prevent them from needing to miss an entire day of classroom teaching.

- Some teachers noted that the P2P training sessions were well-organized and moved forward at a good pace. Some enjoyed the arts integration training activities, whereas others did not enjoy them or find them useful. As in prior years, a few of the teachers suggested that the arts integration activities would have been more helpful if they were more applied and provided details on specific teaching techniques, tools, and resources that teachers could use in their classroom to continue arts-integrated learning after the project ends.
- Many teachers enjoyed having opportunities to share their experiences with teachers from other schools and districts. Teachers from both WFSD and RCSD school districts noted that they have very few opportunities to meet with other educators, thus the C^3 trainings provided a welcome opportunity for collegial conversations. Teachers were particularly appreciative of opportunities to meet with and learn from teachers from another school district, as such opportunities are rare and provide interesting information.
- Most classroom teachers reported that they appreciated opportunities to collaborate with teaching artists because the artists have a different set of skills and brought new perspectives and ideas to the unit planning sessions. Teaching artists reported that building a strong relationship with the classroom teachers was essential for successful implementation of the units of study. They also found it helpful to use the language of classroom teachers during planning sessions, rather than introducing new vocabulary, in order to make teachers comfortable. This practice additionally ensured that the language used during lessons was familiar to students.
- Teachers also appreciated the time to collaborate with other teachers and specialists from their own schools during C^3 trainings, noting that they do not often have opportunities to collaborate with school specialists. However, in some schools, teachers expressed frustration that arts and music specialists were not able to participate in P2P unit planning sessions due to a scarcity of substitute teachers. In cases where specialists were not able to be involved in the unit planning or provide supporting lessons due to schedule conflicts, teachers reported that the units would be strengthened if specialists had been able to contribute to them. Even when specialists could not be involved in the units of study, teaching artists often met with them informally to discuss lessons and, on occasion, to borrow supplies.

Teacher, Specialist, and Artist Outcomes

Research Question 1: To what extent does C[3] build the capacity of teachers and teaching artists in the target schools to incorporate collaborative practice in their instruction and to encourage creative expression in their students?

Objective 1.1	By April of each project implementation year, all (100%) participating treatment teachers, teaching artists, and school arts and library specialists (teachers) will develop at least two unit plans related to the district curriculum maps for collaborative units of study.

During project Year 4, participating treatment school staff and teaching artists developed units of study based on Charlotte Blake Alston's storytelling, the *Infinitus* musical performance, and the *Dream Carver* puppetry performances. Third-grade classroom teachers in the treatment group collaboratively planned units with specialists and teaching artists based on Charlotte Blake Alston's storytelling and the *Dream Carver;* and 4th grade classroom teachers collaboratively planned units of study with specialists and artists based on the *Infinitus* musical performance and the *Dream Carver*. Project staff provided Metis with documentation of the completed unit plans, indicating that Objective 1.1 was achieved. Each unit plan is structured with a guiding question and outlines the unit learning objectives, the sequence of lessons, and anticipated student learning outcomes.

Objective 1.2	By April of each project implementation year, at least 75% of participating treatment teachers, specialists, and teaching artists will report increased use of and skill in cooperative instruction and common vocabulary.
Objective 1.3	By April of each project implementation year, at least 75% of participating treatment teachers, specialists, and teaching artists will report improved attitudes about collaborative instruction.

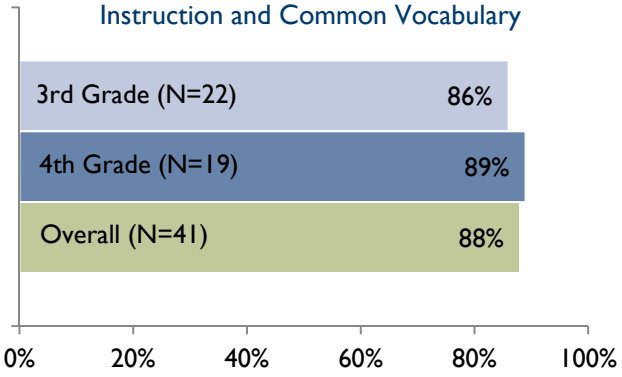
To measure Objectives 1.2 and 1.3, surveys were administered to treatment and comparison group teachers, arts and library specialists, and teaching artists.[4] Composites of relevant survey items were used to measure changes in staff use of and attitudes toward interdisciplinary collaborations. The **cooperative instruction** composite provides a measure of the frequency with which classroom teachers and arts educators engage in cooperative instructional practices, such as discussing shared curricular goals or providing/receiving feedback on instructional methods. Composite scores were developed using the following scale: 1=*never*, 2=*less than once a month*, 3=*once or twice a month*, 4=*once or twice a week*, 5=*three to four times a week*, and 6=*daily*. The **collaborative practice** composite provides a measure of participant's attitudes regarding their interdisciplinary collaboration experiences, such as confidence in their ability to engage in collaborative instructional practices and the degree to which they felt enjoyment, respect, and trust during the process. The collaborative practice composite scores were developed using the following scale: 1=*strongly disagree*, 2=*disagree*, 3=*agree*, and 4=*strongly agree*.

[4] Pre/post survey data for these objectives were available for 41 classroom teachers (summer 2012 or summer 2013/spring 2014), five specialists (summer 2011/spring 2014), and three teaching artists (summer 2011 or summer 2012/spring 2014).

Treatment Staff Survey Results: Cooperative Instruction Composite Measures

Objective 1.2. Pre/post analyses of teacher survey data showed that 86% of 3rd grade classroom teachers and 89% of 4th grade classroom teachers reported increases in their use of cooperative instructional practices. Overall, the target of 75% was achieved for this group (see Figure 1). On average, participating teachers reported that they engaged in cooperative instructional practices with arts educators about *once a month* in Year 4 (as evidenced by their spring 2014 cooperative instruction mean composite score of 2.4), compared to *less than once a month* at baseline (mean composite score of 1.5).

Figure 1. Percent of Teachers Reporting Increased Use of and Skill in Cooperative Instruction and Common Vocabulary



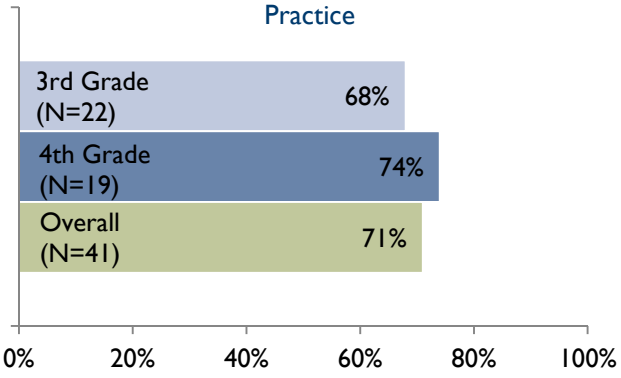
In addition, all three C³ teaching artists with matched survey data reported that they more often engaged in cooperative instructional practices with teachers during Year 4 (target met). On average, the teaching artists reported collaborating with teachers *once or twice a month* in Year 4 (spring 2014 mean composite score of 2.9), up from approximately *once a month* at baseline (2011/2012 composite score of 2.2).

Among the five participating C³ specialists with matched survey data, two reported increased use of cooperative instructional practices (target not met for specialists). The mean composite scores for this group at baseline (2.8) and in spring 2014 (2.5) indicate that arts and library specialists engaged in cooperative instructional practices with teachers in the treatment schools about *once a month*.

Treatment Staff Survey Results: Collaborative Practice Composite Measures

Objective 1.3. Pre/post analyses of teacher survey data (Figure 2) showed that 68% of 3rd grade classroom teachers and 74% of 4th grade classroom teachers made gains during Year 4 on composite measures of teacher attitudes regarding their use of and skills in interdisciplinary collaborative instruction (target not met). On average, teachers demonstrated improved attitudes toward collaborative practice over time, as evidenced by a mean composite score of 2.8 at baseline and 3.4 in spring 2014.

Figure 2. Percent of Teachers Reporting Improved Attitudes about Collaborative Practice



Among the C³ specialists and teaching artists with matched survey data, only one specialist and one teaching artist reported improved attitudes about collaborative instruction during Year 4 (target not met for either group). Both groups demonstrated a mean collaborative practice composite score of 3.4

at baseline. The teaching artists remained constant in their attitudes toward collaborative practices (as evidenced by a spring 2014 mean composite score of 3.4). The specialists were generally positive in their attitudes regarding their collaborative practice experiences, but their mean composite score declined from 3.4 at baseline to 2.9 in spring 2014.

Focus Group Findings

In end of year focus groups, teachers revealed additional details about how the C³ project impacted their skills and attitudes. Responses generally suggest that the project has benefitted teachers' instructional practices in addition to their collaborative experiences. Several teachers reported that the C³ project has helped them to "think outside of the box" in terms of their instructional approaches and provided them with teaching techniques that they will use going forward. Many described how C³ has taught them new strategies to incorporate art, music and library resources into their classroom lessons to engage students and address different learning styles and personalities. Teachers working with students with disabilities and ELL students emphasized how engaging the lessons were for these students, and shared that they have begun using the artists' teaching techniques to engage their students in their own classroom lessons, and will continue to do so after the project ends.

Teacher and Specialist 21st Century Skills Rubric Results

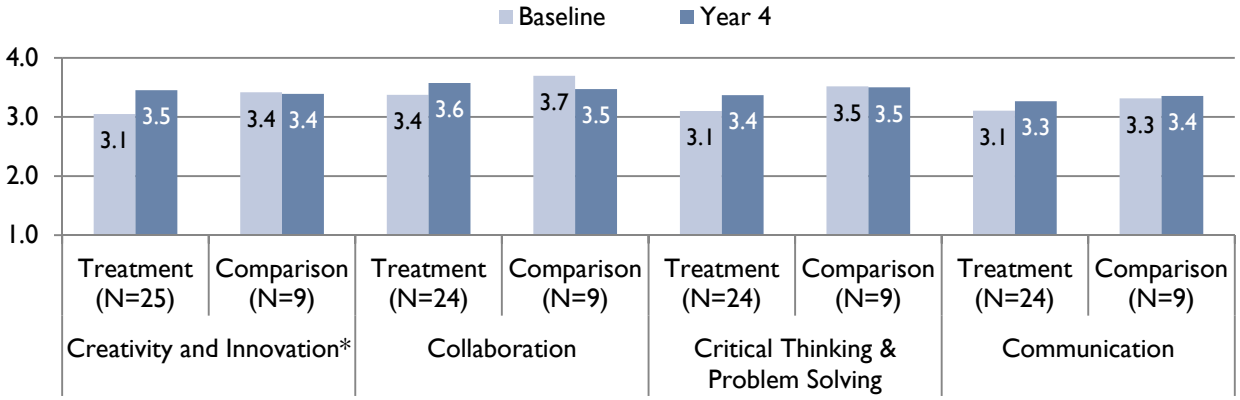
Participating teachers and specialists in both the treatment and comparison groups completed self-assessment rubrics measuring their own 21st Century Skills, assigning themselves a rating of 1 (lowest) to 4 (highest) on their 4Cs skills: creativity and innovation, collaboration, critical thinking and problem solving, and communication. Teachers and specialists serving grade 3 completed assessments in spring 2012 (baseline), spring 2013 (Year 3), and spring 2014 (Year 4); teachers and specialists serving grade 4 completed rubrics in spring 2013 (baseline) and spring 2014 (Year 4). Mean scores for each of the 4 Cs are presented in Figure 3 for grade 3 teachers and specialists and Figure 4 for grade 4 teachers and specialists.

Results of statistical examination[5] of the differences between the 4C means of 3rd grade treatment and comparison group teachers and specialists indicate that treatment group made significantly greater gains than the comparison group in the *creativity and innovation* skill area (effect size[6]=0.96; $p<0.05$). Among the 3rd grade staff, treatment group mean scores for *creativity and innovation* increased by 0.40 from baseline to spring 2014, while the comparison group mean scores remained the same during this period.

[5] Repeated measures ANOVAs were conducted to compare change over time in mean 21st Century Skills rubric ratings for the treatment and comparison groups.

[6] Effect size (Cohen's D) is a measure of the magnitude of the gains or losses. Effect sizes of about .2 are considered small, .5 SDs medium, and.8 SDs or greater are considered large.

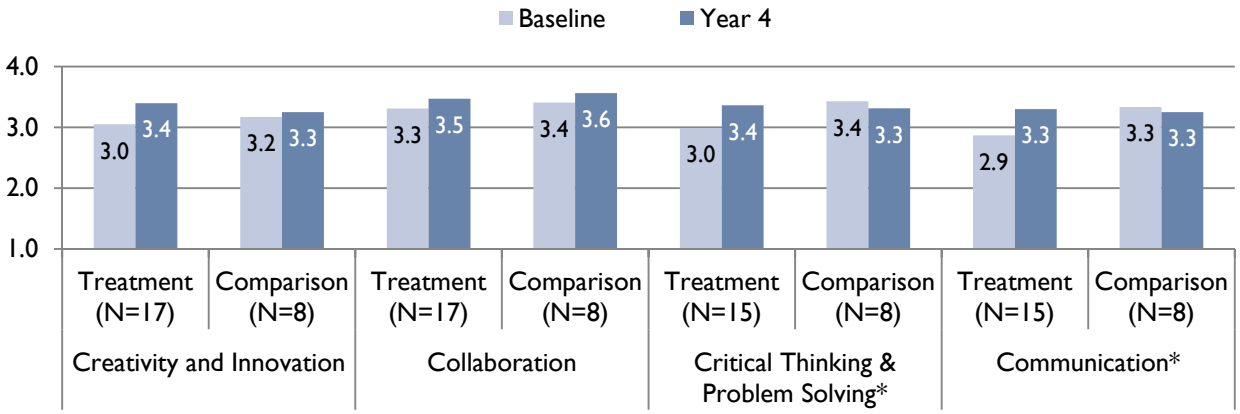
Figure 3: 3rd Grade Teachers & Specialists
21st Century Skills Rubric Mean Scores, baseline to spring 2014



*Denotes statistically significant difference between the gains in the treatment and comparison groups at the p<0.05 level, based on a repeated measures ANOVA.

Results of statistical examination[7] of the differences between the 4C means of 4th grade treatment and comparison group teachers and specialists indicate that treatment group in the areas of *critical thinking and problem solving* and the *communication*. In the *critical thinking and problem solving skill area*, 4th grade treatment group mean scores increased by 0.37 from spring 2013 to spring 2014, while the comparison group mean scores decreased by -0.12 during this period (effect size[8]=1.00; $p<0.05$). In *communication*, 4th grade treatment group mean scores increased by 0.43 from spring 2013 to spring 2014, while the comparison group mean scores remained the same during this period (effect size=0.95; $p<0.05$).

Figure 4: 4th Grade Teachers & Specialists
21st Century Skills Rubric Mean Scores, baseline to spring 2014



**Denotes statistically significant difference between the gains in the treatment and comparison groups at the p<0.05 level, based on a repeated measures ANOVA.

[7] Repeated measures ANOVAs were conducted to compare change over time in mean 21st Century Skills rubric ratings for the treatment and comparison groups.
[8] Effect size (Cohen's D) is a measure of the magnitude of the gains or losses. Effect sizes of about .2 are considered small, .5 SDs medium, and .8 SDs or greater are considered large.

Student Outcomes

Research Question 2: To what extent does C[3] increase student achievement in 21st Century Skills and the core academic areas of ELA and math?

Objective 2.1	In each implementation year for which standardized assessment data is available, treatment students' gains in reading/language arts and math will significantly exceed those of comparison students as measured by the NYS ELA and mathematics exams (statistical analyses will show that there is at least a 95% likelihood that differences between groups are not due to chance).

Several analyses were conducted to examine whether differences between the achievement of students in the treatment group and those in the comparison group were statistically significant. The sections below describe the analyses and results of data from the NYS ELA, NYS Math, and NYSESLAT tests.

Spring 2014 Analyses

NYS ELA, Math, and Science Tests

Differences in the numbers of students scoring at or above the Proficient Level (i.e., Levels 3 and 4) on the NYS ELA, math, and science assessments were analyzed for all participating students in the treatment and comparison schools during the 2013-2014 school year. As shown in Table 10, approximately one-fourth of treatment and comparison group students demonstrated proficiency in ELA in spring 2014, approximately one-third demonstrated proficiency in math, and the majority in both groups (84% and 89%, respectively) demonstrated proficiency in science in spring 2014. Though the differences between the two groups were not statistically significant in math or science, a significantly higher proportion of 3rd grade comparison group students (25%) demonstrated proficiency in ELA than 3rd grade treatment group students (18%).

Table 10: Percent of Students Scoring at or Above the Proficient Level on the Spring 2014 NYS ELA, Math, and Science Tests (Treatment vs. Comparison)

Cohort	Group	NYS ELA			NYS Math			NYS Science		
		N Tested	% Prof.	% Not Prof.	N Tested	% Prof.	% Not Prof.	N Tested	% Prof.	% Not Prof.
3rd Grade	Treatment	427	18%	82%	416	30%	70%			
	Comparison	300	25%*	75%	298	34%	66%			
4th Grade	Treatment	362	23%	77%	356	32%	68%	361	84%	16%
	Comparison	326	26%	74%	326	34%	66%	330	89%	11%

*Denotes a statistically significant difference at the p<.05 level, based on a chi-square test of independent samples.

New York State English as a Second Language Assessment (NYSESLAT)

Student achievement on the NYSESLAT was analyzed for all English Language Learners (ELLs) in 3rd and 4th grade in the treatment and comparison schools during the 2013-2014 school year. As shown in Table

11 below, three (8%) 3rd grade ELLs and 14 (31%) 4th grade ELLs in the treatment schools tested at the Proficient Level on the spring 2014 NYSESLAT, indicating that they had achieved English proficiency and would no longer be classified as ELLs in subsequent school years. Though similar proportions of treatment and comparison ELLs demonstrated proficiency on the NYSESLAT at 4th grade, a significantly higher proportion of 3rd grade comparison group ELL students (29%) demonstrated proficiency on the NYSESLAT than 3rd grade treatment group students (8%).

Table 11: Percent of Students Scoring at the Proficient Level on the Spring 2014 NYSESLAT (Treatment vs. Comparison)

Cohort	Group	Spring 2014 NYSESLAT		
		N Tested	% Proficient	% Not Proficient
3rd Grade	Treatment	39	8%	92%
	Comparison	24	29%*	71%
4th Grade	Treatment	45	31%	69%
	Comparison	28	39%	61%

*Denotes a statistically significant difference at the p<.05 level, based on a chi-square test of independent samples.

Longitudinal (Spring 2013 to Spring 2014) Analyses

Mean Score Analyses

Repeated measures analyses of variance (ANOVAs) were conducted on 4th grade students' mean scores on the spring 2014 NYS ELA Test, NYS Mathematics Test, and the NYSESLAT in order to determine whether treatment students' change in achievement from spring 2013 (as 3rd graders) to spring 2014 (as 4th graders) was significantly different from comparison students' change over this time period. In addition, effect sizes were calculated in order to provide a measure of the magnitude of the change from pretest to posttest. The results are shown in Table 12, below. Note that 3rd grade students are not included in these analyses because they did not take state assessments as 2nd graders in spring 2013.

Table 12: Results of Repeated Measure Analyses of Variance: 2013 and 2014 NYS Achievement Test Mean Scores

Assessment	Group	N Tested (Matched)	Mean Score		Mean Difference (Spring 2014-Spring 2013)	Interaction Effect (ANOVA)	
			Spring 2013	Spring 2014		*p*-value[9]	Effect Size[10]
NYS ELA Test	Treatment	345	296.01	292.76	-3.25*	.98	.0000
	Comparison	302	299.77	296.57	-3.21*		

[9] The p-value is the probability that the observed results occurred by chance or coincidence, and not due to a specific intervention. A *p*-value of less than .05 denotes statistical significance (i.e., there is less than a 5% chance the results occurred due to chance or coincidence).

[10] Effect size is a measure of the magnitude of the gains or losses. Effect sizes of about .2 are considered small, .5 medium, and .8 or greater are considered large.

Assessment	Group	N Tested (Matched)	Mean Score		Mean Difference (Spring 2014-Spring 2013)	Interaction Effect (ANOVA)	
			Spring 2013	Spring 2014		*p*-value[9]	Effect Size[10]
NYS Math Test	Treatment	340	294.25	296.24	1.99	.44	.0000
	Comparison	300	295.72	298.96	3.24*		
NYSESLAT	Treatment	43	824.74	843.21	18.47*	.31	0.016
	Comparison	24	834.04	849.46	15.42*		

*Denotes statistical significance at the p<.05 level of probability, based on a paired samples t-test.

- On the NYS ELA Test, both treatment and comparison group students demonstrated significant declines in their mean ELA scores from spring 2013 to spring 2014 (3.25 and 3.21, respectively). However, the two groups declined to a similar degree in ELA, meaning that there was no significant difference in treatment and comparison students' change in ELA achievement over time.
- In math, both groups demonstrated slight increases in their mean scores from spring 2013 to spring 2014, and the mean gain made by comparison students was found to be statistically significant. However, as in ELA, there was no significant difference in treatment and comparison students' change in math achievement during this time period.
- ELL students in both groups demonstrated significant gains in their mean NYSESLAT scores from spring 2013 to spring 2014; however, there was no significant difference in treatment and comparison students' change in NYSESLAT scores during this time period.

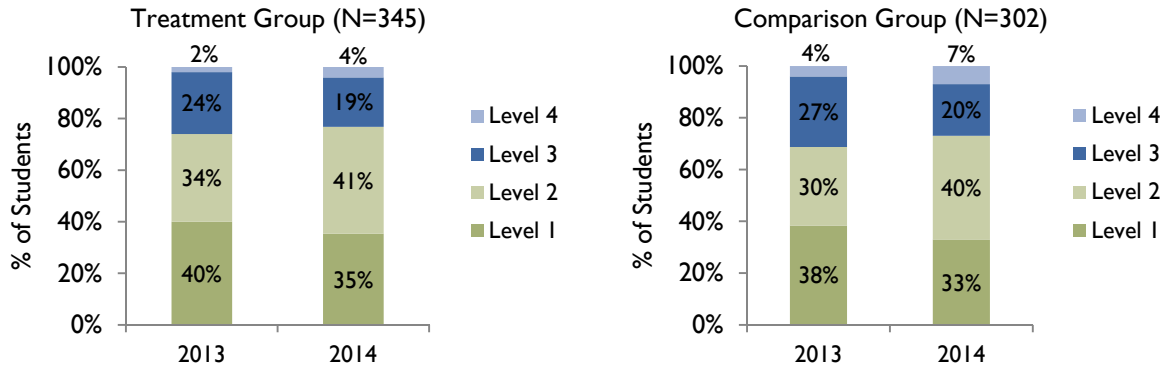
Performance Level Movement Analyses

Performance level movement analyses were conducted to determine whether treatment and comparison group students maintained, increased or decreased their performance levels on the NYS ELA Test, NYS Mathematics Test, and the NYSESLAT from pretest (spring 2013) to posttest (spring 2014). Tests of significance were applied to determine whether the change in students' performance from pretest to posttest was statistically significant, and effect sizes were calculated in order to provide a measure of the magnitude of the change from pretest to posttest.

English Language Arts. Results of the ELA performance level movement analyses for participating students in the treatment and comparison schools are shown in Figure 5 below. As shown in the figure:

- Similar proportions of treatment students performed at or above Level 3 in ELA in spring 2013 (26%) and spring 2014 (23%). As shown in the corresponding data table, the majority (63%) maintained their performance level from spring 2013 to spring 2014, and 20% increased their performance by one or two levels. The overall change was not determined to be statistically significant.
- Likewise, similar proportions of comparison students performed at or above Level 3 in ELA in spring 2013 (31%) and in spring 2014 (27%). As with treatment students, the majority (59%) of comparison students maintained their performance level from spring 2013 to spring 2014, and 23% of students increased their performance by one or two levels. The overall change was not determined to be statistically significant.

Figure 5: 2013 and 2014 NYS ELA Test Performance Level Distributions (Treatment vs. Comparison)



Group	Matched N	Spring 2013 – Spring 2014					p-value[11]	Effect Size[12]
		Down 2 Levels	Down 1 Level	No change	Up 1 Level	Up 2 Levels		
Treatment	345	0.3%	16.5%	63.2%	18.3%	1.7%	.18	.07
Comparison	302	1.7%	16.9%	58.6%	21.2%	1.7%	.30	.06

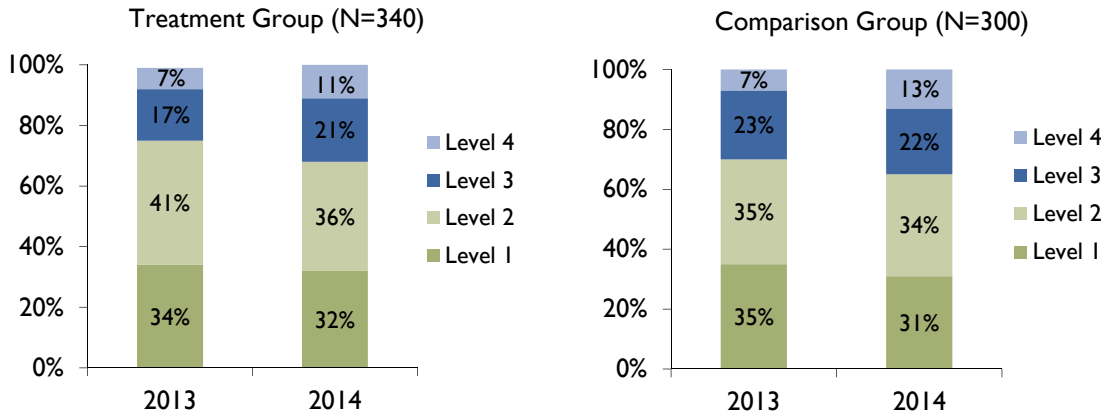
Mathematics. Results of math performance level movement analyses for students in the treatment and comparison schools are shown in Figure 6 below. As shown in the figure:

- The percentage of treatment students performing at Levels 3 and 4 in mathematics increased from 24% in spring 2013 to 32% in spring 2014. The data table shows that 25% increased their performance by one or two levels. This was found to be statistically significant (*p*-value = .00), with an effect size of .20.
- The percentage of comparison students performing at Levels 3 and 4 in mathematics increased from 30% in spring 2013 to 35% in spring 2014. The data table shows that 23% of comparisons students increased their performance by one or two levels. This was also found to be statistically significant (*p*-value = .00), with an effect size of .23.

[11] The p-value is the probability that the observed results occurred by chance or coincidence, and not due to a specific intervention. A p-value of less than .05 denotes statistical significance (i.e., there is less than a 5% chance the results occurred due to chance or coincidence).

[12] Effect size is a measure of the magnitude of the gains or losses. Effect sizes of about .2 are considered small, .5 medium, and .8 or greater are considered large.

Figure 6: 2013 and 2014 NYS Math Test Performance Level Distributions (Treatment vs. Comparison)



Group	Matched N	Spring 2013 – Spring 2014					*p*-value[13]	Effect Size[14]
		Down 2 Levels	Down 1 Level	No change	Up 1 Level	Up 2 Levels		
Treatment	340	0.3%	13.2%	61.5%	22.6%	2.4%	.00*	.20
Comparison	300	0%	10.3%	66.7%	21.7%	1.3%	.00*	.23

*Denotes a statistically significant **positive** change at p <.05, based on a paired samples Wilcoxon signed-ranks test.

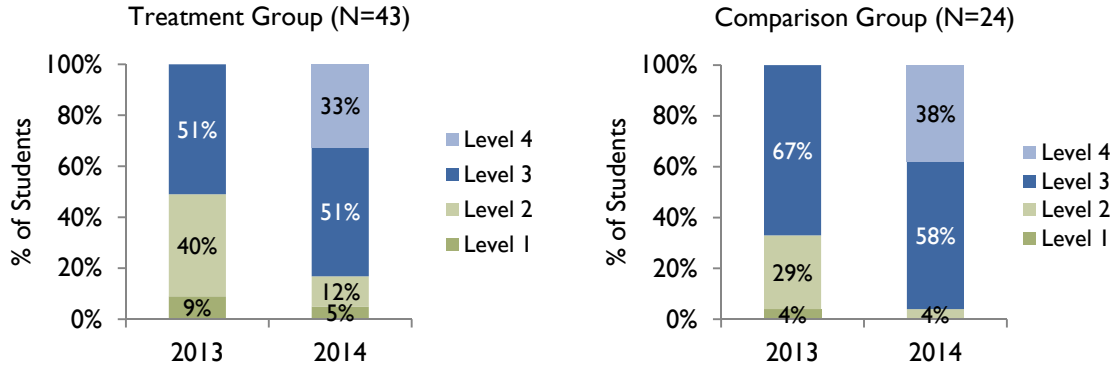
NYSESLAT. Information on student performance on the NYSESLAT was analyzed for ELLs in the treatment and comparison schools who took the NYSESLAT in both 2013 and 2014. Results of the NYSESLAT performance level movement analyses are presented in Figure 7 below. As shown in the figure:

- One-third of treatment ELLs with matched data tested at the Proficient Level on the spring 2014 NYSESLAT. Overall, the majority (68%) increased their performance by one or two levels from spring 2013 to spring 2014, a proportion that was found to be statistically significant (*p*-value = .00) with a large effect size (.76).
- Among the comparison group, 38% of ELLs with matched data demonstrated English proficiency in spring 2014. The majority (67%) increased their performance by one or two levels from spring 2013 to spring 2014, a proportion that was also found to be statistically significant (*p*-value = .00) with a large effect size (.80).

[13] The p-value is the probability that the observed results occurred by chance or coincidence, and not due to a specific intervention. A p-value of less than .05 denotes statistical significance (i.e., there is less than a 5% chance the results occurred due to chance or coincidence).

[14] Effect size is a measure of the magnitude of the gains or losses. Effect sizes of about .2 are considered small, .5 medium, and .8 or greater are considered large.

Figure 7: 2013 and 2014 NYSESLAT Performance Level Distributions (Treatment vs. Comparison)



Group	Matched N	Spring 2013 – Spring 2014					*p*-value[15]	Effect Size[16]
		Down 2 Levels	Down 1 Level	No change	Up 1 Level	Up 2 Levels		
Treatment	43	0%	2.3%	30.2%	62.8%	4.7%	.00*	.76
Comparison	24	0%	0%	33.3%	62.5%	4.2%	.00*	.80

*Denotes a statistically significant **positive** change at p <.05, based on a paired samples Wilcoxon signed-ranks test.

Summary

Though 3rd and 4th grade students in the treatment and comparison groups performed similarly in math and science in spring 2014, significantly higher proportions of 3rd grade comparison group students demonstrated proficiency on English literacy assessments (i.e., the NYS ELA Test and the NYSESLAT) than 3rd grade treatment group students. For 4th grade students in the treatment and comparison groups with matched (spring 2013 and spring 2014) data, no significant changes were detected in their mean scores over time on the NYS ELA and Math Tests or the NYSESLAT. However, both groups had significant proportions of students moving up one or more performance levels on the NYS Math Test and the NYSESLAT.

[15] The p-value is the probability that the observed results occurred by chance or coincidence, and not due to a specific intervention. A p-value of less than .05 denotes statistical significance (i.e., there is less than a 5% chance the results occurred due to chance or coincidence).

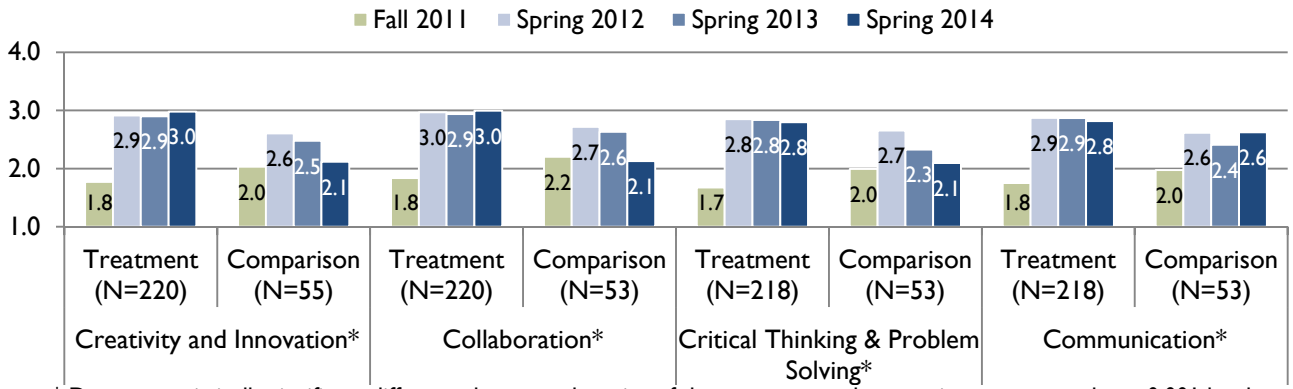
[16] Effect size is a measure of the magnitude of the gains or losses. Effect sizes of about .2 are considered small, .5 medium, and .8 or greater are considered large.

Objective 2.2	In each implementation year of the project, treatment students gains in 21st Century Skills and National Standards for the Arts K4 skills (creativity and communication) will significantly exceed those of control students, as measured by a locally developed rubric designed to assess the 21st Century Skills of creativity and innovation, collaboration, critical thinking and problem solving, and communication (statistical analyses will show that there is at least a 95% likelihood that differences between groups are not due to chance.)

As noted above, student 21st Century Skills are measured at the beginning and end of each project year using locally developed rubrics. The rubrics were completed by participating treatment school teachers in the beginning and end of Year 4 to assess students' 21st Century Skills in the areas of creativity and innovation, collaboration, critical thinking and problem solving, and communication (the "4 Cs").

Rubric data were analyzed using repeated measures analyses of variance to assess change over time in rubric scores and to ascertain whether treatment students' gains in the 4Cs significantly exceeded those of comparison students. Analyses of Cohort 1 student data included data from the fall 2011, spring 2012, fall 2012, spring 2013, fall 2013, and spring 2014 4Cs rubric administrations to assess change during the first, second, and third year of project exposure. The results of these analyses indicate that, from fall 2011 to spring 2014, Cohort 1 treatment students made significantly greater gains in each of the 4Cs—*Creativity and Innovation, Collaboration, Critical Thinking and Problem Solving, and Communication*—than comparison group students (see Figure 8). Although comparison group students initially received ratings similar to or higher than treatment students in all four skill areas each fall, by the spring administration, treatment students' mean scores were higher than comparison students' mean scores for all four skill areas. Repeated measures analyses of variance revealed statistically significant between-group differences in growth over time on all four skills (effect sizes[17] range from 0.57 to 0.66; $p<0.001$).

Figure 8: Cohort 1 Students
21st Century Skills Rubric Mean Scores, baseline 2011 to spring 2014



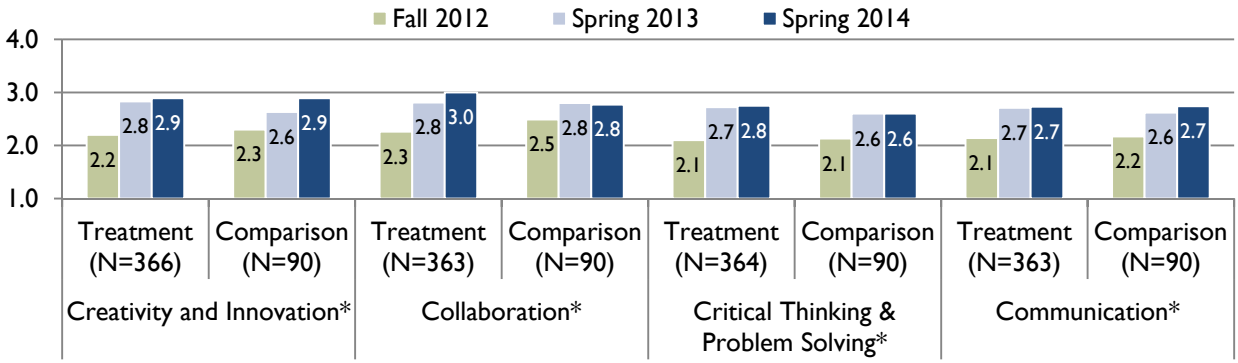
* Denotes statistically significant difference between the gains of the treatment and comparison groups at the $p<0.001$ level.

The fall 2012, spring 2013, fall 2013, and spring 2014 4Cs rubric scores of Cohort 2 students were analyzed to assess change during the first and second years of Cohort 2 participation in the project. As was the case for Cohort 1, Cohort 2 comparison teachers also rated their students higher than Cohort

[17] Effect size (Cohen's D) is a measure of the magnitude of the gains or losses. Effect sizes of about .2 are considered small, .5 SDs medium, and.8 SDs or greater are considered large.

2 treatment teachers each fall. Repeated measures analyses of variance revealed statistically significant between-group differences in growth over time on all four skill areas (effect sizes range from 0.55 to 0.69; $p<0.001$). Results for students in Cohort 2 are presented in Figure 9.

Figure 9: Cohort 2 Students
21st Century Skills Rubric Mean Scores, baseline 2012 to spring 2014



* Denotes statistically significant difference between the gains in the treatment and comparison groups at the $p<0.05$ level.

In focus groups, classroom teachers and specialists also were asked to describe their perceptions of the project's impacts on students. A few teachers commented that the C³ units helped students to build their 21st Century Skills, particularly the skills of collaboration and creativity. They described how students learned performance skills and developed their public speaking skills. Several teachers also reported that the project had helped students understand the concepts the units were designed to teach, including the water cycle, Latino culture and Spanish vocabulary, character development, perspective and point of view, puppetmaking, performing arts vocabulary, and the craft and process behind creative performances, in addition to the storylines of the focal performances. One teacher reported a direct connection between some of the vocabulary used during the lessons and the state standardized test in English Language Arts. However, some teachers doubted that the project's specific impacts on academic skills could be measured, and a few reported that the C³ lessons had relatively little impact on student academics compared to the combined impact of all classroom lessons.

Almost without exception, teachers agreed that they valued the arts exposure provided by C³ both in and out of the classroom, through the teaching artist lessons and performances. Many teachers noted that their students would have had few opportunities to experience the arts if not for this program.

School-Level Outcomes

Research Question 3: To what extent does C^3 contribute to reforms in school planning that better integrate essential 21st Century Skills across the school community through relevant engagement in the arts?

Objective 3.1	In each implementation year of the project, all (100%) treatment schools will demonstrate greater increases over baseline in allocation of resources for arts integration than comparison schools, as measured by annual reviews of School Improvement Plans (SIPs) and school budgets.
Objective 3.2	In each implementation year of the project, all (100%) treatment schools will increase inclusion of 21st Century Skills across the SIP, as measured by documentation of inclusion of artistic activities into academic goals and indicators that directly link to measurable achievement.

Objectives 3.1 and 3.2 were measured through an analysis of School Improvement Plans (SIPs) for the treatment schools. Information from the 2010-2011 SIPs was used as a baseline measure of allocation of resources for arts integration (Objective 3.1) and inclusion of 21st Century Skills in academic goals (Objective 3.2) prior to implementation of the C3 project. According to the SIPs for school year 2010-2011, none of the treatment schools allocated resources for arts integration or included 21st Century Skills in the school curricula. Reviews of 2013-2014 SIPs revealed that resources were not allocated for arts integration in any of the treatment schools (Objective 3.1 not met). While one treatment school did indicate in the 2013-14 SIP that 21st Century Skills were to be incorporated into all instruction at the school as a strategy for promoting improved student skills in literacy, mathematics, science, and social studies, Objective 3.2 not met overall.

C³ Project Dissemination

Research Question 4: To what extent does C³ share tools and lessons learned with NYS and the larger education community? How can the C³ model be expanded and sustained?

Objective 4.1	By the end of Year 4, in June 2014, one web-based "toolkit" comprised of model lessons, assessment tools and protocols, images, and video clips will be publicly accessible for download via the Eastern Suffolk BOCES website.
Objective 4.2	In Years 3 and 4, the project and evaluation team will submit proposals to present at a minimum of three local, regional and/or national conferences (e.g., ASCD, AERA, ARRA, AEP, NYSSMA, NAEA) to share the successes and challenges of this project.

In Year 3, project staff began working with a professional web developer to create the C³ project website, which officially launched during the 2013-2014 project year (www.creativec3.org) (Objective 4.1 met). The website serves as a tool for sharing project documents with the wider education community, including unit and lesson plans, materials, photos, and videos of C³ instruction, along with information on C³ professional development activities that support implementation of the project. Information about C³ staff, cultural partners, school partners, and teaching artists is also provided, along with arts in education research summaries of lessons learned about the implementation and impacts of the C³ project, and other resources.

During Year 4 (2013-2014), the C³ Project Director and Metis evaluators continued working to disseminate information about the C³ project to the broader education community by submitting conference proposals (as per Objective 4.2). They presented the C³ evaluation study design and results at the 2013 American Evaluation Association conference, held in October 2013 in Washington, D.C. They also developed and presented a paper describing the C³ evaluation and preliminary results at the 2014 American Educational Research Association Conference, held in April 2014 in Philadelphia, PA. In addition, the Project Director and Curriculum Coordinator presented information about the C³ curriculum and collaborative planning and training approach at the 2014 Young Audiences conference in April 2014 in San Diego. The Project Director, Curriculum Coordinator, and a teaching artist also presented at the August 2014 New York State Education Department's Uncommon Approaches to the Common Core Conference (Objective 4.2 met).

C³ project staff engaged in a number of other dissemination activities designed to increase awareness of the C³ model in the surrounding community. For example, the Project Director and one of the teaching artists provided workshops in September 2014 for teachers and arts coordinators in Eastern Suffolk County school districts on how to integrate the arts into Common Core-aligned instruction (a total of 55 individuals participated in these workshops). Additional trainings and presentations were held between October and December 2014 for arts educators in surrounding school districts, including a workshop for 15 teachers and two cultural partners in the South Huntington Schools; a two-day training for 5th grade teachers (N=14) in the North Babylon School District, as well as a six-day residency and performance for eight 5th grade classes in two North Babylon school buildings (for a total of 235

students). Furthermore, the project team made presentations on the C³ project at PTA meetings in Half Hollow Hills Central School District, Longwood Central School District, Northport-East Northport Union Free School District (42 participants attended in total). Finally, a newsletter was developed to disseminate lessons learned from the program to a wide range of stakeholders, and was distributed to the NYS BOCES arts-in-education network and the Arts Education Partnership national forum, at a meeting of the Long Island museum association, at local PTAs and to parent coordinators in Eastern Suffolk County schools, to superintendents in Eastern Suffolk County BOCES school districts, and to the Suffolk County middle-level principals' association. The newsletter is also available on the C3 project website.

Conclusions

By Year 4 of the AEMDD grant, the final year of C³ project implementation, C³ project staff had successfully designed, implemented, and refined the C³ model in four high-needs schools in the two participating school districts. Based on feedback obtained from staff in the treatment schools, minor modifications were made to the project structure and activities throughout the implementation period in order to better meet the needs of all stakeholders. These modifications included the alignment of units of study with school curricula and Common Core Learning Standards (CCLS), conducting a Teaching Artist Institute and bringing two new teaching artists on board to serve the schools, incorporating additional time for collaborative unit planning, and reconfiguring professional development sessions to accommodate the busy schedules of teaching staff. Implementation evaluation findings revealed that teachers and administrators appreciated the flexibility of C³ project staff, and teachers enjoyed having opportunities to share and learn from their peers in their own schools, as well as teachers in other schools and districts. Additionally, the evaluation found that the curriculum units developed through the C³ project were engaging for students and generally well-aligned to school curricula and the CCLS. Furthermore, lessons were implemented largely as planned and effectively addressed academic, artistic, and 21st Century Skills, according to treatment teachers. Moreover, teachers noted that lessons were particularly engaging for students with disabilities and ELL students.

Participant outcomes were largely positive over the course of the grant period. By the second and third years of the three-year project implementation period, the majority of treatment teachers and teaching artists reported positive attitudes toward and more frequent use of interdisciplinary, arts-focused collaborations around lesson planning and strategies to meet student needs. In addition, both teachers and student participants in the C³ project demonstrated gains in 21st Century Skills over the course of the project. Each year, treatment teachers and specialists demonstrated significantly greater gains than their comparison group peers in skill areas such as creativity and innovation, critical thinking and problem solving, and communication, and students in the treatment group made significantly greater gains than students in the comparison group in all four 21st Century skill areas (i.e., creativity and innovation, collaboration, critical thinking and problem solving, and communication).

Though no significant differences were detected in treatment and comparison students' change in ELA achievement by Year 4 (the first year that gains could be measured on the NYS standardized assessments), both groups had significant proportions of students moving up one or more performance levels on the NYS Math Test and the NYSESLAT. Given additional time for the collaborative instructional practices to become incorporated into the schools' instructional reform approach, the C³ model still has the potential to positively impact student academic achievement in English language arts. This highlights the importance of building relationships with school administrators to ensure their buy-in to the project.

Lessons learned through the AEMDD grant provided ES BOCES with the opportunity to refine the C^3 model, materials, and processes, which are now being disseminated to additional districts supported by ES BOCES and to other BOCES around the state. For example, C^3 lessons learned and findings on preliminary impacts were disseminated to arts education practitioners and researchers through presentations at regional and national conferences in 2013 and 2014. In addition, ES BOCES staff has engaged in a number of other dissemination activities, including workshops for teachers and arts educators, designed to increase awareness of the C^3 model in several of its component school districts.

Finally, the C^3 project website (www.creativec3.org) serves as a tool for sharing project documents with the wider education community, including unit and lesson plans, materials, photos, and videos of C^3 instruction. Information about C^3 staff, cultural partners, school partners, and teaching artists is also provided, along with arts in education research and other resources, and summaries of lessons learned about the implementation and impacts of the C3 project.

In addition to these dissemination activities, ES BOCES was recently awarded another AEMDD grant to implement the C^3 Squared project (Creative Classroom Collaboratives: Creativity—Confidence and Competence), which is based on lessons learned from the C^3 project. Specifically, the C3 Squared project is being implemented with a variety of arts providers in additional high-needs schools using revised instruments, a new performance assessment, and with increased flexibility in implementation methods in order to better meet the needs of the participating schools. The project is currently in the first year of implementation