Museum Visitor Studies, Evaluation & Audience Research

Randi Korn & Associates, Inc.
118 East Del Ray Avenue
Alexandria, VA 22301

Solomon R. Guggenheim Museum
Teaching Literacy Through Art

Final Report:
Synthesis of 2004-05 and 2005-06 Studies

Distribution Copy

p: 703.548.4078
f: 703.548.4306
www.randikorn.com

April 2007

TABLE OF CONTENTS

LIST OF TABLES

EXECUTIVE SUMMARY

This report presents findings from the 2004-06 *Teaching Literacy Through Art* research study of the *Learning Through Art* program (*LTA*) conducted by Randi Korn & Associates, Inc. (RK&A), for the Solomon R. Guggenheim Museum in New York, New York. The Guggenheim Museum received a three-year Arts in Education Model Development and Dissemination grant from the U.S. Department of Education to study the impact of the *LTA* program on students in the New York City public school system. This is the final report of the study, and it synthesizes data from both the 2004-05 and 2005-06 school years.

Selected highlights of the study are included in this summary. Please consult the body of the report for a detailed account of the findings.

RESEARCH DESIGN

Sample

RK&A employed a quasi-experimental design to examine *LTA*'s impact on students and teachers, selecting four schools along specific demographic, socioeconomic, and literacy criteria: P.S. 86 and P.S. 94 in the Bronx and P.S. 148 and P.S. 149 in Queens[1]. To minimize variability and afford the opportunity to examine standardized test scores, third-grade classes from each school were selected at random to participate in the study (see Table A).

Table A
Sample Description

School	Group	Definition	Number of Third-Grade Classes
P.S. 86	Treatment A	Students received *LTA* program	6
	Treatment B	Students received *LTA* program and teachers received *LTA* professional development	6
P.S. 148	Treatment A	Students received *LTA* program	6
	Treatment B	Students received *LTA* program and teachers received *LTA* professional development	6
P.S. 94	Control	Students and teachers did not participate in *LTA* program	9
P.S. 149	Control	Students and teachers did not participate in *LTA* program	3

[1]In the 2005-06 school year, P.S. 149 was not eligible to act as the control school because students participated in an arts program provided by another organization—contrary to the agreement the school had with the Guggenheim Museum. Instead, for the second year of the study, additional classes at P.S. 94 served as the control group. The socioeconomic and academic performance of P.S. 94 matched both P.S. 86 and P.S. 148. Additionally, in the 2004-05 study, no statistically significant differences were found between P.S. 94 and P.S. 149.

Study Objectives and Research Hypotheses

RK&A designed the research plan to measure two sets of *LTA* program outcomes: the teacher, teaching artist, and student outcomes of the program (e.g., whether *LTA* met its stated goals and objectives) and critical thinking and literacy-related teacher and student outcomes (e.g., whether *LTA* impacted the way teachers teach and students' abilities).

To summarize, RK&A hypothesized that Treatment Group students would have more positive school- and art-related attitudes as well as higher literacy achievement than would Control Group students. In terms of specific treatments, the evaluators hypothesized that the combination of the *LTA* program and extended teacher professional development (Treatment Group B) would have a greater impact on students' attitudes toward reading, literacy skills, and scores on the Third Grade Citywide English Language Arts Test than would the program alone (Treatment Group A).

Data Collection and Analysis

RK&A hired and trained research assistants—who did not know the research hypotheses—to conduct observations and interviews as well as code and enter data. When appropriate, two research assistants independently and simultaneously collected or analyzed data to enable RK&A to test inter-rater reliability. To compare experimental groups and program elements, RK&A performed chi-square tests, analyses of variance, analyses of covariance, and multiple regressions. **In the Executive Summary and throughout the report, only statistically significant differences are reported.**

I. PRINCIPAL FINDINGS: STUDENT QUESTIONNAIRES

The combined data set includes 605 third-graders who completed questionnaires: 215 from Treatment Group A, 190 from Treatment Group B, and 200 from the Control Group.

Student Characteristics

- 51 percent of students were female and 49 percent were male.
- The median age of students was nine years.
- 75 percent speak English and one other language at home (most often Spanish).
- 89 percent of Treatment Group students and 88 percent of Control Group students had never visited the Guggenheim Museum with their families.

Student Attitudes and Perceptions

- Overall, students expressed positive attitudes toward school, reading, and class participation.
- There were no statistically significant differences between the Treatment and the Control Groups' students' attitudes toward school and reading; however, more Treatment Group students said they enjoyed working with their classmates on projects than did Control Group students.
- Overall, students expressed positive attitudes about making, looking at, and discussing works of art.
- More Treatment Group students agreed with the statement, "I enjoy talking about artwork by well-known artists," than did Control Group students.
- Overall, students accurately described making artwork as process-oriented. Nearly all stated that if they were to make a mistake while working on an art project at school they would "keep working on it and try to fix it" or problem-solve with their teacher or classmates.
- More Control Group students than Treatment Group students inaccurately described the artistic process—stating they would "feel sad," "feel mad," "throw away their project and start over," and/or "give up and do something else" if they made a mistake on an art project. In total, Treatment Group students had a higher artistic process score (i.e., more positive perceptions of the artistic process) than did Control Group students.
- About one-half of students described an artist as someone who "works hard and practices."
- However, more Control Group students described an artist as someone who "draws really well" and "makes beautiful things" than did Treatment Group students. Conversely, more Treatment Group students described an artist as someone who "has good ideas" and "experiments with different materials" than did Control Group students.

- Overall, students expressed positive attitudes toward art museums. However, more Treatment Group students indicated that they would bring their families to an art museum than did Control Group students.
- Additionally, Treatment Group students had a higher total art museum attitude score (i.e., a more positive attitude toward art museums) than did Control Group students.
- Nearly all Treatment Group students had positive attitudes toward *LTA.*
- Treatment Group students most often selected "taking a field trip to the Museum," "getting to use different materials," and "working with a real artist" as their favorite aspects of *LTA.*

II. PRINCIPAL FINDINGS: STUDENT INTERVIEWS

A total of 565 third-graders completed interviews: 207 from Treatment Group A, 188 from Treatment Group B, and 170 from the Control Group.

Word Count and Grade Level

- On average, students' interviews were at a sixth-grade reading level. Treatment Group students' responses were at a higher grade level than were those of Control Group students.
- Students used, on average, 551 words during the entire interview, 264 words in the discussion of the Gorky painting, and 288 words in the discussion of the Kadohata text.
- Treatment Group students used more words during the entire interview and in the discussion of the Gorky painting than did Control Group students.

Interview Content Analysis

- When the content of students' responses to the Gorky painting were scored for six literacy characteristics[2], RK&A found that Treatment Group students scored higher on five of the six characteristics compared with Control Group students.
- For the Kadohata text, Treatment Group students scored higher on five of the six literacy characteristics than did Control Group students.
- The stepwise multiple regression model[3] that predicts a higher Gorky painting score includes three significant variables: a high word count, participating in *LTA* (i.e., being in the Treatment Group), and a more positive attitude toward art (i.e., a higher total score on six art attitude scales).

[2] For a description of the literacy characteristics measured, see Appendix Q for the student interview scoring rubric.
[3] RK&A conducted stepwise multiple regression analyses to identify the models that predict the characteristics of students who had higher interview scores (i.e., demonstrated greater literacy skills).

- The stepwise multiple regression model that predicts a higher Kadohata text score includes two significant variables: a high word count and participating in *LTA* (i.e., being in the Treatment Group).

III. PRINCIPAL FINDINGS: STUDENT TEST SCORES

In 2005 and 2006, the four schools provided New York Citywide English Language Arts Test (ELA) performance level scores for 472 third-graders: 338 from the Treatment Groups and 134 from the Control Group.

- 62 percent of students scored at levels three and four on the ELA test, while 38 percent scored at levels one and two. There were no statistically significant differences between the ELA performance levels of the Treatment and Control Groups.
- RK&A found correlation between the ELA test and the *LTA* metrics. Students who achieved level three and four scores on the ELA test received higher total interview scores for both the Gorky painting and the Kadohata text than did those who achieved level one and two scores.

In 2006, the four schools also provided ELA scale scores for 214 third-graders: 160 from the Treatment Groups and 54 from the Control Group.

- The mean ELA scale score of Treatment Group students (mean = 667.1) did not differ significantly from the mean ELA scale score of Control Group students (mean = 672.6).
- Stepwise multiple regression analysis found that a higher total Kadohata text interview score was associated with a higher ELA scale score.

IV. PRINCIPAL FINDINGS: STUDENT CASE STUDIES (2005-06 ONLY)

Throughout the 2005-06 school year, RK&A conducted case studies of four treatment school students. Each case study consisted of two to four observations of the students, two to four in-depth interviews with the students, and in-depth interviews with the students' classroom teacher, teaching artist, and parent

Case Study One

Student one, a nine-year-old girl, was a third-grade student at P.S. 86 identified as high-achieving.

- Observations and interviews indicate that Case Study One functions best when working independently on assignments with specific rules and guidelines. Nevertheless, though Case Study One performed well in structured lessons, she displayed little enthusiasm for her school work.

- Though Case Study One is high-achieving by conventional academic pen-and-paper standards, she appeared challenged by open-ended assignments—a hallmark of *LTA*. She had a difficult time starting and completing art-making assignments, and showed little enthusiasm for these activities.
- Inquiry lessons also challenged Case Study One because of the open-ended nature of the questions (no right or wrong answers) and the fact that she had to speak in front of a group.
- Though Case Study One appeared relatively untouched by *LTA*, there were some hints that at least one aspect of the program had influenced her. The classroom teacher noted that the student had developed visual literacy skills by looking at works of art.

Case Study Two

Student two, a nine-year-old girl, was a third-grade P.S. 86 student who was identified as low-achieving.

- Observations and interviews indicate that Case Study Two is a student with low self esteem who struggles to do well in school. She demonstrated difficulty staying on task, and was easily distracted during regular classroom and *LTA* sessions.
- Crediting *LTA*, the teaching artist and classroom teacher noticed that Case Study Two's self esteem and critical thinking abilities improved during the year. The teaching artist recalled Case Study Two as an easily frustrated student—especially in the beginning of the year—but she noticed a marked improvement in the student's persistence during the program.
- The classroom teacher said that *LTA* had positively impacted Case Study Two in two ways: it gave her a chance to use her visual learning abilities, which may have been a new experience for her; and it allowed her to speak in class without others judging her response.

Case Study Three

Student three, a nine-year-old boy, was a third-grade P.S. 148 student who was identified as high-achieving.

- Interviews and observations indicate that Case Study Three is a high-achieving student with strong analytical and comprehension abilities, yet inconsistent in his classroom performance.
- Case Study Three was highly enthusiastic about *LTA*. His mother said he talked about the program often, and the classroom teacher said Case Study Three thrived in *LTA*. She explained that he performed best when allowed to express himself verbally, and *LTA* gave him many opportunities to do so.
- The classroom teacher and teaching artist agreed that Case Study Three was most

influenced by *LTA* inquiry lessons. They explained that the approach was ideal for his verbal willingness and analytical skills, especially when it came to his own artwork. The teaching artist said she believed the predictability and structure of questioning in inquiry helped Case Study Three access his reflective abilities.

Case Study Four

Student four, a nine-year-old girl, was a third-grade P.S. 148 student who was identified as low-achieving.

- Though described as a low-achieving student, Case Study Four demonstrated just the opposite in all four observations. In fact, Case Study Four appeared to be a model student in every sense of the word.
- The classroom teacher confirmed that Case Study Four had been labeled as low-achieving based on her low reading levels and comprehension in the second grade, but that she has dramatically improved throughout her third grade school year. The teacher said Case Study Four showed great confidence in her skills by always wanting to show and read her work to her peers.
- The teaching artist and classroom teacher talked at length about Case Study Four's critical thinking abilities as displayed in *LTA* inquiry lessons. The classroom teacher said that inquiry has helped her in all her subjects. Additionally, she said that *LTA* has helped Case Study Four develop better reading and comprehension skills by improving her decoding and focusing skills.

V. PRINCIPAL FINDINGS: TEACHER QUESTIONNAIRES

In May 2005 and May 2006, RK&A surveyed all participating third-grade classroom teachers. Of twenty-six teachers in the study, eight participated only in the 2004-05 school year (two teachers in Treatment Group A and six teachers in the Control Group), ten participated in the 2004-05 and 2005-06 school years (four teachers in Treatment A and six teachers in Treatment B), and eight participated only in the 2005-06 school year (two teachers in Treatment A and six teachers in the Control Group).

Class and Teacher Characteristics

- In 2004-05 and 2005-06, teachers had an average class size of 22 students. In both study years, Treatment classes had a smaller average class size than did Control classes.
- In 2004-05 and 2005-06 the majority of students were considered mainstream. In 2005-06, there were more ESL students in the Control Group than in the Treatment Group.
- In 2004-05, Control Group teachers had more experience than did Treatment Group teachers (12 years vs. six years). In 2005-06, Control and Treatment Group teachers had

similar teaching experience (six years).

- For both 2004-05 and 2005-06 teachers, the average number of years teaching at their current school was five years. For both 2004-05 and 2005-06 teachers, the average number of years teaching third grade was three years. Among 2004-05 teachers, Control Group teachers had taught third grade for more years than had Treatment Group teachers (five years vs. two years).

- The 2004-05 teachers reported spending an average of 12 hours a week on literacy and literacy-related activities, and 2005-06 teachers reported spending an average of 11 hours a week on literacy and literacy-related activities.

Experiences with the Arts

- In 2004-05 and 2005-06, none of the Control Group classroom teachers were participating in any visual arts programs, and *LTA* was the only visual arts program in which Treatment Group classroom teachers were participating.

- In 2004-05, teachers in the Treatment and Control Groups reported having similar levels of training in the visual arts. On a scale from 1 (I have no training in the visual arts) to 7 (I have a lot of training in the visual arts), the 2004-05 teachers' overall mean rating was 3.1. In 2005-06 Treatment Group teachers reported having more training in the visual arts than did Control Group teachers (Treatment mean = 3.5 vs. Control mean = 1.7).

- The 2004-05 and 2005-06 teachers expressed positive attitudes toward art museums and about interacting with works of art on a series of seven-point scales.

- The 2004-05 and 2005-06 Treatment Group teachers gave the teaching artists' lessons high ratings on a series of seven-point scales. They reported that the art-making projects were a high-quality experience and the art discussions worked well for their students. Treatment teachers also said the teaching artists' lessons supported the curriculum.

- The 2004-05 and 2005-06 Treatment Group teachers also gave the *LTA* program high ratings on a series of seven-point scales. They reported that the *LTA* program increased their confidence in discussing artwork with their students and was enriching for their students. They also reported that they learned new strategies for teaching with art and indicated that they would participate in the program again.

- Nearly all of the 2004-05 and 2005-06 Treatment Group teachers said having a professional, working artist in the classroom was their favorite aspect of *LTA*.

VI. PRINCIPAL FINDINGS: OBSERVATIONS (2004-05 ONLY)

Throughout the spring 2005 semester, data collectors observed the two teaching artists 35 times—17 times with Treatment Group A classes and 18 times with Treatment Group B classes. The six Treatment Group B classroom teachers were observed 22 times during *LTA*-related lessons.

Teaching Artist Observations

- During the teaching artists' lessons, the majority of students demonstrated six of the ten behaviors in the *LTA* rubric, including engagement while making artwork, enthusiasm when responding to works of art, and active participation in class discussions about art. Problem-solving related to the art-making process and three aspects of active listening—asking questions, restating comments, and building on comments during class discussions—were observed less often.
- Teaching artists incorporated active listening, positive classroom climate, and art-making demonstration at the most accomplished level during more than one-half of their lessons. They incorporated critique/reflection of students' artwork and art-making problem solving at less accomplished levels.
- During discussions about works of art, teaching artists asked open-ended questions, used wait time and follow-up questions, and asked for evidence during more than one-half of their lessons. They encouraged thorough description, integrated factual information, and asked questions that supported curriculum-based themes during less than one-half of their lessons.
- For all of the categories described in the two previous bullet points, Teaching Artist One received higher observation scores for all student and teaching artist behaviors compared with Teaching Artist Two. However, no correlations among teaching artists and students' questionnaire responses and interview scores existed.
- Of the behaviors teaching artists displayed during discussions about how to create artwork, they frequently modeled art techniques and processes as well as referenced works of art that students had viewed, but infrequently made connections to the classroom curriculum.
- During 40 percent of the teaching artists' lessons, classroom teachers were highly active and effective.

Classroom Teacher Observations

- During the classroom teachers' inquiry lessons, students demonstrated hypothesizing, extended focus, evidential reasoning, and building schema at moderate to high degrees; whereas, their demonstrations of multiple interpretations and thorough description varied.
- During more than one-half of the classroom teachers' inquiry lessons, teachers elicited multiple responses, accepted/validated many interpretations, asked for interpretations, showed enthusiasm for the lesson, demonstrated schema building, and asked appropriate,

open-ended questions at the accomplished level.

- During more than one-half of the classroom teachers' inquiry lessons, teachers summarized and linked skills used for looking at works of art and reading text (i.e., demonstrated transfer) at the beginning level.
- Teachers' implementation of inquiry varied; however, none of the differences were statistically significant.

VII. PRINCIPAL FINDINGS: TEACHING ARTIST AND CLASSROOM TEACHER INTERVIEWS (2004-05 AND 2005-06)

2004-05 Interviews

In June 2005, two teaching artists and 11 Treatment Group classroom teachers participated in telephone interviews.

Teaching Artist Interviews

- Both teaching artists had positive experiences working with their assigned schools, describing their interactions with the classroom teachers as productive and collaborative.
- Teaching artists also appreciated the Guggenheim staff for their logistical and material support as well as their reflective natures and willingness to make changes to the program.
- When asked how they might modify their lessons next year, both teaching artists said they would try to integrate their lessons with the curriculum earlier in the planning process.
- Both teaching artists complimented *LTA's* professional development, describing it as useful and noting that they had applied what they had learned in their lessons.
- Both teaching artists said *LTA* had positively impacted them, the classroom teachers, and the students. In particular, the two teaching artists said that learning inquiry strategies was powerful for them and for the classroom teachers. Additionally, they said students had developed a relationship with art and gained confidence in interacting with works of art.

Classroom Teacher Interviews

- All classroom teachers praised *LTA* for providing their students with engaging and enjoyable experiences, in particular having the opportunity to work with the teaching artist and visit the Guggenheim Museum. Teachers also described the program as well-managed.
- Most classroom teachers said the teaching artists' lessons and projects connected to the curriculum. In contrast, two teachers from Treatment Group A saw no relationship

between the teaching artists' lessons and the curriculum; however, they still said the program benefited their students.

- All Treatment Group B teachers who received the extended professional development found it highly useful, noting that they had gained experience and confidence in using inquiry both with works of art and with texts. This is particularly noteworthy, as teachers were selected at random.
- Nearly all classroom teachers said *LTA* had positively impacted their teaching practice. All Treatment Group B teachers said they had gained skills to integrate inquiry and art in their curriculum. Two Treatment Group A teachers said the program had encouraged them to interact more with their students, while another said she felt more comfortable with art. In contrast, two teachers in Treatment Group A said *LTA* had no impact on them.
- All classroom teachers said *LTA* had enhanced their students' personal and intellectual development including—for a few Treatment Group B teachers and one from Treatment Group A—improvements in students' communication and reading skills.

2005-06 Interviews

In June 2006, three teaching artists and 11 Treatment Group classroom teachers participated in telephone interviews.

Teaching Artist Interviews

- All the teaching artists said *LTA* was important, because, aside from its direct impact on students, it: improves schools, provides enriching opportunities to young people who would otherwise not have them, and presents a model of excellence.
- Regarding the program's administration, teaching artists praised the Guggenheim's organization and recognized it as a model for best practices.
- Teaching artists expressed some frustration about their collaborations with classroom teachers. Two of the teaching artists said their classroom teachers were not invested in the collaboration.
- Overall, teaching artists most appreciated *LTA's* professional development for giving them the opportunity to share with and learn from one another.
- All the teaching artists said *LTA* had positively impacted them, the classroom teachers, and the students. They said *LTA* has led them to try things with students that they had never done before, and that they have changed their teaching styles as a result of their positive experiences. Teaching artists also said the program allows classroom teachers to discover hidden talents in their students and learn new methods for reaching those who have been known to be non-participatory or below-average in their performance. And finally, they said that by looking at and creating art, students learned to observe, appreciate, interact with, and contribute to everything that surrounds them.

Classroom Teacher Interviews

- All classroom teachers praised *LTA* for providing their students with engaging and enjoyable experiences, in particular having the opportunity to work with the teaching artist and visit the Guggenheim Museum. Teachers also described the program as well-managed.
- When discussing how well the teaching artists' activities connected with their curricula, classroom teachers were, for the most part, pleased. Most classroom teachers provided examples of where connections were made. Of these examples, most were concrete and determined by the content of the curriculum or available artwork.
- Overall, classroom teachers who participated in the extended professional development had positive experiences. They said they found the opportunity to share ideas with other *LTA* teachers, planning and researching time with teaching artists, learning to lead inquiries, and establishing a rapport with the program's leaders especially helpful.
- Classroom teachers said that their Guggenheim experiences had noticeable impacts on their teaching. Most said that since participating in the program, they have found more ways to incorporate art and creativity into their classrooms, enabling them to reach more students—including some who had been difficult to engage—in more subjects, including math and reading.
- When speaking about their students' participation in the program, most classroom teachers excitedly related the "positive," "profound," and "tremendous" impacts it has had on them simply by exposing them to so many new experiences at once. Among these experiences, classroom teachers most frequently repeated that creating art and visiting the Guggenheim were especially momentous.

DISCUSSION

The Guggenheim Museum's *Learning Through Art* (*LTA*) is a highly successful program. It achieved its stated program goals and met objectives regarding relevant New York State English Language Arts Learning Standards. Furthermore, *LTA* positively impacted participating students and classroom teachers—in terms of their learning and personal development. Most strikingly, RK&A found strong correlations between students' participation in *LTA* and improved critical thinking and literacy skills in their discussions of both a work of art and a text selection. In other words, students who participated in *LTA* demonstrated they had transferred critical thinking skills learned in discussing works of art to interpreting texts.

PROGRAM IMPLEMENTATION

Prior to receiving the Arts in Education Model Development and Dissemination grant, staff at the Guggenheim Museum worked with RK&A to articulate the goals and objectives of *LTA* and develop criteria for success. The resulting rubric was used by Guggenheim Museum staff to assess the teaching artists' performance and by the teaching artists for their own self-reflection. The assessment of teaching artists' performance indicated that certain aspects of the program were being implemented better than others and Museum staff used these findings to provide teaching artists with additional training and guidance in those areas.

At the beginning of the grant-funded research study, RK&A again examined the implementation of *LTA*. Through observations of the teaching artists, classroom teachers, and students, RK&A found that the program was being executed as intended. Observers noted that students, in general, were actively engaged in *LTA*-related discussions and art-making activities. Similarly, classroom teachers and teaching artists expressed enthusiasm for the lessons and cultivated a positive classroom climate that encouraged student participation. One subset of teachers (Treatment Group B) experienced a new *LTA* program element: extended professional development for using inquiry with works of art and texts. These teachers effectively used most of the inquiry strategies during the majority of the observed art- and text-based lessons. Concordantly, during Treatment Group B teachers' lessons, students demonstrated four of the six literacy-related, creative thinking behaviors at a moderate to high proficiency. Teaching artists also received additional inquiry-based professional development sessions and used many of the inquiry strategies when discussing works of art. In addition, teaching artists modeled different techniques, encouraged experimentation, and emphasized critical thinking and communication skills while they engaged students in sustained, process-oriented experiences during art-making activities. Students' questionnaire data further corroborate the teaching artists' approach, as more Treatment Group students accurately described the art-making process than did Control Group students.

When asked their opinions of *LTA*, classroom teachers and students praised the program for providing high quality experiences. *LTA* received favorable ratings in both the teacher and student questionnaires. In particular, students and teachers selected having a professional, working artist in the classroom and visiting the Guggenheim Museum as favorite aspects of *LTA*. During interviews, classroom teachers described *LTA* as having a positive effect on students'

self-esteem and cognition because the program encouraged class participation and fostered analytical thinking skills. The case studies concur with these findings. In addition to the positive impact on students, classroom teachers said they benefited from *LTA* as well. They described the program as well-organized and well-managed and appreciated the logistical and material support that Guggenheim Museum staff provided, which made participation in the program trouble-free for teachers. Treatment Group B teachers spoke highly of the professional development sessions, noting that the inquiry methods they learned were eye-opening and valuable teaching techniques. In fact, these teachers perceived the professional development as having a substantial impact on the way they interact with students and structure class discussions. Furthermore, they said the professional development sessions were so successful in balancing theory and practical applications that they could not offer suggestions for improving them. These responses are particularly noteworthy, as Treatment Group B teachers were selected at random to participate in these professional development sessions (rather than opting into the program).

RESEARCH HYPOTHESES

Once the program evaluation determined that *LTA* was successfully implemented, RK&A conducted research to assess the program's impact on students. The design of the *LTA* research study accounted for multiple factors that impact students' attitudes and abilities, including students' participation in the *LTA* program and having teachers who received *LTA* professional development. The research hypotheses along with relevant findings follow, and tables summarizing statistically significant differences are presented after the narrative.

Attitude Hypotheses

- Students who participate in *LTA* will have more positive attitudes toward school, art, and art museums than those who do not participate in *LTA*.
- Students who participate in *LTA* and have teachers who receive *LTA* professional development will have more positive attitudes toward reading than those whose teachers do not have such training.

LTA did not impact students' attitudes toward school or reading—that is, there were no statistically significant differences between the school-related attitudes of Treatment and Control Group students (see Table B, page xxxviii). Additionally, attitudinal differences did not exist between Treatment Group A and Treatment Group B students. In general, students already had positive school-related attitudes, making it difficult to definitively determine the program's affective impact on students. Such a finding is not altogether surprising, considering that other studies have shown that negative attitudes toward school tend to develop in middle school (Hogsten and Peregoy, 1999; Anderman and Midgley, 1998; Eccles and Midgely, 1989), and the students in this study were third graders. Furthermore, a multitude of factors unrelated to the program contributed to students' opinions, as demonstrated by the fact that other variables—gender or attendance at a particular school—positively impacted students' attitudes about school and reading.

LTA moderately influenced students' attitudes toward art and art museums (see Tables C and D, pages xxxix-xl). Participation in *LTA* was correlated with one art attitude scale—more Treatment Group students responded that they enjoyed discussing works of art than did Control Group students—and one art museum attitude scale— more Treatment Group students responded that they would like to bring their families to an art museum than did Control Group students. Additionally, Treatment Group students' total art museum attitude scores were more positive than were those of Control Group students. Again, students, overall, expressed positive attitudes about art and art museums, which may have obscured possible program outcomes. Moreover, RK&A found in a study for the National Gallery of Art that students' attitudes toward art were heavily influenced by family and demographic characteristics rather than a museum school program (RK&A, 2002). For example, both in this study and the one for the National Gallery of Art, females had a more positive attitude towards art than did males. Similarly, RK&A found in the National Gallery of Art study and in this one that positive museum-based experiences can contribute to a more positive attitude toward art museums, but that demographics are still an important factor (RK&A, 2002).

While having moderate effects on students' attitudes toward art and art museums, *LTA* greatly enhanced students' understanding of art as a process-oriented activity (see Table C, page xxxix). Control Group students were more likely to express frustration when encountering problems during artmaking compared to Treatment Group students. Additionally, Control Group students were more likely to describe an artist in terms of their product—for example, as someone who creates beautiful things—whereas Treatment Group students were more likely to describe an artist in terms of process—for example, as someone who has good ideas and experiments with materials. Such findings are noteworthy, as a key criticism of other studies that explore the connection between the arts and learning core curriculum is that none demonstrated whether students learned about art (Baker, 2002). Not so for this study; *LTA* clearly provided quality arts instruction.

In addition to examining differences between the Control and Treatment Groups, RK&A also explored whether the classroom professional development sessions that one subset of Treatment Group teachers received (Treatment Group B) had any impact on students' attitudes toward school, art, and art museums or on their perceptions of art. Interestingly, there were no differences between Treatment Groups A and B. In other words, the *LTA* professional development for classroom teachers did not affect students' attitudes towards or perceptions of art. As noted earlier, non-school variables are more likely to influence third-graders, which is important to know when designing programs for this age group, so as not to set unrealistic goals.

Literacy Abilities Hypotheses

- Students who participate in *LTA* will demonstrate greater abilities to discuss works of art and texts (i.e., will have higher interview scores) than those who do not participate in *LTA.*
- Students who participate in *LTA* and have teachers who receive *LTA* professional development will demonstrate greater abilities to discuss works of art and texts (i.e., will have higher interview scores) than those who do not.

LTA greatly enhanced students' abilities to discuss works of art and texts (see Tables E and F,

pages xli-xlii). During the interview Treatment Group students were more talkative and used more complex language than did Control Group students. Additionally, participation in *LTA* was correlated with higher total content scores for responses to both the Gorky painting and Kadohata text. Furthermore, Treatment Group students scored higher than Control Group students on five of the six literacy characteristics in their responses to the Gorky painting and Kadohata text. More impressively, RK&A found that the stepwise multiple regression models that predict higher Gorky painting and Kadohata text scores include only two significant variables: word count and Treatment or Control Group. That is, students with higher word counts achieved higher scores for their response to the Gorky painting and Kadohata text than did those with lower word counts. Once the regression models controls for word count, the models predict that students in the Treatment Group achieved higher scores for their response to the Gorky painting and Kadohata text than did those in the Control Group. Word count and Treatment Group explain 38.7 percent of the variance in the Gorky Painting total scores and 31.0 percent of the variance in the Kadohata text total scores—high percentages considering the myriad of variables that could impact students' scores. None of the other large-scale museum school program evaluations RK&A has conducted have demonstrated such a strong correlation between a program and student knowledge (RK&A, 1999, 2002, and 2004). The findings of this study demonstrate that Treatment Group students were able to better articulate their thoughts and had more sophisticated responses to both a work of art and text than Treatment Group students. More importantly, students who participated in *LTA* were able to apply skills they learned in the program—specifically, using inquiry to decipher a work of art—to text.

While the teaching artists' lessons clearly impacted students' literacy abilities, the effect of the teacher professional development is more complicated. In terms of the total content scores and individual literacy characteristics for the Gorky painting and Kadohata text, no statistically significant differences exist between Treatment Groups A and B, suggesting that the teacher professional development that Treatment Group B received did not have an impact on students' literacy. That said, *LTA* professional development should not be viewed as unsuccessful. During interviews, teachers in Treatment Group B described the *LTA* professional development as having a significant impact on their teaching—an encouraging finding, since the first step to changing teacher practice is having teachers acknowledge the benefits of a new method. Education researchers acknowledge that it takes time to change teacher practice (Cook, 1997 and Fullan, 1985). The *LTA* teacher professional development was introduced in 2004-05, so this study may have taken place too soon for teachers to fully integrate what they learned into their lessons and for the researchers to see any student impact.

It is worth discussing some of the other variables that did not impact students' interview scores, including demographic characteristics, speaking English at home, and attitudes. Interestingly, while gender frequently impacted students' attitudes, it rarely influenced the content of their interview responses. Additionally, speaking English at home positively impacted students' scores on the English Language Arts test (ELA), but it did not affect students' interview scores. That is, *LTA*'s inquiry method and focus on verbal abilities worked equally well for students who do not speak English at home and those who do. Students' attitudes toward school, art, and art museums also did not have any impact on interview responses. As noted earlier, students were generally positive, so their attitudes had a neutral effect on their learning.

One of the challenges of conducting educational research is isolating and studying the countless variables that contribute to student knowledge. RK&A designed this study to take into account not only participation in *LTA* but also student characteristics. This approach acknowledges the authentic complexity of impacting student learning and also recognizes the difficulty of measuring transfer (Baker, 2002 and Catterall, 2002). In light of the research design, the fact that *LTA* was found to have a positive impact on students cannot be overstated. The study's findings demonstrate *LTA's* strength—that dedicating class time to create and discuss artwork and using an inquiry method to facilitate those discussions can positively affect students' abilities to decipher works of art and transfer those skills to interpreting texts.

Standardized Test Score Hypothesis

- Students who participate in *LTA* and have teachers who receive *LTA* professional development will have higher scores on the Third Grade Citywide English Language Arts Test than those who do not.

LTA did not impact students' performance levels on the New York Citywide English Language Arts Test (ELA)—that is, there were no statistically significant differences between the scores of Treatment and Control Group students (see Table G, page xliii). Additionally, there were no differences between the scores of Treatment Group A and Treatment Group B students. RK&A proposes several explanations for the findings. First, the *LTA* study and the ELA test measured slightly different aspects of literacy. High ELA scores were associated with three literacy characteristics for the Gorky painting and four for the Kadohata text, so for these characteristics the ELA test and *LTA* metrics seem to correlate. Conversely, high ELA scores did not correlate with evidential reasoning, for example—one of the higher level thinking skills that is a hallmark of *LTA*. Second, students who do not speak English at home were at a disadvantage with the ELA test. Such students performed more poorly on the ELA compared with students who speak English at home. This was not the case for *LTA* scores, as there were no differences between students who speak English at home and those who do not. Third, the testing experience greatly differed. The ELA test is a standardized, multiple choice exam; whereas, for the *LTA* study, students were interviewed and their verbatim transcripts analyzed—the former focuses on the written word, the latter on aural and oral communication skills. Finally, a few methodological issues arose during the analysis of the ELA test scores: many students were exempt from the test as first-year immigrants even though they were not classified as ESL students; and only performance levels were released to RK&A for the 2004-05 school year, preventing additional statistical analysis that scale scores would have afforded. These findings will be examined and the relevant issues addressed in the new research study RK&A and the Guggenheim Museum are working on to further examine the impact of *LTA* on student academic performance.

Even though the Control Group and Treatment Group students' test scores did not differ, the enhanced literacy abilities that the Treatment Group students demonstrated in the interviews bolsters the case for integrating an inquiry-based approach to the visual arts. This study provides solid data that demonstrates that the arts positively impact student academic performance.

IMPACT FOR THE FIELD

The U.S. Department of Education's Arts in Education Model Development and Dissemination (AEMDD) grant funded research studies to examine the impact of the arts on student academic performance, in part, because of the paucity of rigorous studies in this area. *Champions of Change* and *Critical Links* highlight a number of studies that show the positive effects of arts programming on student learning. However, many of the large-scale, quantitative studies examined the impact of multi-arts programming. For example, Burton, Horowitz, and Abeles (2000) showed that students attending arts-rich schools outscored students in arts-poor schools in measures of creative thinking. Catterall and Waldorf (1999) found that students who were highly involved in the arts outperformed students who had low arts involvement on a variety of academic measures. Of the four visual arts program studies that met the rigorous criteria to be included in *Critical Links*, each avowed varying degrees of transfer. However, only one clearly established that students transferred skills gained during arts instruction to a core curriculum area—that is, skills used in deciphering works of art were applied to examination of a scientific image (Tishman, MacGillivray, and Palmer, 1999). While other AEMDD grantees are in the process of preparing their findings, at the time of this report submittal RK&A is unaware of any other studies that demonstrate students who participated in a visual arts program transferring skills from viewing and creating art to interpreting and discussing texts. As such, this study makes a significant, original contribution to the field of arts education research and *LTA* provides a model for quality arts education.

REFERENCES CITED

Anderman, L. H. and Midgley, C. (1998, June). "Motivation and Middle School Students." *ERIC Digest*, 1-2. EDO-PS-98-5.

Baker, T. L. (2002). "Reflections on Visual Arts Education Studies." In R. Deasy (Ed.), *Critical Links: Learning in the Arts and Student Academic and Social Development*. Washington, DC: The Arts Education Partnership.

Burton, J., Horowitz, R., and Abeles, H. (1999). "Learning In and Through the Arts: Curriculum Implications." In E. Fisk (Ed.), *Champions of Change: The Impact of the Arts on Learnin*g. Washington, DC: The Arts Education Partnership and The President's Committee on the Arts and the Humanities.

Catterall, J. S. (2002). "The Arts and the Transfer of Learning." In R. Deasy (Ed.), *Critical Links: Learning in the Arts and Student Academic and Social Development*. Washington, DC: The Arts Education Partnership.

Catterall, J. S. and Waldorf, L. (1999). "Chicago Arts Partnership in Education (CAPE): Evaluation Summary." In E. Fisk (Ed.), *Champions of Change: The Impact of the Arts on Learnin*g. Washington, DC: The Arts Education Partnership and The President's Committee on the Arts and the Humanities.

Cook, C. J. (1997). *Critical Issue: Evaluating Professional Growth and Development* [Online]. Available: http://www.ncrel.org/sdrs/areas/issues/educatrs/profdevl/pd500.htm.

Eccles, J. S. and Midgely, C. (1989). "Stage/Environment Fit: Developmentally Appropriate Classrooms for Early Adolescents." In R. E. Ames and C. Ames (Eds.), *Research on Motivation in Education* (Vol. 3, pp. 139-186). New York: Academic.

Fullan, M. (1985, January). Change processes and strategies at the local level. *Elementary School Journal, 85*(3), 391-421.

Hogsten, J. F. and Peregoy, P. A. (1999). "An Investigation of Reading Attitudes and Self-Perceptions of Students Reading On or Below Grade Level." Research report. Charlottesville, VA: University of Virginia.

Randi Korn & Associates, Inc. (2004). "*Dinosaurs and More* School Tour Evaluation: Findings from Questionnaires, Interviews, and Observations." Unpublished manuscript. New Haven, CT: Yale University, Peabody Museum of Natural History.

Randi Korn & Associates, Inc. (2002). "*Artists' Choices* School Tour Evaluation." Unpublished manuscript. Washington, DC: National Gallery of Art.

Randi Korn & Associates, Inc. (1999). "United States Holocaust Memorial Museum Evaluation of School Programs." Unpublished manuscript. Washington, DC: United States Holocaust Memorial Museum.

Table B
Summary: Statistically Significant Differences in Attitudes and Perceptions about School (2004-06)

Finding	Significant Variables[1]			
	Treatment/ Control	Treatment Group A/B	School	Other[2]
Agreed with "I like school."				Female 2004-05 data set
Disagreed with "School is boring."				Female
Agreed with "I like to read."				Female
Agreed with "When I read a book, I enjoy talking about it."				Female
Disagreed with "I do not like working with my classmates on projects."	Treatment			
Agreed with "When I have an idea to share my classmates listen to me."			P.S. 86	2004-05 data set
Disagreed with "I never share my ideas when we are talking about something in class."			P.S. 86	
Agreed with "I learn more when I work on projects with my classmates."				2005-06 data set
Higher total score on 9 school attitudes			P.S. 86	Female

[1]The variables listed in each column have a statistically significant relationship with the finding as determined by cross-tabs, analysis of variance, analysis of covariance, and/or stepwise multiple regression.

[2]Other variables tested included: gender, age, whether English was spoken in the student's home, prior visits to the Guggenheim Museum with school and family, cumulative score on nine school attitude scales, cumulative score on six art attitude scales, cumulative score on eight artistic process scales, cumulative score on five art museum attitude scales, and school year.

Table C
Summary: Statistically Significant Differences in Attitudes and Perceptions about Art (2004-06)

Finding	Significant Variables[1]			
	Treatment/ Control	Treatment Group A/B	School	Other[2]
Agreed with "I enjoy talking about artwork by well-known artists."	Treatment			Female
Agreed with "I enjoy looking at artwork by well-known artists."				Female
Disagreed with "I think looking at artwork made by well-known artists is boring."			P.S. 86	
Agreed with "I like making artwork in class."				English at home Female
Agreed with "I concentrate when I'm doing an art project."				Female
Higher total score on six art attitude scales[3]				Female
"When I am working on an art project at school and make a mistake, I . . ."				
"Keep working on it and try to fix it."				Female
"Feel mad."	Control			
"Feel sad."	Control			
"Give up and do something else."	Control			
"Throw away my project and start over."	Control			
"Talk about how to fix it with my teacher or other students."			P.S. 86	
"Ask the teacher for help."				2005-06 data set
Higher total score on eight art process scales[4]	Treatment			Female
"A good artist is somebody who . . ."				
"Experiments with different materials."	Treatment			2005-06 data set
"Has good ideas.	Treatment		P.S. 148	
"Draws really well."	Control			2004-05 data set
"Makes beautiful things."	Control			
"Is famous."				Male

[1]The variables listed in each column have a statistically significant relationship with the finding as determined by cross-tabs, analysis of variance, analysis of covariance, and/or stepwise multiple regression.

[2]Other variables tested included: gender, age, whether English was spoken in the student's home, prior visits to the Guggenheim Museum with school and family, cumulative score on nine school attitude scales, cumulative score on six art attitude scales, cumulative score on eight artistic process scales, cumulative score on five art museum attitude scales, and school year.

[3]The sixth scale, "I know how to talk about artwork made by well-known artists," was not included in the table because no statistically significant relationships were found among the variables tested.

[4]The seventh scale, "Ask another student for help," was not included in the table because no statistically significant relationships were found among the variables tested.

Table D
Summary: Statistically Significant Differences in Attitudes about Art Museums (2004-06)

Finding	Significant Variables[1]			
	Treatment/ Control	Treatment Group A/B	School	Other[2]
Agreed with "I like art museums."				Female 2005-06 data set
Disagreed with "I think art museums are boring."				Female
Agree with "I would like my class to visit an art museum."				Female
Disagreed with "I feel uncomfortable in art museums."				Female 2005-06 data set
Agreed with "I would bring my family to an art museum."	Treatment			2005-06 data set
Higher total score on five art museum attitude scales	Treatment			Female 2005-06 data set

[1]The variables listed in each column have a statistically significant relationship with the finding as determined by cross-tabs, analysis of variance, analysis of covariance, and/or stepwise multiple regression.

[2]Other variables tested included: gender, age, whether English was spoken in the student's home, prior visits to the Guggenheim Museum with school and family, cumulative score on nine school attitude scales, cumulative score on six art attitude scales, cumulative score on eight artistic process scales, cumulative score on five art museum attitude scales, and school year.

Table E
Summary: Statistically Significant Differences in Word Count and Total Interview Scores (2004-06)

Finding	Significant Variables[1]			
	Treatment/ Control	Treatment Group A/B	School	Other[2]
Higher total interview word count	Treatment			2005-06 data set
Higher total interview grade level	Treatment			Female
Higher Gorky painting word count	Treatment			2005-06 data set
Higher Kadohata text word count				Female 2005-06 data set
Higher total Gorky painting score (all students)	Treatment			High word count Level 3 and 4 ELA scores
Higher total Gorky painting score (Treatment only)	------			High word count Female
Higher total Kadohata text score (all students)	Treatment			High word count Level 3 and 4 ELA scores
Higher total Kadohata text score (Treatment only)	------			High word count

[1]The variables listed in each column have a statistically significant relationship with the finding as determined by cross-tabs, analysis of variance, analysis of covariance, and/or stepwise multiple regression.

[2]Other variables tested included: gender, age, whether English was spoken in the student's home, prior visits to the Guggenheim Museum with school and family, cumulative score on nine school attitude scales, cumulative score on six art attitude scales, cumulative score on eight artistic process scales, cumulative score on five art museum attitude scales, and school year.

Table F
Summary: Statistically Significant Differences in Interview Literacy Characteristics (2004-06)

Finding	Significant Variables[1]			
	Treatment/ Control	Treatment Group A/B	School	Other[2]
Higher score Gorky painting extended focus	Treatment			2004-05 data set Level 3 and 4 ELA scores
Higher score Gorky painting thorough description				2004-05 data set Level 3 and 4 ELA scores
Higher score Gorky painting hypothesizing	Treatment			2005-06 data set Level 3 and 4 ELA scores
Higher score Gorky painting evidential reasoning	Treatment			2004-05 data set
Higher score Gorky painting building schema	Treatment			Female 2005-06 data set
Higher score Gorky painting multiple interpretations	Treatment			2004-05 data set
Higher score Kadohata text extended focus	Treatment		P.S. 148	Level 3 and 4 ELA scores
Higher score Kadohata text thorough description	Treatment			2004-05 data set Level 3 and 4 ELA scores
Higher score Kadohata text hypothesizing	Treatment		P.S. 148	2005-06 data set Level 3 and 4 ELA scores
Higher score Kadohata text evidential reasoning	Treatment			2004-05 data set
Higher score Kadohata text building schema				Female 2005-06 data set
Higher score Kadohata text multiple interpretations	Treatment		P.S. 148	Male 2004-05 data set Level 3 and 4 ELA scores

[1]The variables listed in each column have a statistically significant relationship with the finding as determined by cross-tabs, analysis of variance, analysis of covariance, and/or stepwise multiple regression.

[2]Other variables tested included: gender, age, whether English was spoken in the student's home, prior visits to the Guggenheim Museum with school and family, cumulative score on nine school attitude scales, cumulative score on six art attitude scales, cumulative score on eight artistic process scales, cumulative score on five art museum attitude scales, and school year.

Table G
Summary: Statistically Significant Differences in the New York Citywide English Language Arts Test Scores (2004-06)

Finding	Significant Variables[1]			
	Treatment/ Control	Treatment Group A/B	School	Other[2]
Achieved high score (levels three and four) on New York Citywide English Language Arts exam			P.S. 148 P.S. 149	English at home

[1]The variables listed in each column have a statistically significant relationship with the finding as determined by cross-tabs, analysis of variance, analysis of covariance, and/or stepwise multiple regression.

[2]Other variables tested included: gender, age, whether English was spoken in the student's home, prior visits to the Guggenheim Museum with school and family, cumulative score on nine school attitude scales, cumulative score on six art attitude scales, cumulative score on eight artistic process scales, cumulative score on five art museum attitude scales, and school year.

INTRODUCTION

This report presents findings from the 2004-06 *Teaching Literacy Through Art* research study of the *Learning Through Art* program (*LTA*) conducted by Randi Korn & Associates, Inc. (RK&A), for the Solomon R. Guggenheim Museum in New York. This is the final report of the study, and it synthesizes data from both the 2004-05 and 2005-06 school years.

In 2003, the Guggenheim Museum received a three-year Arts in Education Model Development and Dissemination grant from the U.S. Department of Education to study the impact of *LTA* on students in the New York City Public School System. Since 1970, *LTA* has placed hundreds of teaching artists in New York City public schools to work with students and classroom teachers on curriculum-based art projects. Anecdotally, the program has been well received by principals, teachers, and students. The Department of Education research grant enabled the Guggenheim Museum to hire RK&A to document and examine *LTA*'s impact on participating students and teachers.

RESEARCH DESIGN

Study Objectives

The research plan was designed to measure two sets of *LTA* program outcomes: the teacher, teaching artist, and student outcomes of the program and literacy-related teacher and student outcomes. The study measures:

- Whether *LTA* met its goals and objectives (see Appendix A);
- Whether *LTA* met teacher objectives related to the New York State English Language Arts Learning Standards 1 (Learning for Information and Understanding) and 3 (Language for Critical Analysis and Evaluation) (see Appendix B);
- Whether *LTA* met student objectives related to the New York State English Language Arts Learning Standards 1 (Learning for Information and Understanding) and 3 (Language for Critical Analysis and Evaluation) (see Appendix B); and
- What correlations exist between student participation in *LTA* and their scores on the Citywide English Language Arts Test.

Research Hypotheses

RK&A designed the *LTA* study with the idea that multiple factors impact student attitudes and abilities. However, the research hypotheses focus on two variables—student participation in the *LTA* program and students having teachers who received *LTA* professional development. The research hypotheses are:

- Students who participate in *LTA* will have more positive attitudes toward school, art, and art museums than those who do not participate in *LTA*.

- Students who participate in *LTA* will demonstrate greater abilities to discuss works of art and texts (i.e., will have higher interview scores) than will those who do not participate in *LTA*.
- Students who participate in *LTA* and have teachers who receive *LTA* professional development will have more positive attitudes toward reading than will those whose teachers do not have such training.
- Students who participate in *LTA* and have teachers who receive *LTA* professional development will demonstrate greater abilities to discuss works of art and texts (i.e., will have higher interview scores) than will those who do not.
- Students who participate in *LTA* and have teachers who receive *LTA* professional development will score higher on the Third Grade Citywide English Language Arts Test than will those who do not.

Literature Review

The U.S. Department of Education created the Arts in Education Model Development and Dissemination program because few rigorous evaluation and research studies have been conducted to demonstrate that arts skills transfer to other academic disciplines. For example, researchers who conducted the meta-analysis of visual arts studies for the 2002 publication, *Critical Links: Learning in the Arts and Student Academic and Social Development,* lamented that small sample sizes, incomplete documentation, etc., plague existing studies.[4] That said, Guggenheim staff conducted a literature review as part of the planning for the study and RK&A conducted a review prior to instrument development (see Appendix C).

Sample

RK&A employed a quasi-experimental design to examine the impact the *LTA* program had on students and teachers. The design was quasi-experimental because RK&A purposely, rather than randomly, selected four schools to participate in the study, and established other parameters to limit the variability and strengthen the reliability of the research. The parameters were:

- The four schools had similar student populations and school culture (matching characteristics are detailed in the next section).
- All the classes were comprised of third graders.[5]
- Data from special education and English as a second language (ESL) students were not included in the sample.[6]

[4]Deasy, R. J. (Ed.). (2002). *Critical Links: Learning in the Arts and Student Academic and Social Development*. Washington, DC: Arts Education Partnership.

[5]The Department of Education has identified third grade as a critical time in students' language arts development and the No Child Left Behind Reading First Program focused on addressing readers in K-3. Additionally, working with third graders will enable examination of Citywide Third Grade English Language Arts Test scores.

[6]To minimize variability, the study excluded classes that were entirely special education or English as a second language. In contrast, in the classes selected, mainstreamed students who had been designated special education or

- None of the students and/or teachers had participated in *LTA* prior to the grant.
- Students and teachers participating in *LTA* were randomly assigned to one of two Treatment groups at the beginning of the school year.
- For the Control Group, teachers were randomly selected from the participating schools at the beginning of the school year.
- Data were collected simultaneously (questionnaire and interview data were collected from the Control and Treatment groups in May 2005 and 2006 to mitigate differences in students' learning throughout the school year).

School Selection

RK&A selected four New York City public schools—P.S. 86 and P.S. 94 in the Bronx and P.S. 148 and P.S. 149 in Queens—to participate in the study based on the following characteristics:

- All were Title I schools.
- All had a sufficient number of third-grade classes to accommodate the research plan.
- Students had similar demographic and socioeconomic characteristics.[7]
- All did not meet the state performance standards on the English Language Arts test in 2001-02 (according to the *2001-02 Annual School Reports*).
- All have principals eager to participate in this project and accommodating to the study's parameters. The principals guaranteed teacher participation, agreed to assist in gaining parent consent, and set aside class time for student interviews and questionnaires.[8]
- All had similar participation in the arts in 2002-03, based on a questionnaire developed by RK&A and administered to principals to gauge the school culture (see Appendix D).
- None of the students who were part of the study in these schools had participated in any Guggenheim Museum programs.

RK&A used the *2001-02 Annual School Reports*[9] to match P.S. 86 (treatment school) with P.S. 94 (control school) based on these characteristics:

- Both had similar ethnic diversity and are in the Bronx.
- Both had been designated in the "High Need Similar Schools Group."

English-as-a-second-language were provided the LTA program and data were collected from them (so they would not feel self-conscious), but their data were not included in the analysis.

[7]Using data from the *2001-02 Annual School Reports*, the two treatment schools were examined by academic and extracurricular activities, parent/school support, gender, class size, ethnicity, languages spoken, free-lunch eligibility, teacher characteristics, test scores, and location.

[8]Four schools with matching characteristics were initially contacted to serve as control schools. RK&A chose the two schools that had principals most willing to participate in the program.

[9]*2001-02 Annual School Reports*. Division of Assessment and Accountability, New York State Education Department: New York: NY.

- Both had similar attendance, student stability, and eligibility for free lunch.
- Both had similar teacher populations (percentage fully licensed and permanently assigned to school, percentage teaching more than two years at this school, percent teaching more than five years, and percentage with a Master's Degree or higher).
- Both spent less per student on direct services than the city average.
- Both had similar class size.
- In terms of general education students (the student population that participated in the *LTA* study), both schools had similar percentages of students attaining levels one/two, and three/four on the state and city English Language Arts tests.
- In terms of general education students, both schools had similar mean scale scores on the state English Language Arts test.

RK&A used the *2001-02 Annual School Reports* to match P.S. 148 (treatment school) with P.S. 149 (control school)[10] based on these characteristics:

- Both had similar ethnic diversity and were located in Queens.
- Both had been designated in the "Medium Need Similar Schools Group."
- Both had similar attendance, student stability, and eligibility for free lunch.
- Both had similar teacher populations (percentage fully licensed and permanently assigned to school, percentage teaching more than two years at this school, percent who have taught for more than five years, and percentage with a Master's Degree or higher).
- Both spent less per student on direct services than the city average.
- Both had similar class size.
- In terms of general education students (the student population that participated in the *LTA* study), both schools had similar percentages of students attaining levels one/two and three/four on the state and city English Language Arts tests.
- In terms of general education students, both schools had similar mean scale scores on the state English Language Arts test.

Student Selection

The Guggenheim Museum distributed parent/guardian consent forms to students in each of the four participating schools to be signed and returned to the teachers (see Appendix E). The Guggenheim Museum provided consent forms in English and Spanish, per advice from the

[10] In the 2005-06 school year, P.S. 149 was not eligible to act as the control school because students participated in an arts program provided by another organization—contrary to the agreement the school had with the Guggenheim. Instead, for the second year of the study, additional classes at P.S. 94 served as the control group. The socioeconomic and academic performance of P.S. 94 matched both P.S. 86 and P.S. 148. Additionally, in the 2004-05 study, no statistically significant differences were found between P.S. 94 and P.S. 149.

schools and offered students a Guggenheim Museum t-shirt in Year 1 and a Guggenheim pen in Year 2 to increase their motivation to return the form, regardless of their participation in the study. The form stressed that participation was strictly voluntary and that all data generated from the study would be confidential and anonymous. It asked parents/guardians to denote whether or not their child had permission to participate in the study, and only students who had written, active consent from their parents/guardians were included in the study. The Guggenheim Museum retrieved the consent forms from the schools, and both the Museum and RK&A retained copies.

Students who had permission from their parents/guardians to participate in the study were assigned a code number so that during data collection, students were referred to by number rather than name. Special education and ESL students were invited to complete the questionnaires and interviews; however, their data was not included in the sample.

For case study student selection, the Guggenheim Museum also distributed parent/guardian consent forms to students in the two treatment schools' classrooms to be signed and returned to the teachers (see Appendix F). The Museum provided consent forms in English and Spanish, per advice from the schools, and used the same protocol described above. Students who had permission from their parents/guardians to participate as case study students were identified by the classroom teachers as low achieving, mid-level achieving, and high-achieving based on the students' second grade reading levels. From those, RK&A randomly selected one low- to mid-level achieving student and one high-achieving student in each classroom. RK&A also chose alternates in case of student absenteeism or withdrawal from the school. Classroom teachers notified the parents of the selected students.

Human Subject Review

RK&A received Federal wide Assurance the protection of human subjects for domestic institutions from the U.S. Department of Health and Human Services. RK&A also received approval to conduct research in New York City pubic schools from the Proposal Review Committee of the New York City Education Department's Division of Assessment and Accountability. The Proposal Review Committee served as the institutional review board for the study.

METHODOLOGY

Plan Overview

The research study was a quantitative, modified "post-test only control group design" that employs standardized questionnaires, rubric-scored student interviews, and rubric-scored observations. The focus on quantitative data enabled RK&A to collect responses from many individuals and statistically analyze the data in a variety of ways. Qualitative student case studies as well as teacher and teaching artist interviews were collected to complete the comprehensive study. Table 1 (see below) outlines the general plan. In 2004-05 and 2005-06, third-grade classes in P.S. 86 and P.S. 148 that participated in *LTA* were randomly assigned to one of two treatment groups:

- Groups "tested" after they experienced the 20-week *LTA* program—to gauge the program's effects on students (Treatment Group A).[11]
- Groups "tested" after they experienced the 20-week *LTA* program and their teachers participated in *LTA* professional development—to gauge the effects of the professional development on students and teachers (Treatment Group B).

As noted earlier, in 2004-05 third-grade classes in P.S. 94 and P.S. 149 served as the Control Group; in 2005-06 P.S. 94 acted as the Control Group. The Control Group was defined as classes "tested" who had not experienced the *LTA* program and whose teachers had not participated in *LTA* teacher professional development. RK&A used the Control Group to gauge students' baseline attitudes and skills.

11"Tested," as used in the context above, refers to the measurements taken of each student's ability to decipher and discuss works of art and texts using an inquiry-based approach, as outlined in the rubrics.

Table 1
Research Plan—Years One (2004-05) and Two (2005-06)

Sample	**Pre-program Measure**	20-Week *LTA* Program	*LTA* Teacher Professional Development	**Program Measure I**	**Program Measure II**	**Program Measure III**	**Post-program Measure**	**Follow-up Measure I**	**Follow-up Measure II**
1. Control Group 9 classes P.S. 94 3 classes P.S. 149	Student questionnaire and rubric-scored student interview Principal and classroom teacher questionnaire	—	—	—	—	—	—	Student test scores on the Third Grade Citywide English Language Arts Test	—
2. Treatment A 6 classes P.S. 86 6 classes P.S. 148	Principal questionnaire	⊕	—	—	Observations of teaching artist and students scored with rubric (3 for each class: 2004-05 Only)	—	Student questionnaire and rubric-scored student interview Teacher questionnaire	Student test scores on the Third Grade Citywide English Language Arts Test	Classroom teacher and teaching artist interviews
3. Treatment B 6 classes P.S. 86 6 classes P.S. 148	Principal questionnaire	⊕	⊕	Observations of classroom teacher and students scored with rubric (4 for each class: 2004-05 only)	Observations of teaching artist and students scored with rubric (3 for each class: 2004-05 only)	Case studies of 4 students	Student questionnaire and rubric-scored student interview Teacher questionnaire	Student test scores on the Third Grade Citywide English Language Arts Test	Classroom teacher and teaching artist interviews

Note. A "⊕" indicates that the respective group experienced the particular program element. A "—" signifies that the experience of the group with respect to the program or evaluation element was irrelevant to the study.

Instruments

To develop the instruments, RK&A reviewed the literature and sample instruments of other arts-related studies distributed by Branch Associates, Inc.—an evaluation firm providing technical assistance to U.S. Department of Education grantees—and employed standard educational research procedures. For example, for the student questionnaire, RK&A used Estes Attitude Scales because they reliably and effectively measure student attitudes toward school and academic subjects, such as reading.[12] With the exception of the Estes Attitude Scales, all other measurements were developed specifically for this project.

Description of Instruments

RK&A measured student performance in both Treatment and Control Groups using standardized questionnaires, interviews, case studies, and test scores on the Third Grade Citywide English Language Arts (ELA) Test. Data collection for the case studies took place throughout the school year. Each school set aside two days in May 2005 and 2006 for RK&A to collect the questionnaire and interview data. Additionally, the schools provided RK&A with students' third grade ELA Test scores. As mentioned earlier, only students who returned signed parent consent forms participated in the study. Student responses were kept confidential and anonymous, as each student was given an identification number that was used for all data. If a student accidentally wrote his/her name on the questionnaire or said it during the interview, the name was blacked out or stricken from the transcripts.

The student questionnaire and interview data were collected at the end of each school year. On the morning of the first day of data collection, the data collectors projected the student questionnaire on an overhead projector and then verbally administered it to each class (see Appendix I for the student questionnaire). During the remainder of the first day and throughout the second day at the schools, data collectors interviewed each student one-on-one and audio-recorded the responses with parental consent (see Appendix J for the student interview guide).

Teachers' impact and performance were measured using standardized questionnaires, observations, and in-depth interviews. As with the student data, teachers' were given identification numbers so that their data would be confidential and anonymous. The classroom teacher questionnaires primarily provided context for student data (see Appendix K for the classroom teacher questionnaire). Classroom teachers completed the questionnaire on their own (i.e., it was self-administered) at the end of the year—on the same day students completed their interviews. After the data collectors finished interviewing students, they collected the sealed envelopes containing the teacher questionnaires. In 2004-05, RK&A observed the teachers in Treatment Group B to determine whether *LTA* was being implemented as designed. They were observed during three art inquiry lessons and one read-aloud lesson in the spring 2005 semester.[13] That is, the observations provided quantitative data allowing RK&A to examine

[12]Estes, T.H., Roettger, D.M., Johnstone, P.J., & Richards, H.C. (1976). Estes Attitude Scales (Elementary Form): Manual for Administration and Interpretation. Charlottesville, VA: Virginia Research Associates.

[13]Art inquiry lessons involved teachers' showing students a work of art and then discussing it using *LTA* inquiry strategies. Read-aloud lessons involved teachers' fostering a discussion about texts using the same *LTA* inquiry strategies.

which, if any, *LTA* activities teachers had integrated into their lessons and to what degree they used inquiry. Teacher and student behaviors during the lessons were scored by two data collectors using an observation tool (see Appendix L for the classroom teacher observation form).

The in-depth interviews allowed teachers to talk about their experiences with *LTA*, specifically the program's impact on their teaching practice and their students (see Appendix M for the classroom teacher interview guide). RK&A conducted the teacher interviews over the telephone in May and June 2005 and 2006. The qualitative interview data have provided a rich analysis of the *LTA* program from the perspective of teachers, which is key to building a sustainable program.

RK&A measured teaching artists' impact and performance using observations and in-depth interviews. As with all the other data, teaching artists were given identification numbers so that their data would be confidential and anonymous. The teaching artist observations provided context for student data, by showing evaluators how well the artists implemented *LTA* and how students responded to the lessons. During the spring semester of 2005, each teaching artist was observed three times with each class participating in the *LTA* program. Teaching artists' and students' behaviors during the lessons were scored by two data collectors using an observation tool (see Appendix N for the teaching artist observation form).

The in-depth interviews enabled the teaching artists to talk about their experiences with *LTA*, specifically the impact of the new inquiry-focused professional development on their teaching practice and their students (see Appendix O for the teaching artist interview guide). RK&A conducted the teaching artist interviews over the telephone in May and June 2005 and 2006. Again, the qualitative interview data has provided a rich description of the *LTA* program.

The program was examined at the micro level by conducting case studies of four treatment school students. Case studies typically examine the interplay of variables to provide as complete an understanding of one event or situation as possible. Case studies do not attempt to identify trends, nor do they produce generalizable information. For the evaluation, one case study was defined as one student. Two case study students at each treatment school were selected, and each included at least two observations (in the regular classroom as well as in *LTA*) and in-depth interviews with the students, their classroom teachers, their teaching artists, and their parents. RK&A developed an in-depth interview guide to allow students and those in their *LTA* community to talk about their experiences with the program (see Appendix G for the interview guides). RK&A interviewed each case study student up to four times, including before the program began, once in the fall, once in the spring, and at the conclusion of the program. RK&A interviewed the students' classroom teachers, teaching artists, and parents at the conclusion of the program. Additionally, RK&A observed the four students to provide an objective account of how they interact and work in a *LTA* session and in the regular classroom. Observations were open-ended but influenced by some guiding questions (see Appendix H). RK&A conducted between two and four *LTA* and classroom observations for each case study.

Instruments' Reliability and Validity

RK&A developed all instruments according to stringent questionnaire construction techniques, assuring appropriate item wording, order, format, and internal consistency. Guggenheim Museum staff, school partners, literacy advisors, and an independent statistician reviewed all instruments (see Appendix P for advisors' biographies).

Literacy advisors reviewed and critiqued the student questionnaire and interview guide for face and content validity. In particular, the advisors examined the questionnaire and interview guide for age-appropriate wording and clarity of expression. They also judged whether the questions and scales sufficiently addressed the variables they were intended to measure: critical thinking abilities for works of art and texts; demographic characteristics; understanding how artists create art; attitudes toward school, art, and art museums; and (for the Treatment Group only) *LTA* program ratings.

RK&A conducted a pretest of the student questionnaire with third-grade students not participating in *LTA*, and who did not attend any of the schools participating in the study. RK&A and Guggenheim staff selected P.S. 88 in Queens for the pretest, as its student population matches those of the schools participating in the study. RK&A administered the questionnaire to students who had submitted parental consent forms. Using the pretest data, the internal consistency of the major rating scales was examined using Chronbach's alpha, with a minimally acceptable score of 0.65.[14] Also, correlation coefficients were calculated for individual items with both positive and negative wording (e.g. "I like making artwork in class" and "I do not like doing art projects in class").

RK&A also conducted pretests of the student interviews. RK&A conducted the first round with the same third-grade students in P.S. 88 who participated in the questionnaire pretest, and Guggenheim staff conducted two subsequent rounds with separate samples of third-grade students at P.S. 58. The interview pretest enabled RK&A to refine the scoring rubric and determine the feasibility of the activities. RK&A also pre-tested the teacher and teaching artist observation forms by observing classroom teachers and teaching artists at P.S. 148.

Data Collection Protocol

Quality data collection is as important to a study as is quality research design. To prevent potential biases, RK&A hired seven data collectors who did not know the research hypotheses to administer the questionnaires, conduct the observations, and carry out the interviews. Data collectors were education or museum studies graduate students or similarly qualified contractors. RK&A extensively trained the data collectors and carefully monitored data collection.

The student questionnaire and student interview guide were standardized to limit variation among data collectors. Additionally, two data collectors simultaneously conducted observations in each classroom so that RK&A could test inter-rater reliability.

[14] DeVellis, R. F. (1991). *Scale Development: Theory and Applications*. Newbury Park, CA: Sage, p. 85.

DATA ANALYSIS

Following educational research procedures, RK&A analyzed the student data by individual, by class, and by Treatment group. RK&A analyzed the teacher and teaching artist data by individual and, when applicable, by Treatment group. The instruments discussed in the previous section produced both quantitative and qualitative data.

Quantitative Data Analysis

The student and teacher questionnaires, student interviews, student test scores, as well as the teacher and teaching artist observations were analyzed quantitatively. For the student questionnaire data, like the pretest sample, the internal consistency of the major rating scales was examined using Chronbach's alpha, with a minimally acceptable score of 0.65.[15]

Student interviews were audio-recorded, then transcribed, and these transcriptions were scored according to a series of literacy indicators (see Appendix Q for the student interview scoring rubric and Appendix R for examples of verbatim student interview transcripts). To avoid potential biases, two experienced research assistants—who had not conducted the interviews and did not know the research hypotheses—conducted the scoring. One assistant scored 100 percent of the interview data and then the second one independently scored a percentage of the data so that RK&A could test inter-rater reliability (for the 2004-05 data, 15 percent of the data was scored twice and in 2005-06, 33 percent of the data was scored a second time). To test the inter-rater reliability, RK&A used percent-agreement with a consensus estimate of 65 percent or greater.[16]

Two data collectors simultaneously and independently conducted each teaching artist and teacher observation. Again, to test inter-rater reliability, RK&A used percent-agreement with a consensus estimate of 65 percent or greater.[17]

The quantitative data was entered into a computer and statistically analyzed using SPSS 12.0.1 for Windows, a statistical package for personal computers. Calculations performed on categorical data (e.g., demographic characteristics) included frequency distributions and percentages. Calculations for interval variables (e.g., rating scales) included summary statistics, such as the mean (average), median (point at which one-half of the responses fall above and one-half fall below), and standard deviation (spread of scores: ±). To make comparisons among experimental groups and program elements, RK&A performed chi-square tests, analyses of variance, analyses of covariance, and multiple regressions. Appendix S provides a list of all statistical analyses conducted and detailed descriptions of statistically significant relationships are provided throughout the report.

A standard 0.05 level of significance was used to preclude relationships bearing little or no practical significance. When the level of significance is set to $p = 0.05$, any relationship that

[15]DeVellis, R. F. (1991). *Scale Development: Theory and Applications*. Newbury Park, CA: Sage, p. 85.
[16]Stemler, S. E. (2004). A Comparison of Consensus, Consistency, and Measurement Approaches to Estimating Inter-Rater Reliability. *Practical Assessment, Research, & Evaluation*, 9(4). http://PAREonline.net.
[17]Ibid.

exists at a probability (*p*-value) less than or equal to 0.05 is "significant." When a relationship has a *p*-value of 0.05, there is a 95 percent probability that the relationship exists; that is, in 95 out of 100 cases, there would be a relationship between two variables such as age group and reason for visiting. Conversely, there is a 5 percent probability that the relationship would not exist; in other words, in 5 out of 100 cases, a relationship would appear by chance. Only statistically significant differences are presented in the body of the report.

Qualitative Data Analysis

RK&A qualitatively analyzed the data resulting from verbatim responses to the teacher and teaching artist interview questions as well as the case study interviews and observation notes. In analyzing quantitative data, the evaluator studies the responses for meaningful patterns, and, as patterns and trends emerge, groups similar responses. Each grouping is assigned a name or category conveying the meaning the responses embody and is exemplified with verbatim quotations.

REPORTING METHOD

RK&A presents the quantitative data in tables. Percentages within tables may not always equal 100 owing to rounding. The findings within each topic are presented in descending order, starting with the most frequently occurring.

Interview data are presented in narrative. In quotations, the interviewer's remarks appear in parentheses and the identification code or group membership appears in brackets following the quotation. Trends and themes in the interview data are also presented from most- to least-frequently occurring.

Findings in this report are presented in seven main sections:

I. Student Questionnaires
II. Student Interviews
III. Student Test Scores
IV. Student Case Studies (2005-06 only)
V. Teacher Questionnaires
VI. Observations
VII. Teaching Artist and Classroom Teacher Interviews (2004-05 and 2005-06)

I. PRINCIPAL FINDINGS: STUDENT QUESTIONNAIRES

In 2004-05, four Title I schools in the New York City Public School System participated in the study: P.S. 86 and P.S. 94 in the Bronx and P.S. 148 and P.S. 149 in Queens (see the "Introduction: Research Design—School Selection" for a detailed description of the schools' matching characteristics). In 2005-06, P.S. 86, P.S. 94, and P.S. 148 participated in the study.[18]

The combined 2004-06 data set includes 605 third graders who completed questionnaires: 215 from Treatment Group A (*LTA* program only), 190 from Treatment Group B (*LTA* program and teacher professional development), and 200 from the Control Group (no *LTA* program or professional development).

BACKGROUND INFORMATION

Data Collection

RK&A-trained data collectors displayed an overhead projection of the questionnaire (see Appendix I) while verbally administering it to students as a class. Only students with signed parental consent forms completed questionnaires. The questionnaire was administered in May 2005 and 2006 in the morning prior to the beginning of student interviews. All four schools had high participation rates—61 percent or higher (see Table I.1).

Table I.1
Questionnaire Participation Rate 2004-06

School	Number of Classes	Group	Teaching Artist*	Total Number of Students	% Participating in Study
P.S. 148 (Queens)	6 classes 6 classes	Treatment A Treatment B	Teaching Artist 1 Teaching Artist 1	226	89.8
P.S. 86 (Bronx)	6 classes 6 classes	Treatment A Treatment B	Teaching Artist 2 & 3 Teaching Artist 2 & 4	260	77.7
P.S. 94 (Bronx)	9 classes	Control	------	228	61.4
P.S. 149 (Queens)	3 classes	Control (2004-05 only)	------	69	79.7

*Teaching artists are referred to by a code number assigned to them in the study.

[18]In the 2005-06 school year, P.S. 149 was not eligible to act as the control school because students participated in an arts program provided by another organization—contrary to the agreement the school had with the Guggenheim. Instead, for the second year of the study, additional classes at P.S. 94 served as the control group. The socioeconomic and academic performance of P.S. 94 matched both P.S. 86 and P.S. 148. Additionally, in the 2004-05 study, no statistically significant differences were found between P.S. 94 and P.S. 148.

Data Analysis and Reliability

RK&A analyzed the student questionnaire data with SPSS 12.0.1 for Windows. Calculations performed on categorical data (e.g., demographic characteristics) included frequency distributions and percentages. Calculations for interval variables (e.g., rating scales) included summary statistics, such as the mean (average), median (point at which one-half of the responses fall above and one-half fall below), and standard deviation (spread of scores: ±). To make comparisons among experimental groups and program elements, RK&A also performed chi-square tests, analyses of variance, analyses of covariance, and multiple regressions.

In the questionnaire, students had three choices for each of the scales: "agree," "disagree," and "don't know." In the data analysis, RK&A combined "disagree" and "don't know" for the scales with positive statements and combined "agree" and "don't know" with negative statements to circumvent courtesy bias and enable statistical analyses of the modest sample size. Courtesy bias is a phenomenon in which respondents select a favorable rating to please those administering the questionnaire.[19] For example, students might avoided selecting "disagree" because that term appeared too negative and selected "don't know" instead.

RK&A tested the internal consistency of the scales using Chronbach's alpha, with a minimally accepted score of 0.65.[20] For all the scales combined, Chronbach's alpha was 0.82. Chronbach's alpha for each set of scales is as follows:

- Nine scales measuring students' attitudes toward school, reading, and class participation = 0.67
- Six scales measuring attitudes toward art = 0.65
- Five scales measuring attitudes toward art museums = 0.68
- Four scales measuring attitudes toward the *LTA* program (Treatment Group only) = 0.72

Reporting Method

All tables present the percentages and summary statistics for the total sample, the Treatment Group (combined data from Treatment Group A and Treatment Group B), and the Control Group. **Only statistically significant differences between the Treatment Group and Control Group are described in the text.** However, some additional significant relationships are presented in table footnotes (e.g., when RK&A found statistically significant differences between Treatment Group A and Treatment Group B, the data are presented by specific experimental group). Because some students skipped questions on the survey form, the total number of students that responded to each question (*n*) is provided in the tables.

[19]Warwick, D., and C. Lininger. (1975) *The Sample Survey: Theory and Practice*. New York: McGraw-Hill.
[20]DeVellis, RF (1991) *Scale Development: Theory and Applications*. Newbury Park, CA: Sage, p. 85.

STUDENT CHARACTERISTICS

Demographics

One-half of the students were female and one-half were male (51 percent and 49 percent, respectively) (see Table I.2). Just over one-half of students were nine years old (52 percent). Three-quarters of students speak English and one other language at home (75 percent). The most commonly spoken foreign language was Spanish (74 percent).

RK&A found two statistically significant differences between the demographics of the Treatment and Control Groups. More Treatment Group students speak English at home than do Control Group students. For students who speak a non-English language at home, Spanish is spoken more frequently by Treatment Group students than by Control Group students.

Table I.2
Students' Demographic Characteristics 2004-06

Gender (Treatment *n* = 392, Control *n* = 198, Total *n* = 590)	**Treatment (%)**	**Control (%)**	**Total (%)**
Female	51.5	50.0	51.0
Male	48.5	50.0	49.0
Age (Treatment *n* = 389, Control *n* = 197, Total *n* = 586)	**Treatment (%)**	**Control (%)**	**Total (%)**
7 years	0.0	0.5	0.2
8 years	37.5	41.6	38.9
9 years	52.4	51.3	52.0
10 years	10.0	6.6	8.9
Languages Spoken at Home[1,2] (Treatment *n* = 394, Control *n* = 197, Total *n* = 591)	**Treatment (%)**	**Control (%)**	**Total (%)**
English plus one other language	76.6	70.1	74.5
English only	8.9	12.7	10.2
English plus two or more other languages	7.9	5.5	7.1
Language other than English	6.6	11.7	8.3

[1]More Treatment Group students speak English at home than do Control Group students (93.4 per-cent and 89.3 percent, respectively; x^2=4.451, *df*=1, *p*=0.035). Overall, 91.7 percent of students speak English at home.
[2]More Treatment Group students speak Spanish at home than do Control Group students (76.9 and 69.0 percent, respectively; x^2=4.256, *df*=1, *p*=0.039). Overall, 74 percent of students speak Spanish at home.

Museum Visitation Patterns

Students noted whether they had visited the Guggenheim with their schools and their families. Less than one-quarter of the total student sample (20 percent) had visited the Guggenheim with their school (see Table I.3). More treatment students responded that they had visited the Guggenheim prior to the 2004-05 or 2005-06 school years than did Control students (26 percent and 8 percent, respectively). However, some Treatment Group students may have misunderstood the question and included their *LTA*-related visits to the Guggenheim Museum, as the Museum had never worked with these students prior to the study. Most students—89 percent—had never visited the Guggenheim with their families.

Table I.3
Prior Visitation to the Guggenheim Museum 2004-06

School Visits[1,2] (Treatment *n* = 389, Control *n* = 198, Total *n* = 587)	**Treatment (%)**	**Control (%)**	**Total (%)**
Never visited the Guggenheim with school	73.8	91.9	79.9
Visited the Guggenheim with school	26.2	8.1	20.1
Family Visits (Treatment *n* = 387, Control *n* = 197, Total *n* = 584)	**Treatment (%)**	**Control (%)**	**Total (%)**
Never visited the Guggenheim with family	89.4	88.8	89.2
Visited the Guggenheim with family	10.6	11.2	10.8

[1]Students in the Treatment Group were asked, "Before this school year, had you ever visited the Guggenheim Museum with your school?" and students in the Control group were asked, "Have you ever visited the Guggenheim Museum with your school?"
[2]x^2=26.883, *df*=1, *p*=0.000

STUDENT ATTITUDES AND PERCEPTIONS

Attitudes about School, Reading, and Class Participation

Students responded to nine attitude scales about school, reading, and class participation. **There were no statistically significant differences in student attitudes toward school and reading between the Treatment and the Control Groups.**

Most students expressed positive attitudes toward school: 70 percent agreed with the statement, "I like school;" 66 percent disagreed with, "School is boring;" and 63 percent agreed with, "I look forward to coming to school" (see Table I.4).

Table I.4
Attitudes about School 2004-06

School Attitude Scale	Treatment (%)	Control (%)	Total (%)
I like school. (Treatment n = 396, Control n = 198, Total n = 594)[1,2]			
Agree	69.9	69.7	69.9
Disagree/Don't Know	30.1	30.3	30.1
School is boring. (Treatment n = 394, Control n = 198, Total n = 592)[3]			
Disagree	66.2	61.1	64.5
Agree/Don't Know	33.8	38.9	35.5
I look forward to coming to school. (Treatment n = 391, Control n = 198, Total n = 589)			
Agree	64.5	61.1	63.3
Disagree/Don't Know	35.5	38.9	36.7

[1]More students in 2004-05 agreed with the statement, "I like school," than did students in 2005-06 (75.0 percent and 64.0 percent respectively; x^2=8.455, df=1, p=0.004).
[2]More girls agreed with the statement, "I like school," than did boys (75.4 percent and 64.4 percent respectively; x^2=8.581, df=1, p=0.003).
[3]More girls disagreed with the statement, "School is boring," than did boys (70.7 percent and 58.3 percent respectively; x^2=9.777, df=1, p=0.002).

Most students also had positive attitudes toward reading (see Table I.5). Seventy-five percent agreed with the statement, "I like to read," and 63 percent agreed with, "When I read a book, I enjoy talking about it."

Table I.5
Attitudes about Reading and Discussing Texts 2004-06

Reading Attitude Scale	Treatment (%)	Control (%)	Total (%)
I like to read. (Treatment *n* = 394, Control *n* = 197, Total *n* = 591)[1]			
Agree	72.8	78.2	74.6
Disagree/Don't Know	27.2	21.8	25.4
When I read a book, I enjoy talking about it.[2] (Treatment *n* = 396, Control *n* = 197, Total *n* = 593)			
Agree	60.9	66.5	62.7
Disagree/Don't Know	39.1	33.5	37.3

[1]More girls agreed with the statement, "I like to read," than did boys (81.7 percent and 67.4 percent respectively; x^2=15.895, *df*=1, *p*=0.000).
[2]More girls agreed with the statement, "When I read a book, I enjoy talking about it," than did boys (69.0 percent and 56.4 percent respectively; x^2=10.003, *df*=1, *p*=0.002).

Most students expressed positive attitudes about class participation (see Table I.6). Seventy-six percent agreed with, "I learn more when I work on projects with my classmates," while 75 percent disagreed with, "I do not like working with my classmates on projects." Sixty-two percent disagreed with, "I never share my ideas when we are talking about something in class," and 51 percent agreed with, "When I have an idea to share, my classmates listen to me."

There was one statistically significant difference between the Treatment and Control Groups' class participation attitudes. More Treatment Group students disagreed with, "I do not like working with my classmates on projects," than did Control Group students.

Table I.6
Attitudes about Class Participation 2004-06

Class Participation Attitude Scale	Treatment (%)	Control (%)	Total (%)
I learn more when I work on projects with my classmates.[1]			
(Treatment *n* = 201, Control *n* = 114, Total *n* = 315)			
Agree	78.2	72.7	76.4
Disagree/Don't Know	21.8	27.3	23.6
I do not like working with my classmates on projects.[2]			
(Treatment *n* = 395, Control *n* = 198, Total *n* = 593)			
Disagree	78.0	67.7	74.5
Agree/Don't Know	22.0	32.3	25.5
I never share my ideas when we are talking about something in class.[3]			
(Treatment *n* = 395, Control *n* = 198, Total *n* = 593)			
Disagree	63.0	59.6	61.9
Agree/Don't Know	37.0	40.4	38.1
When I have an idea to share, my classmates listen to me.[4,5]			
(Treatment *n* = 395, Control *n* = 196, Total *n* = 591)			
Agree	52.4	49.0	51.3
Disagree/Don't Know	47.6	51.0	48.7

[1]More students in 2005-06 agreed with the statement, "I learn more when I work on projects with my classmates," than did students in 2004-05 (80.2 percent and 73.0 percent respectively; x^2=4.245, *df*=1, *p*=0.039).
[2]x^2=7.369, *df*=1, *p*=0.007
[3]More students at P.S. 86 disagreed with the statement, "I never share my ideas when we are talking about something in class," than did students at P.S. 148 (68.7 percent and 57.4 percent respectively; x^2=5.437, *df*=1, *p*=0.020).
[4]More students at P.S. 86 agreed with the statement, "When I have an idea to share, my classmates listen to me," than did students at P.S. 148 (60.1 percent and 44.7 percent respectively; x^2=9.427, *df*=1, *p*=0.002).
[5]More students in 2004-05 agreed with the statement, "When I have an idea to share, my classmates listen to me," than did students in 2005-06 (55.3 percent and 46.8 percent respectively; x^2=4.267, *df*=1, *p*=0.039).

To calculate the total score for the school-related scales, the number of positive responses ("agree" on affirmative statements and "disagree" on negative statements) for all nine scales was summed for each student (see Table I.7). The total score corroborates that students had positive attitudes toward school, averaging six positive responses out of nine possible.

Table I.7
Total Score for Nine School Attitude Scales 2004-06
(Treatment *n* = 385, Control *n* = 195, Total *n* = 580)

Group	Mean[1,2]	±	Minimum	Maximum
Treatment	6.1	2.2	0.0	9.0
Control	5.9	2.1	1.0	9.0
Total	6.0	2.2	0.0	9.0

[1]Students at P.S. 86 had a higher total school attitude score compared with students at P.S. 148 (mean scores of 6.3 and 5.8, respectively; F=5.096; *df*=1, 383; *p*=0.025).
[2]Girls had a higher total school attitude score compared with boys (mean scores of 6.2 and 5.8, respectively; F=6.166; *df*=1, 576; *p*=0.013).

Attitudes about and Perceptions of Art, the Artistic Process, and Artists

Students responded to six attitude scales about art. They were also asked a series of "yes/no" questions about their perceptions of the artistic process and a multiple choice question about how to define an artist.

Most students expressed positive attitudes about making, looking at, and discussing art (see Table I.8, below). Ninety-three percent of students responded that they enjoy making artwork in class, and 90 percent said they concentrate when working on an art project. Eighty percent noted that they enjoy looking at works of art by well-known artists and, similarly, 76 percent disagreed that looking at such works of art is boring. Sixty-four percent noted that they enjoy talking about works of art made by well-known artists, and 52 percent said they felt confident doing so.

There was one statistically significant difference: more Treatment Group students agreed with the statement, "I enjoy talking about artwork by well-known artists," than did Control Group students.

Table I.8
Attitudes about Art 2004-06

Art Attitude Scale	Treatment (%)	Control (%)	Total (%)
I like making artwork in class.[1]			
(Treatment *n* = 396, Control *n* = 198, Total *n* = 594)			
Agree	93.9	91.4	93.1
Disagree/Don't Know	6.1	8.6	6.9
I concentrate when I'm doing an art project.[2]			
(Treatment *n* = 395, Control *n* = 198, Total *n* = 593)			
Agree	89.6	90.4	89.9
Disagree/Don't Know	10.4	9.6	10.1
I enjoy looking at artwork by well-known artists.[3]			
(Treatment *n* = 395, Control *n* = 195, Total *n* = 590)			
Agree	81.0	78.5	80.2
Disagree/Don't Know	19.0	21.5	19.8
I think looking at artwork made by well-known artists is boring.[4]			
(Treatment *n* = 396, Control *n* = 197, Total *n* = 593)			
Disagree	77.5	71.6	75.5
Agree/Don't Know	22.5	28.4	24.5
I enjoy talking about artwork by well-known artists.[5,6]			
(Treatment *n* = 396, Control *n* = 198, Total *n* = 594)			
Agree	67.7	57.6	64.3
Disagree/Don't Know	32.3	42.4	35.7
I know how to talk about artwork made by well-known artists.			
(Treatment *n* = 396, Control *n* = 196, Total *n* = 592)			
Agree	53.8	47.4	51.7
Disagree/Don't Know	46.2	52.6	48.3

[1]More girls agreed with the statement, "I like making artwork in class," than did boys (96.7 percent and 89.3 percent respectively; x^2=12.501, *df*=1, *p*=0.000).
[2]More girls agreed with the statement, "I concentrate when I am doing an art project," than did boys (92.4 percent and 87.2 percent respectively; x^2=4.360, *df*=1, *p*=0.037).
[3]More girls agreed with the statement, "I enjoying looking at artwork made by well-known artists," than did boys (83.2 percent and 77.4 percent respectively; x^2=7.306, *df*=2, *p*=0.026).
[4]More students at P.S. 86 disagreed with the statement, "I think looking at artwork made by well-known artists is boring," than did students at P.S. 148 (84.4 percent and 70.6 percent respectively; x^2=10.921, *df*=1, *p*=0.001).
[5]x^2=5.868, *df*=1, *p*=0.015
[6]More girls agreed with the statement, "I enjoy talking about artwork made by well-known artists," than did boys (69.8 percent and 58.8 percent respectively; x^2=7.703, *df*=1, *p*=0.006).

To calculate the total score for the art attitude scales, the number of positive responses ("agree" on affirmative statements and "disagree" on negative statements) for all six scales was summed for each student (see Table I.9). The total score, averaging five positive responses of a possible six, corroborates that students had positive attitudes toward art.

Table I.9
Total Score for Six Art Attitude Scales 2004-06
(Treatment *n* = 394, Control *n* = 193, Total *n* = 587)

Group	Mean*	±	Minimum	Maximum
Treatment	4.6	1.5	0.0	6.0
Control	4.4	1.5	0.0	6.0
Total	4.6	1.5	0.0	6.0

*Girls had a higher total art attitude score compared with boys (mean scores of 4.8 and 4.4, respectively; F=12.407; *df*=1, 581; *p*=0.000). In other words, girls had a more positive attitude toward art than did boys.

Students were asked to respond "yes" or "no" to a series of choices that describe what they do when they are working on an art project at school and make a mistake (see Table I.10). Ninety-two percent said they keep working on their art project and try to fix it. Many also said they asked the teacher for help and/or talked about how to fix it with their teacher or other students (each 86 percent).

There were four statistically significant differences: more Control Group students said they would feel sad, throw away their project and start over, feel mad, and/or give up and do something else if they made a mistake on an art project than did Treatment Group students.

Table I.10
Perceptions of the Artistic Process 2004-06

When you are working on an art project at school and you make a mistake, do you…?	Treatment (%)	Control (%)	Total (%)
Keep working on your project and try to fix it.[1] (Treatment *n* = 393, Control *n* = 197, Total *n* = 590)	91.6	91.4	91.5
Ask the teacher for help.[2] (Treatment *n* = 392, Control *n* = 198, Total *n* = 590)	87.5	84.3	86.4
Talk about how to fix it with your teacher or other students.[3] (Treatment *n* = 394, Control *n* = 196, Total *n* = 590)	87.1	83.7	85.9
Ask another student for help. (Treatment *n* = 201, Control *n* = 114, Total *n* = 315)	48.3	52.5	49.7
Feel sad.[4] (Treatment *n* = 394, Control *n* = 195, Total *n* = 589)	16.8	24.1	19.2
Throw away your project and start over.[5] (Treatment *n* = 396, Control *n* = 198, Total *n* = 594)	14.6	27.3	18.9
Feel mad.[6] (Treatment *n* = 392, Control *n* = 198, Total *n* = 590)	14.8	23.2	17.6
Give up and do something else.[7] (Treatment *n* = 393, Control *n* = 197, Total *n* = 590)	4.8	11.2	6.9

[1]More girls selected, "Keep working on your project and try to fix it," than did boys (95.6 percent and 87.2 percent respectively; x^2=13.510, *df*=1, *p*=0.000).
[2]More students in 2005-06 selected, "Ask the teacher for help," than did students in 2004-05 (90.2 percent and 83.1 percent respectively; x^2=6.311, *df*=1, *p*=0.012).
[3]More students at P.S. 86 selected, "Talk about how to fix it with your teacher and other students," than did students at P.S. 148 (90.9 percent and 83.2 percent respectively; x^2=5.244, *df*=1, *p*=0.022).
[4]x^2=4.547, *df*=1, *p*=0.033
[5]x^2=13.754, *df*=1, *p*=0.000
[6]x^2=6.448, *df*=1, *p*=0.011
[7]x^2=8.139, *df*=1, *p*=0.004

To calculate the total score for the artistic process-related questions, the number of positive responses ("yes" on positive statements and "no" on negative statements) for all eight questions was summed for each student (see Table I.11). The total score, averaging seven positive responses of a possible eight, corroborates that students had positive perceptions of the artistic process.

There was a statistically significant difference: Treatment Group students had a higher artistic process score (i.e., more positive perceptions of the artistic process) than did Control Group students.

Table I.11
Total Score on Eight Artistic Process Scales 2004-06
(Treatment *n* = 387, Control *n* = 194, Total *n* = 581)

Group	Mean[1,2]	±	Minimum	Maximum
Treatment	6.7	1.3	1.0	8.0
Control	6.3	1.5	1.0	8.0
Total	6.5	1.4	1.0	8.0

[1]F=10.069; *df*=1, 579; *p*=0.002
[2]Girls had a higher total artistic process attitude score compared with boys (mean scores of 6.7 and 6.4, respectively; F=8.463; *df*=1, 575; *p*=0.004). In other words, girls had more positive perceptions of the artistic process than did boys.

Students completed the following sentence, "A good artist is somebody who _____," choosing up to two responses from a selection of eight possible choices (see Table I.12). One-half of students responded that an artist is someone who "draws really well," and nearly one-half also said an artist is someone who "works hard and practices" (50 percent and 49 percent, respectively). The fewest students described an artist as someone who "experiments with different materials" and "calls themselves an artist" (9 percent and 3 percent, respectively).

There were four statistically significant differences: more Control Group students described an artist as someone who "draws really well" and "makes beautiful things" compared with Treatment Group students. Conversely, more Treatment Group students described an artist as someone who "has good ideas" and "experiments with different materials" than did Control Group students.

Table I.12
Perceptions of Artists 2004-06
(Treatment *n* = 397, Control *n* = 198, Total *n* = 595)

A good artist is somebody who _____.	Treatment (%[1])	Control (%[1])	Total (%[1])
Draws really well[2,3]	47.1	56.1	50.1
Works hard and practices	48.9	49.5	49.1
Has good ideas[4,5]	34.3	24.7	31.1
Makes beautiful things[6]	20.7	30.8	24.0
Has their artwork displayed in a museum	24.2	22.7	23.7
Is famous[7]	10.3	13.6	11.4
Experiments with different materials[8,9]	11.8	4.0	9.2
Calls themselves an artist	2.8	4.0	3.2

[1]The column totals exceed 100 percent, because students were asked to select two responses to complete the sentence.
[2]x^2=4.240, *df*=1, *p*=0.039
[3]More students in 2004-05 selected, "Draws really well," than did students in 2005-06 (55.5 percent and 43.9 percent respectively; x^2=8.021, *df*=1, *p*=0.005).
[4]x^2=5.576, *df*=1, *p*=0.018
[5]More students at P.S. 148 selected, "Has good ideas," than did students at P.S. 86 (40.6 percent and 28.0 percent respectively; x^2=7.006, *df*=1, *p*=0.008).
[6]x^2=7.459, *df*=1, *p*=0.006
[7]More boys selected, "Is famous," than did girls (14.2 percent and 8.6 percent respectively; x^2=4.510, *df*=1, *p*=0.034).
[8]x^2=9.577, *df*=1, *p*=0.002
[9]More students in 2005-06 selected, "Experiments with different materials," than did students in 2004-05 (11.9 percent and 6.9 percent respectively; x^2=4.292, *df*=1, *p*=0.038).

Attitudes about Art Museums

Students responded to a series of attitude scales about art museums (see Table I.13, below). Most students had positive attitudes toward art museums—more than 80 percent noted that they liked art museums and disagreed that art museums are boring (88 percent and 85 percent, respectively). Eighty-two percent of students would like their class to visit an art museum, and 80 percent would like to bring their families to an art museum. Additionally, 78 percent

disagreed with the statement, "I feel uncomfortable in art museums."

There was one statistically significant difference: more Treatment Group students said they would bring their families to an art museum compared with Control Group students.

Table I.13
Attitudes about Art Museums 2004-06

Art Museum Attitude Scale	Treatment (%)	Control (%)	Total (%)
I like art museums.[1]			
(Treatment *n* = 396, Control *n* = 198, Total *n* = 594)			
Agree	90.2	84.8	88.4
Disagree/Don't Know	9.8	15.2	11.6
I think art museums are boring.[2]			
(Treatment *n* = 396, Control *n* = 198, Total *n* = 594)			
Disagree	87.4	81.3	85.4
Agree/Don't Know	12.6	18.7	14.6
I would like my class to visit an art museum.[3]			
(Treatment *n* = 396, Control *n* = 198, Total *n* = 594)			
Agree	83.6	79.8	82.3
Disagree/Don't Know	16.4	20.2	17.7
I would bring my family to an art museum.[4,5]			
(Treatment *n* = 394, Control *n* = 198, Total *n* = 592)			
Agree	85.5	69.7	80.2
Disagree/Don't Know	14.5	30.3	19.8
I feel uncomfortable in art museums.[6]			
(Treatment *n* = 395, Control *n* = 198, Total *n* = 593)			
Disagree	79.2	75.8	78.1
Agree/Don't Know	20.8	24.2	21.9

[1]More students in 2005-06 agreed with the statement, "I like art museums," than did students in 2004-05 (89.6 percent and 87.3 percent respectively; x^2=6.733, *df*=1, *p*=0.035). Additionally, more girls agreed with the statement, "I like art museums," than did boys (92.4 percent and 84.4 percent respectively; x^2=9.092, *df*=1, *p*=0.003).

[2]More girls disagreed with the statement, "I think art museums are boring," than did boys (89.4 percent and 81.0 percent respectively; x^2=8.275, *df*=1, *p*=0.004).

[3]More girls agreed with the statement, "I would like my class to visit an art museum," than did boys (88.0 percent and 76.5 percent respectively; x^2=13.591, *df*=1, *p*=0.000).

[4]x^2=20.840, *df*=1, *p*=0.000

[5]More students in 2005-06 agreed with the statement, "I would bring my family to an art museum," than did students in 2004-05 (84.2 percent and 76.8 percent respectively; x^2=5.121, *df*=1, *p*=0.024).

[6]More students in 2005-06 disagreed with the statement, "I feel uncomfortable in art museums," than did students in 2004-05 (82.7 percent and 74.0 percent respectively; x^2=6.629, *df*=1, *p*=0.010). Additionally, more girls disagreed with the statement, "I feel uncomfortable in art museums," than did boys (85.0 percent and 70.8 percent respectively; x^2=17.391, *df*=1, *p*=0.000).

To calculate the total score for the museum attitude scales, the number of positive responses ("agree" on affirmative statements and "disagree" on negative statements) for all five scales was summed for each student (see Table I.14). The total score, averaging four positive responses of a possible five, corroborates that students had positive attitudes toward art museums.

There was a statistically significant difference: Treatment Group students had a higher total art museum attitude score (i.e., a more positive attitude toward art museums) than did Control Group students.

Table I.14
Total Score on Five Art Museum Attitude Scales 2004-06
(Treatment *n* = 393, Control *n* = 198, Total *n* = 591)

Group	Mean[1,2]	±	Minimum	Maximum
Treatment	4.3	1.1	0.0	5.0
Control	3.9	1.4	0.0	5.0
Total	4.1	1.2	0.0	5.0

[1]F=15.940; *df*=1, 589; *p*=0.001
[2]Students in 2005-06 had a higher total art museum attitude score compared with students in 2004-05 (means scores of 4.3 and 4.0, respectively; F=6.184; *df*=1, 589; *p*=0.013). Additionally, girls had a higher total art museum attitude score compared with boys (means scores of 4.4 and 3.9, respectively; F=20.895; *df*=1, 585; *p*=0.000).

Attitudes about LTA *(Treatment Group Only)*

Students in the Treatment Group who experienced *LTA* responded to four attitude scales about the program and a closed-response question about their favorite aspect of *LTA*.

Nearly all students had positive attitudes toward *LTA* (see Table I.15). Ninety-four percent responded that the *LTA* art projects were fun, and another 94 percent disagreed with, "I do not like the Guggenheim program." Ninety-three percent noted that they enjoyed learning different ways to make art. Ninety-two percent also said they enjoyed working with the teaching artist.

Table I.15
Attitudes about *LTA* 2004-06

	Treatment Group	
***LTA* Attitude Scale**	**% Agreeing**	**% Disagreeing/ Don't Know**
The art projects we did in the Guggenheim program were fun. (n = 201)	93.9	6.1
I do not like the Guggenheim program. (n = 396)[1]	6.3	93.7
I enjoyed learning different ways of making artwork. (n = 202)[2]	93.2	6.8
I enjoyed working with the teaching artist. (n = 201)	91.9	8.1

[1]With a negative statement, "agree" and "don't know" were combined.
[2]More students at P.S. 148 agreed with the statement, "I enjoyed learning different ways of making artwork," than did students at P.S. 86 (97.5 percent and 88.9 percent respectively; x^2=11.304, df=1, p=0.001).

To calculate the total score for the *LTA* attitude scales, the number of positive responses ("agree" on affirmative statements and "disagree" on negative statements) for all four scales was summed for each student (see Table I.16). The total score, averaging four positive responses of a possible four, corroborates that students had a positive attitude toward *LTA*.

Table I.16
Total Score for Four *LTA* Attitude Scales 2004-06
(n = 395)

Group	Mean*	±	Minimum	Maximum
Treatment only	3.7	0.7	0.0	4.0

*Students at P.S. 148 had a higher total *LTA* attitude score compared with students at P.S. 86 (mean scores of 3.8 and 3.7, respectively; F=4.117; df=1, 393; p=0.043).

Students were asked to identify their two favorite aspects of *LTA* from eight choices (see Table I.17). Students most often selected "taking a field trip to the Museum" and "getting to use different materials" as their favorite aspects of the program (50 percent and 43 percent, respectively). The fewest students chose "talking about my and my classmates' artwork" and "looking at and talking about art by well-known artists" as their favorite aspects (14 percent and 11 percent, respectively).

Table I.17
Favorite Aspects of *LTA* 2004-05
(n = 397)

Aspect	Treatment Group (%[1])
Taking a field trip to the Museum.[2]	50.4
Getting to use different materials.[3]	42.8
Working with a real artist.	33.5
Thinking up my own ideas for my artwork.	18.4
Working with my classmates.	16.1
Having others look at my artwork.	14.1
Talking about my and my classmates' artwork.	13.6
Looking at and talking about art by well-known artists.	11.3

[1]The column total exceeds 100 percent, because students were asked to select their two favorite aspects of *LTA*.
[2]More boys selected "Taking a field trip to the Museum," than did girls (56.8 percent and 45.0 percent respectively; x^2=5.448, df=1, p=0.020).
[3]More girls selected "Getting to use different materials," than did boys (51.0 percent and 34.2 percent respectively; x^2=11.256, df=1, p=0.001).

II. PRINCIPAL FINDINGS: STUDENT INTERVIEWS

In May 2005 and 2006, data collectors interviewed the same students at P.S. 86 and P.S. 94 in the Bronx and P.S. 148 and P.S. 149 in Queens who completed questionnaires (see Section I).[21,22] A total of 565 third-graders completed interviews: 207 from Treatment Group A (*LTA* program only), 188 from Treatment Group B (*LTA* program and teacher professional development), and 170 from the Control Group (no *LTA* program or professional development).

BACKGROUND INFORMATION

Data Collection

RK&A-trained data collectors interviewed students one-on-one using an interview guide (see Appendix J). The RK&A-designed student interview guide included three sections. First, the data collector asked the student to show a piece of his/her own artwork and to answer a few questions about it. Second, the data collector showed the student the painting, *The Artist and His Mother*, by Arshile Gorky (hereafter referred to as "the Gorky painting") and asked questions about it. Third, the interviewer showed the student a piece of text from the novel *Kira-Kira* by Cynthia Kadohata (hereafter referred to as "the Kadohata text"), read it aloud twice, and then asked him/her questions similar to those about the painting.

Interviews took place over two days at each school during regular school hours. Six data collectors were assigned to each school to simultaneously conduct interviews. The interviews were audio-recorded with students' awareness and parental permission and transcribed to facilitate analysis.

Data Analysis and Reliability

Using the verbatim transcripts, RK&A ascertained the total number of words students used in the interview and the grade level of their language using Microsoft Word functions. RK&A also analyzed the content of students' responses using a rubric (see Appendix Q). Two research assistants—who did not conduct the interviews or know the research hypotheses—scored the student interview data. To test inter-rater reliability, RK&A used percent-agreement with a consensus estimate of 65 percent or greater.[23] In total, the two research assistants had a 66 percent agreement rate for all 12 Gorky painting scores and Kadohata text scores combined. For the six Gorky painting scores combined, the scorers had a 67 percent agreement rate. For the six

[21] n the 2005-06 school year, P.S. 149 was not eligible to act as the control school because students participated in an arts program provided by another organization—contrary to the agreement the school had with the Guggenheim. Instead, for the second year of the study, additional classes at P.S. 94 served as the control group. The socioeconomic and academic performance of P.S. 94 matched both P.S. 86 and P.S. 148. Additionally, in the 2004-05 study, no statistically significant differences were found between P.S. 94 and P.S. 148.

[22] The sample size for the interviews (n = 565) is slightly smaller than the questionnaires (n = 605), because some students were absent during the interviewing or data collectors could not interview all the students during the two days the schools allotted.

[23] Stemler, S. E. (2004). A Comparison of Consensus, Consistency, and Measurement Approaches to Estimating Inter-Rater Reliability. *Practical Assessment, Research, & Evaluation*, 9(4). http://PAREonline.net.

Kadohata text scores combined, the scorers had a 65 percent agreement rate.

Because Treatment and Control Groups students' artwork varied,[24] their responses were not appropriate to compare using the interview rubric.[25] As such, RK&A did not include students' responses to their own artwork in the word count, grade level, and content analysis when comparing the Treatment and Control Groups. In a separate section, RK&A reports Treatment Group students' responses to their own artwork, as this data is relevant to *LTA* program objectives.

Reporting Method

All tables include the percentages and summary statistics for the total sample, the Treatment Group (combined data from Treatment Group A and Treatment Group B), and the Control Group. **Only statistically significant differences between the Treatment Group and Control Group are described in the text.** However, some additional significant relationships are mentioned in table footnotes (e.g., when RK&A found statistically significant differences between Treatment Group A and Treatment Group B, the data are presented by specific experimental group). Because some students were not asked all questions from the interview guide, the total number of students that responded to each question (*n*) is provided in the tables.

[24]The control schools spend little time making art and, in fact, one school in 2004-05 had to do an art activity the day before the interviews in order to have student art to discuss. As such, there was little comparison in the artistic process, time, and intensity of the art projects among the Control and Treatment schools, making the scoring of students' responses to their artwork spurious.

[25]The two research assistants' scores of students' responses to their artwork had a 49 percent agreement rate.

WORD COUNT AND GRADE LEVEL

RK&A analyzed the student interview data through: examination of the Flesch-Kincaid Grade Level score (rates the reading level of the text based on U.S. grade-school level) and the word count (the number of words students used to respond to the interviewers' questions).[26]

On average, students' interviews were at a sixth-grade reading level (see Table II.1). **There was one statistically significant difference: Treatment Group students' responses were at a higher grade level than were those of the Control Group students.**

Table II.1
Interview Grade Level 2004-06
(Treatment *n* = 395, Control *n* = 170, Total *n* = 565)

	Total Interview Flesch-Kincaid Grade Level Score[1,2]			
Group	**Mean**	**±**	**Minimum**	**Maximum**
Treatment	6.1	2.6	1.0	12.0
Control	5.6	2.2	1.0	12.0
Total	5.9	2.5	1.0	12.0

[1]F=4.825; *df*=1, 563; *p*=0.028
[2]Girls' responses were at a higher grade level compared with boys (mean scores of 6.1 and 5.7, respectively; F=4.925; *df*=1, 549; *p*=0.027).

Students used, on average, 551 words during their interviews—264 words in the discussion of the Gorky painting, and 288 words in the discussion of the Kadohata text (see Table II.2, next page).

There were two statistically significant differences: Treatment Group students used more words during the entire interview and in the discussion of the Gorky painting than did Control Group students.

In the 2004-05 study, however, statistically significant differences existed among interviewers for word count, suggesting that they may have conducted the interviews in more than one way (e.g., some interviewers may have asked students additional questions for clarification, while others did not). There were no differences among interviewers in the study's second year. In data analyses presented later in this report, RK&A controlled for word count to mitigate the variance of interviewers in the study's first year.

[26]Microsoft Word provides both word count and Flesch-Kincaid Grade Level score functions. Verbatim transcripts of students' interviews, minus the interviewers' questions and comments, were used to ascertain the word count and grade level. The formula for the Flesch-Kincaid Grade Level score is: [(.39 x ASL) + (11.8 x ASW) – 15.59]. ASL is the average sentence length (the number of words divided by the number of sentences), and ASW is the average number of syllables per word (the number of syllables divided by the number of words).

Table II.2
Interview Word Count 2004-06

Group	Total Interview Word Count[1,2] *n*	Mean	±	Minimum	Maximum
Treatment	395	573.3	332.3	100	3,021
Control	170	500.7	294.4	40	1,893
Total	565	551.4	322.8	40	3,021
Group	**Gorky Painting Word Count[3,4] *n***	**Mean**	**±**	**Minimum**	**Maximum**
Treatment	395	282.6	180.2	36	1,472
Control	170	221.0	153.4	32	1,020
Total	565	264.0	174.8	32	1,472
Group	**Kadohata Text Word Count[5,6] *n***	**Mean**	**±**	**Minimum**	**Maximum**
Treatment	395	290.8	173.4	36	1,754
Control	170	279.8	156.7	32	907
Total	565	287.5	168.5	32	1,754

[1]F=6.060; *df*=1, 563; *p*=0.01
[2]Students in 2005-06 had a higher total interview word count than did students in 2004-05 (means of 612.5 and 499.0, respectively; F=17.882; *df*=1, 563; *p*=0.000).
[3]F=15,120; *df*=1, 563; *p*=0.000
[4]Students in 2005-06 had a higher Gorky painting word count than did students in 2004-05 (means of 288.8 and 242.8, respectively; F=9.918; *df*=1, 563; *p*=0.002).
[5]Students in 2005-06 had a higher Kadohata text word count than did students in 2004-05 (means of 323.9 and 256.2, respectively; F=23.505; *df*=1, 563; *p*=0.000).
[6]Girls had a higher Kadohata text word count than did boys (means of 301.1 and 272.0, respectively; F=4.107; *df*=1, 549; *p*=0.043).

INTERVIEW CONTENT ANALYSIS

Word count and grade level are useful measures, but analyzing the content of their responses provides a more precise measure of students' literacy. The rubrics used to score students' verbatim responses to interview questions are provided in Appendix Q.

Gorky Painting: Scores for Each Literacy Characteristic

Students' responses to the Gorky painting were scored against a rubric of six characteristics. Scores for the first two characteristics are presented in Table II.3a, and scores for the remaining four characteristics are presented in Table II.3b.

For extended focus and thorough description, most students' responses were scored at the developing level (61 percent and 55 percent, respectively) (see Table II.3a).

One statistically significant difference was found. For extended focus, more Treatment Group students scored at the accomplished level than did Control Group students.

Table II.3a
Responses to Gorky Painting 2004-06

Extended Focus[1,2] (Treatment *n* = 390, Control *n* = 170, Total *n* = 560)	**Treatment (%)**	**Control (%)**	**Total (%)**
Beginning	12.6	24.8	16.2
Developing	60.5	63.6	61.4
Accomplished	26.9	11.5	22.3
Thorough Description[3] (Treatment *n* = 390, Control *n* = 170, Total *n* = 560)	**Treatment (%)**	**Control (%)**	**Total (%)**
Beginning	23.6	33.5	26.6
Developing	57.4	50.0	55.2
Accomplished	19.0	16.5	18.2

[1] x^2=23.294, *df*=2, *p*=0.000
[2] For extended focus, more students in 2004-05 scored at an accomplished level compared with students in 2005-06 (27.5 percent and 16.5 percent, respectively; x^2=11.089, *df*=2, *p*=0.004).
[3] For thorough description, more students in 2004-05 scored at an accomplished level compared with students in 2005-06 (24.3 percent and 11.2 percent, respectively; x^2=28.005, *df*=2, *p*=0.000).

For hypothesizing, most students' responses were scored at the developing level (59 percent) (see Table II.3b). For evidential reasoning and multiple interpretations, most students scored at the accomplished level (60 percent and 41 percent, respectively). For building schema, most students scored at the beginning level (48 percent).

RK&A found four statistically significant differences—in each case, Treatment Group students scored higher than did Control Group students. For hypothesizing, evidential reasoning, building schema, and multiple interpretations, more Treatment Group students scored at the accomplished level than did Control Group students.

Table II.3b
Responses to Gorky Painting 2004-06

Hypothesizing[1,2] (Treatment *n* = 391, Control *n* =169, Total *n* = 560)	**Treatment (%)**	**Control (%)**	**Total (%)**
Beginning	2.3	10.1	4.6
Developing	56.3	65.7	59.1
Accomplished	41.4	24.3	36.3
Evidential Reasoning[3,4] (Treatment *n* = 372, Control *n* = 166, Total *n* = 538)	**Treatment (%)**	**Control (%)**	**Total (%)**
Beginning	3.2	7.8	4.6
Developing	29.0	48.8	35.1
Accomplished	67.7	43.4	60.2
Building Schema[5,6,7] (Treatment *n* = 383, Control *n* = 167, Total *n* = 550)	**Treatment (%)**	**Control (%)**	**Total (%)**
Beginning	43.3	58.1	47.8
Developing	36.8	34.1	36.0
Accomplished	19.8	7.8	16.2
Multiple Interpretations[8,9] (Treatment *n* = 383, Control *n* = 169, Total *n* = 552)	**Treatment (%)**	**Control (%)**	**Total (%)**
Beginning	15.9	28.4	19.7
Developing	38.1	40.8	38.9
Accomplished	46.0	30.8	41.3

[1] x^2=26.662, *df*=2, *p*=0.000
[2] For hypothesizing, more students in 2005-06 scored at an accomplished level compared with students in 2004-05 (48.5 percent and 25.7 percent, respectively; x^2=31.328, *df*=2, *p*=0.000).
[3] x^2=29.318, *df*=2, *p*=0.000
[4] For evidential reasoning, more students in 2004-05 scored at an accomplished level compared with students in 2005-06 (72.2 percent and 46.9 percent, respectively; x^2=36.028, *df*=2, *p*=0.000).
[5] x^2=15.968, *df*=2, *p*=0.000
[6] For building schema, more students in 2005-06 scored at an accomplished level compared with students in 2004-05 (23.2 percent and 10.1 percent, respectively; x^2=18.457, *df*=2, *p*=0.000).
[7] For building schema, more girls scored at an accomplished level compared with boys (19.9 percent and 12.3 percent, respectively; x^2=10.792, *df*=2, *p*=0.005).
[8] x^2=16.008, *df*=2, *p*=0.000
[9] For multiple interpretations, more students in 2004-05 scored at an accomplished level compared with students in 2005-06 (47.3 percent and 34.4 percent, respectively; x^2=11.791, *df*=2, *p*=0.003).

Kadohata Text: Scores for Each Literacy Characteristic

Students' responses to the Kadohata text were scored against a rubric of six characteristics. Scores for the first two characteristics are in Table II.4a, and scores for the remaining four characteristics are in Table II.4b.

For extended focus and thorough description, most students' responses were scored at the developing level (62 percent and 48 percent, respectively) (see Table II.4a).

RK&A found two statistically significant differences—in each case, Treatment Group students scored higher than did Control Group students. For thorough description and extended focus, more Treatment Group students scored at the accomplished level than did Control Group students.

Table II.4a
Responses to Kadohata Text 2004-06

Extended Focus[1,2] (Treatment *n* = 391, Control *n* = 167, Total *n* = 558)	**Treatment (%)**	**Control (%)**	**Total (%)**
Beginning	27.9	28.1	28.0
Developing	59.6	67.1	61.8
Accomplished	12.5	4.8	10.2
Thorough Description[3,4] (Treatment *n* = 390, Control *n* = 169, Total *n* = 559)	**Treatment (%)**	**Control (%)**	**Total (%)**
Beginning	28.2	27.8	28.1
Developing	44.9	55.0	47.9
Accomplished	26.9	17.2	24.0

[1] x^2=7.926, *df*=2, *p*=0.019
[2] For extended focus, more students at P.S. 148 scored at an accomplished level than did students at P.S. 86 (15.4 percent and 9.7 percent, respectively; x^2=11.423, *df*=2, *p*=0.003).
[3] x^2=7.233, *df*=2, *p*=0.027
[4] For thorough description, more students in 2004-05 scored at an accomplished level compared with students in 2005-06 (28.1 percent and 19.2 percent, respectively; x^2=10.536, *df*=2, *p*=0.005).

As Table II.4b shows, for hypothesizing, building schema, and multiple interpretations, most students' responses were scored at the developing level (60 percent, 45 percent, and 43 percent). For evidential reasoning, most students scored at the accomplished level (56 percent).

RK&A found three statistically significant differences—in each case, Treatment Group students scored higher than did Control Group students. For hypothesizing, evidential reasoning, and multiple interpretations, more Treatment Group students scored at the accomplished level than did Control Group students.

Table II.4b
Responses to Kadohata Text 2004-06

Hypothesizing[1,2] (Treatment *n* = 389, Control *n* = 168, Total *n* = 557)	**Treatment (%)**	**Control (%)**	**Total (%)**
Beginning	6.9	23.8	12.0
Developing	57.1	65.5	59.6
Accomplished	36.0	10.7	28.4
Evidential Reasoning[3,4] (Treatment *n* = 367, Control *n* = 159, Total *n* = 528)	**Treatment (%)**	**Control (%)**	**Total (%)**
Beginning	9.3	15.7	11.2
Developing	28.9	42.8	33.1
Accomplished	61.9	41.5	55.7
Building Schema[5] (Treatment *n* = 385, Control *n* = 166, Total *n* = 551)	**Treatment (%)**	**Control (%)**	**Total (%)**
Beginning	36.6	41.6	38.1
Developing	45.2	45.2	45.2
Accomplished	18.2	13.3	16.7
Multiple Interpretations[6,7] (Treatment *n* = 388, Control *n* = 165, Total *n* = 553)	**Treatment (%)**	**Control (%)**	**Total (%)**
Beginning	33.8	46.1	37.4
Developing	43.3	43.6	43.4
Accomplished	22.9	10.3	19.2

[1] x^2=55.570, *df*=2, *p*=0.000

[2] For hypothesizing, more students at P.S. 148 scored at an accomplished level than did students at P.S. 86 (40.0 percent and 32.0 percent, respectively; x^2=8.103, *df*=2, *p*=0.017). Additionally, more students in 2005-06 scored at an accomplished level compared with students in 2004-05 (40.5 percent and 17.8 percent, respectively; x^2=40.089, *df*=2, *p*=0.000).

[3] x^2=18.833, *df*=2, *p*=0.000

[4] For evidential reasoning, more students in 2004-05 scored at an accomplished level compared with students in 2005-06 (66.7 percent and 44.1 percent, respectively; x^2=29.107, *df*=2, *p*=0.000).

[5] For building schema, more students in 2005-06 scored at an accomplished level compared with students in 2004-05 (22.3 percent and 11.7 percent, respectively; x^2=11.231, *df*=2, *p*=0.004). Additionally, more girls scored at an accomplished level compared to boys (18.3 percent and 15.4 percent, respectively; x^2=6.745, *df*=2, *p*=0.034).

[6] x^2=14.322, *df*=2, *p*=0.001

[7] For multiple interpretations, more students at P.S. 148 scored at an accomplished level than did students at P.S. 86 (29.0 percent and 16.9 percent, respectively; x^2=9.395, *df*=2, *p*=0.009). More students in 2004-05 scored at an accomplished level compared with students in 2005-06 (23.5 percent and 14.2 percent, respectively; x^2=21.783, *df*=2, *p*=0.000). Additionally, more boys scored at an accomplished level than did girls (21.5 percent and 17.2 percent, respectively; x^2=7.932, *df*=2, *p*=0.019).

Total Interview Scores

Students' scores for all six characteristics in the Gorky painting rubric were summed to create the "total Gorky painting score." The same procedure was followed for the Kadohata text to create the "total Kadohata text score."

Total Interview Scores' Means

For the Gorky painting, students' average total score was 13 out of a possible 18 points (see Table II.5). For the Kadohata text, students' average total score was 12 out of a possible 18 points.

RK&A found two statistically significant differences: for both the Gorky painting total score and the Kadohata text total score, students in the Treatment Group scored higher than did those in the Control Group. That is, Treatment Group students demonstrated greater literacy skills, as defined by the *LTA* rubric, in discussing a painting and a piece of text compared with Control Group students.

Table II.5
Total Interview Scores 2004-06

	Gorky Painting Total Score[1]				
Group	***n***	**Mean**	**±**	**Minimum**	**Maximum**
Treatment Group	357	13.3	2.1	7.0	18.0
Control Group	160	11.8	2.1	6.0	17.0
Total	517	12.8	2.2	6.0	18.0
	Kadohata Text Total Score[2]				
Group	***n***	**Mean**	**±**	**Minimum**	**Maximum**
Treatment Group	359	12.4	2.3	6.0	18.0
Control Group	155	11.2	2.3	6.0	17.0
Total	514	12.0	2.4	6.0	18.0

[1]F=57.369; *df*=1, 515; *p*=0.000
[2]F=29.719; *df*=1, 512; *p*=0.000

Gorky Painting Total Score Regression Model: Whole Student Population

To further examine *LTA*'s impact on students, stepwise multiple regression analyses were carried out to identify the models that best predict the characteristics of students who had higher interview scores (i.e., demonstrated greater literacy skills in discussing the painting). Predictor variables tested for the model included word count, Treatment/Control group, age, gender, English spoken at home, and total scores on the questionnaire's attitude scales.

The model that predicts a higher Gorky painting score for the whole student population includes two significant variables: word count and Treatment or Control Group (see Table II.6, below).

- Students with higher word counts achieved higher scores for their response to the Gorky painting than did those with lower word counts.
- Once the regression model controls for word count,[27] the model predicts that students in the Treatment Group achieved higher scores for their response to the Gorky painting than did those in the Control Group.

Word count and Treatment Group explain 38.7 percent of the variance in the total Gorky Painting scores—a high percentage considering the myriad of variables that could impact students' scores.

[27]Statistically significant differences existed among the 2004-05 interviewers for word count, suggesting that there may have been variation in how they conducted the interviews (e.g., some interviewers may have asked students additional questions for clarification, while others did not). As such, RK&A controlled for word count to mitigate the variance of interviewers.

Table II.6
Multiple Regression Model for Students' Total Gorky Painting Score 2004-06
(*n* = 467)

Dependent Variable	Independent Variables: Significant Predictor Variables[1]	Independent Variables: Excluded Variables[2]	Model F	df	Sig. F	R^2
Total Gorky painting score	• Word count • Treatment/Control Group	• English spoken at home • Age • Gender • Total score on nine school attitude scales • Total score on six art attitude scales • Total score on eight artistic process perception scales • Total score on five museum attitude scales	101.261	3, 463	0.000	0.396

[1]Significant predictor variables are associated with a higher total Gorky painting score.
[2]Excluded variables are those that that do not have a significant impact on the total Gorky painting score.

Gorky Painting Total Score Regression Model: Treatment Group Only

RK&A conducted additional statistical analysis to understand whether differences existed in the Gorky painting total score between the two test groups that made up the Treatment Group: Group A and Group B. Predictor variables tested for the model included word count, Treatment group, age, gender, English spoken at home, and total scores on the questionnaire's attitude scales.

The model that predicts a higher Gorky painting score among Treatment Group students includes two significant variables: word count and gender (see Table II.7).

- Treatment Group students with higher word counts achieved higher scores for their response to the Gorky painting than did those with lower word counts.

- Once the regression model controls for word count[28], the model predicts that females in the Treatment Group achieved higher scores for their response to the Gorky painting than did males.

Word count explains 37.9 percent of the variance in Treatment students' total Gorky painting scores—a high percentage considering the myriad of variables that could impact students' scores.

[28]Statistically significant differences existed among the 2004-05 interviewers for word count, suggesting that there may have been variation in how they conducted the interviews (e.g., some interviewers may have asked students additional questions for clarification, while others did not). As such, RK&A controlled for word count to mitigate the variance of interviewers.

Table II.7
Multiple Regression Model for Treatment Group Students' Total Gorky Painting Score 2004-06
(*n* = 320)

Dependent Variable	Independent Variables: Significant Predictor Variables[1]	Independent Variables: Excluded Variables[2]	Model F	df	Sig. F	R^2
Total Gorky painting score	• Word count • Gender	• Treatment Group A/Group B • Age • English spoken at home • Total score on nine school attitude scales • Total score on six art attitude scales • Total score on eight artistic process perception scales • Total score on five museum attitude scales	96.540	2, 317	0.00	0.379

[1]Significant predictor variables are associated with a higher total Gorky painting score.
[2]Excluded variables are those that that do not have a significant impact on the total Gorky painting score.

Kadohata Text Total Score Regression Model: Whole Student Population

To further examine the impact of *LTA*, stepwise multiple regression analyses were carried out to identify the models that best predict the characteristics of students who had higher interview scores (i.e., demonstrated greater literacy skills in discussing the text). Predictor variables tested for the model included word count, Treatment/Control group, age, gender, English spoken at home, and total scores on the questionnaire's attitude scales.

The model that predicts a higher Kadohata text score includes two significant variables: word count and Treatment or Control Group (see Table II.8, below).

- Students with higher word counts achieved higher scores for their response to the Kadohata text than did those with lower word counts.
- Once the regression model controls for word count, the model predicts that students in the Treatment Group achieved higher scores for their response to the Kadohata text than did those in the Control Group.

Word count and Treatment Group explain 31.0 percent of the variance in the total Kadohata text scores—a high percentage considering the myriad of variables that could impact students' scores.

Table II.8
Multiple Regression Model for Students' Total Kadohata Text Score 2004-06
(*n* = 470)

Dependent Variable	Independent Variables: Significant Predictor Variables[1]	Independent Variables: Excluded Variables[2]	Model F	df	Sig. F	R^2
Total Kadohata text score	• Word count • Treatment/Control Group	• English spoken at home • Age • Gender • Total score on nine school attitude scales • Total score on six art attitude scales • Total score on eight artistic process perception scales • Total score on five museum attitude scales	104.975	2,467	0.000	0.310

[1]Significant predictor variables are associated with a higher total Kadohata text score.
[2]Excluded variables are those that that do not have a significant impact on the total Kadohata text score.

Kadohata Text Total Score Regression Model: Treatment Group Only

RK&A conducted additional statistical analysis to understand whether differences existed in the Kadohata text total score between the two test groups that made up the Treatment Group: Group A and Group B. Predictor variables tested for the model included word count, Treatment group, age, gender, English spoken at home, and total scores on the questionnaire's attitude scales.

The model that predicts a higher Gorky painting score among Treatment Group students includes one significant variable: word count (see Table II.9 below).

- Treatment Group students with higher word counts achieved higher scores for their response to the Kadohata text than did those with lower word counts.

Word count explains 28.7 percent of the variance in Treatment students' total Kadohata text scores—a high percentage considering the myriad of variables that could impact students' scores.

Table II.9
Multiple Regression Model for Treatment Group Students' Total Kadohata Text Score 2004-06
(n = 326)

Dependent Variable	Independent Variables: Significant Predictor Variable[1,2]	Independent Variables: Excluded Variables[3]	Model F	df	Sig. F	R^2
Total Kadohata text score	• Word count	• Treatment Group A/Group B • English spoken at home • Age • Gender • Total score on nine school attitude scales • Total score on six art attitude scales • Total score on eight artistic process perception scales • Total score on five museum attitude scales	130.184	1, 324	0.00	0.287

[1]Significant predictor variables are associated with a higher total Kadohata text score.
[2]RK&A also ran a univariate analysis of variance that examined the total Kadohata text score for Group A, Group B, and the Control Group with word count as a covariate. The findings concur with the regression model: no statistically significant difference existed between Group A and Group B.
[3]Excluded variables are those that do not have a significant impact on the total Kadohata text score.

STUDENT RESPONSES TO THEIR OWN ARTWORK (TREATMENT GROUP ONLY)

As noted earlier, art-making is not a regular part of the Control Group students' classroom experience and, as such, RK&A deemed it inappropriate to compare Control Group and Treatment Group students' responses to their own artwork. Thus, in the previous sections the responses to student artwork were removed from the data set comparing the Control and Treatment Groups. The responses to student artwork for Treatment Group A and Group B, however, are still relevant to the study, and this section presents content analysis for these responses.

Students' responses to their own artwork were scored for one characteristic: thorough description (i.e., student's discussions of his/her own artwork show evidence of close and careful looking as defined in the student interview scoring rubric, see Appendix Q). Two examples of verbatim student interview transcripts are provided in Appendix R.

As Table II.10 shows, most students in both groups discussed their own artwork at a developing or accomplished level (82 percent).

RK&A found one statistically significant difference: more Treatment Group A students scored at the accomplished level than did Treatment Group B students. However, the difference was likely school-related, as more students at P.S. 86 scored at the accomplished level than did those at P.S. 148.

Table II.10
Responses to Student Artwork (Treatment Group Only) 2004-06
(Treatment A *n* = 206, Treatment B *n* = 184, Total Treatment *n* = 390)

Thorough Description [1,2]	Treatment A (%)	Treatment B (%)	Treatment Total (%)
Beginning	14.1	20.1	16.9
Developing	50.5	55.4	52.8
Accomplished	35.4	24.5	30.3

[1] x^2=6.413, *df*=2, *p*=0.041
[2] A statistically significant difference existed between schools. More students at P.S. 86 scored at the accomplished level, while more students at P.S. 148 scored at the beginning level (50.0 percent and 23.4 percent, respectively; x^2=10.906, *df*=2, *p*=0.004).

III. PRINCIPAL FINDINGS: STUDENT TEST SCORES 2004-06

In addition to analyzing questionnaire data (Section I) and interview data (Section II) for students at P.S. 86 and P.S. 94 in the Bronx and P.S. 148 and P.S. 149 in Queens, RK&A also compared students' performance on the third grade Citywide ELA Test. The schools provided ELA Test scores for 472 third-graders: 175 from Treatment Group A (*LTA* program only), 163 from Treatment Group B (*LTA* program and teacher professional development), and 134 from the Control Group (no *LTA* program or professional development).[29]

BACKGROUND INFORMATION

Description of the ELA Test

Students in grades three, five, six, and seven take the ELA Test. The ELA Test was developed by Harcourt Educational Measurement to ascertain students' reading comprehension level.[30] It contains 50 multiple-choice questions based on brief reading passages from original stories, articles, and poems. Test questions ask students to:

Recall details or sequence of events
Select a main idea
Analyze plot, characters, setting, or tone
Distinguish between cause and effect
Analyze use of language
Draw conclusions
Predict outcomes

[29]The schools did not have ELA test scores for students absent on the day the test was administered or for special education and English-as-a-second-language students who were exempt from the test.

[30]The description of the ELA Test and its scoring were copied from the 2005 Web site of the New York City Department of Education's Division of Assessment and Accountability (http://www.nycenet.edu/daa/test_info/).

Students' results are reported as scale scores and performance levels:

Scale score—a score that accounts for all the correct answers on the test according to the difficulty of the questions.

Performance levels—the four proficiency levels that show how students have mastered the knowledge and skills that make up the learning standards. When a student is at level three or four, s/he has met or exceeded the standard (see Table III.1, below)

Table III.1
Description of ELA Test Performance Levels

Meeting Standard	Level 4 (Advanced)	Students exceed the learning standards for English Language Arts. Their performance shows superior understanding of written and oral text.
	Level 3 (Proficient)	Students meet the learning standards. Their performance shows thorough understanding of written and oral text.
Below Standard	Level 2 (Basic)	Students show partial achievement of the learning standards. Their performance shows partial understanding of written and oral text.
	Level 1 (Below Basic)	Students do not meet the learning standards. Their performance shows minimal understanding of written and oral text.

Data Processing

Each school provided RK&A with students' test scores and RK&A filtered out students who did not have parental permission to participate in the study. RK&A received spreadsheet printouts of the students' performance levels for the 2004-05 and 2005-06 school years. RK&A also received spreadsheet printouts of the students' scale scores for the 2005-06 school year. The students' names were replaced with their identification codes before the student data was entered and analyzed in SPSS 12.0.1 for Windows. Student ELA Test results were then merged with the spreadsheet of their questionnaire and interview data.

ELA TEST PERFORMANCE LEVELS

Overall, 38 percent of students achieved a level one or level two score on the ELA test (a "below standard" performance level), and 62 percent achieved a level three or level four score, (a "meeting standard" performance level) (see Table III.2). **No statistically significant differences existed between the ELA performance levels of the Treatment and Control Groups.**

Table III.2
New York Citywide English Language Arts Test Scores
by Treatment/Control Group 2004-06
(Treatment *n* = 338, Control *n* = 134, Total *n* = 472)*

ELA Performance Level	Treatment (%)	Control (%)	Total (%)
Level 1 (Lowest)	5.6	8.2	6.4
Level 2	31.7	32.8	32.0
Level 3	55.0	49.3	53.4
Level 4 (Highest)	7.7	9.7	8.3

*RK&A did not receive ELA test scores for 133 students. Most of these students were exempt from the test as first-year immigrants even though they were not classified as English as a second language students.

However, when ELA performance levels were compared by school and student characteristics, two statistically significant relationships were found (see Table III.3). **More students attending P.S. 148 and P.S. 149 achieved level three and level four scores on the ELA test than did those attending P.S. 86 and P.S. 94. More students who speak English at home achieved level three and level four scores on the ELA test than did those who do not speak English at home.**

Table III.3
New York Citywide English Language Arts Test Scores
by School and English Spoken at Home 2004-06

	School[1]				
ELA Performance Level (P.S. 86 *n* = 168, P.S. 94 *n* = 90, P.S.148 *n* = 170, P.S. 149 *n* = 44, Total *n* = 472)	**P.S. 86 Treatment (%)**	**P.S. 94 Control (%)**	**P.S. 148 Treatment (%)**	**P.S. 149 Control (%)**	**Total (%)**
Level 1 and Level 2 (Below Standard)	44.6	45.6	30.0	31.8	38.3
Level 3 and Level 4 (Meeting Standard)	55.4	54.4	70.0	68.2	61.7

	English Spoken at Home[2]		
ELA Performance Level (No *n* = 28, Yes *n* = 437, Total *n* = 465)	**No (%)**	**Yes (%)**	**Total (%)**
Level 1 and Level 2 (Below Standard)	63.3	36.6	38.3
Level 3 and Level 4 (Meeting Standard)	36.7	63.4	61.7

[1] x^2 =10.598, *df*=3, *p*=0.014 [2] x^2 =8.479, *df*=1, *p*=0.006

Comparison of ELA Test Scores with Interview Data

To understand commonalities between the ELA test and the *LTA* rubric, RK&A examined the student interview data by students' ELA performance levels and found three statistically significant relationships between ELA performance levels and interview responses to the Gorky painting (see Table III.4).

More students who responded at a beginning level for extended focus when discussing the Gorky painting achieved level one and level two scores on the ELA test. Conversely, more students who responded at an accomplished level achieved level three and level four scores on the ELA test.

More students who responded at a beginning level for thorough description when discussing the Gorky painting achieved level one and level two scores on the ELA test. Conversely, more students who responded at a developing level achieved level three and level four scores on the ELA test.

More students who responded at a beginning or developing level for hypothesizing when discussing the Gorky painting achieved level one and level two scores on the ELA test. Conversely, more students who responded at an accomplished level achieved level three and level four scores on the ELA test.

Table III.4

Responses to Gorky Painting by ELA Performance Level 2004-06

Extended Focus[1] (Level 1-2 *n* = 172, Level 3-4 *n* =266, Total *n* = 438)	**Level 1-2 (%)**	**Level 3-4 (%)**	**Total (%)**
Beginning	15.7	11.7	13.2
Developing	66.3	60.5	62.8
Accomplished	18.0	27.8	24.0
Thorough Description[2] (Level 1-2 *n* = 172, Level 3-4 *n* =268, Total *n* = 440)	**Level 1-2 (%)**	**Level 3-4 (%)**	**Total (%)**
Beginning	35.5	19.4	25.7
Developing	46.5	62.3	56.1
Accomplished	18.0	18.3	18.2
Hypothesizing[3] (Level 1-2 *n* = 173, Level 3-4 *n* =265, Total *n* = 438)	**Level 1-2 (%)**	**Level 3-4 (%)**	**Total (%)**
Beginning	5.2	1.9	3.2
Developing	64.7	57.8	60.5
Accomplished	30.1	40.3	36.3

[1] x^2 =6.022, *df*=2, *p*=0.049 [2] x^2 =15.188, *df*=2, *p*=0.001 [3] x^2 =8.755, *df*=2, *p*=0.013

Four statistically significant relationships were found between ELA performance levels and interview responses to the Kadohata text (see Table III.5).

More students who responded at a beginning level for extended focus when discussing the Kadohata text achieved level one and level two scores on the ELA test. Conversely, more students who responded at an accomplished level achieved level three and level four scores on the ELA test.

More students who responded at a beginning level for thorough description when discussing the Kadohata text achieved level one and level two scores on the ELA test. Conversely, more students who responded at a developing or accomplished level achieved level three and level four scores on the ELA test.

More students who responded at a beginning or developing level for hypothesizing when discussing the Kadohata text achieved 1evel one and level two scores on the ELA test. Conversely, more students who responded at an accomplished level achieved level three and level four scores on the ELA test.

More students who responded at a developing level for multiple interpretations when discussing the Kadohata text achieved level one and level two scores on the ELA test. More students who responded at an accomplished level for multiple interpretations achieved level three and level four scores on the ELA test.

Table III.5

Responses to Kadohata Text by ELA Performance Level 2004-06

Extended Focus[1] (Level 1-2 *n* = 173, Level 3-4 *n* = 267, Total *n* = 440)	**Level 1-2 (%)**	**Level 3-4 (%)**	**Total (%)**
Beginning	32.4	22.5	26.4
Developing	61.3	62.9	62.3
Accomplished	6.4	14.6	11.4
Thorough Description[2] (Level 1-2 *n* = 173, Level 3-4 *n* = 265, Total *n* = 438)	**Level 1-2 (%)**	**Level 3-4 (%)**	**Total (%)**
Beginning	31.8	19.1	24.1
Developing	45.7	50.6	43.7
Accomplished	22.5	30.3	27.3
Hypothesizing[3] (Level 1-2 *n* = 173, Level 3-4 *n* = 265, Total *n* = 438)	**Level 1-2 (%)**	**Level 3-4 (%)**	**Total (%)**
Beginning	9.8	6.0	7.5
Developing	67.6	58.9	62.3
Accomplished	22.5	35.1	30.1
Multiple Interpretations[4] (Level 1-2 *n* = 172, Level 3-4 *n* = 264, Total *n* = 436)	**Level 1-2 (%)**	**Level 3-4 (%)**	**Total (%)**
Beginning	32.0	33.0	32.6
Developing	52.9	41.3	45.9
Accomplished	15.1	25.8	21.6

[1] x^2 =10.232, *df*=2, *p*=0.006

[2] x^2 =9.874, *df*=2, *p*=0.007

[3] x^2 =8.755, *df*=2, *p*=0.013

[4] x^2 =8.566, *df*=2, *p*=0.014

RK&A also found two statistically significant relationships between ELA performance level and total interview scores (see Table III.6).

Students who achieved level three and level four scores on the ELA test received higher total interview scores for both the Gorky pointing and the Kadohata text than did those who achieved level one and level two scores.

Table III.6
Total Interview Scores by ELA Performance Level 2004-06

ELA Performance Level	Total Gorky Painting Score[1]				
	n	**Mean**	**±**	**Minimum**	**Maximum**
Level 1-2	159	12.6	2.1	6	17
Level 3-4	250	13.3	2.2	7	18
Total	409	13.0	2.2	6	18
ELA Performance Level	**Total Kadohata Text Score[2]**				
	n	**Mean**	**±**	**Minimum**	**Maximum**
Level 1-2	154	11.9	2.1	6	18
Level 3-4	251	12.6	2.2	6	18
Total	405	12.3	2.2	6	18

[1] $F=9.036$, $df=1, 407$; $p=0.003$
[2] $F=11.940$, $df=1, 403$; $p=0.001$

ELA SCALE SCORES 2005-06

For the 2005-06 school year, RK&A received the students' ELA scale scores in addition to their performance level scores. No statistically significant differences existed in the ELA scale scores of 2005-06 Treatment and Control Group students (overall mean = 668.5; see Table III.7).

Table III.7
ELA Scale Scores 2005-06

	ELA Scale Score[1]				
Group	***n***	**Mean**	**±**	**Minimum**	**Maximum**
Treatment	160	667.1	26.7	613	780
Control	54	672.6	37.6	597	764
Total	214	668.5	29.8	597	780

ELA Scale Score Regression Model

A stepwise multiple regression analysis was carried out to determine the model of student characteristics that best predicts the 2005-06 ELA scale score. Predictor variables tested for the model include students' total word count, total Gorky painting interview score, total Kadohata text interview score, Treatment/Control group, English spoken at home, age, gender, and total scores on the questionnaire scales.

The model that predicts a higher ELA scale score includes one significant variable: total Kadohata text interview score (see Table III.8,below). **Higher ELA scale scores are associated with higher total Kadohata text interview scores.**

Total Kadohata text interview scores explain 5.3 percent of the variance in the ELA scale scores, a significant, but not particularly high percentage. This suggests that many other factors, not accounted for in the regression model, influence students' ELA scale scores.

Table III.8
Multiple Regression Model for Students' ELA Scale Score 2005-06
(n = 168)

Dependent Variable	Independent Variables: Significant Predictor Variables[1]	Independent Variables: Excluded Variables[2]	Model F	df	Sig. F	R^2
ELA Scale Score	• Total Kadohata text interview score	• Word count • Treatment/Control Group • Total Gorky painting interview score • Age • Gender • English spoken at home • Total score on nine school attitude scales • Total score on six art attitude scales • Total score on eight artistic process perception scales • Total score on five museum attitude scales	9.203	1,166	0.003	0.053

[1]Significant predictor variables are associated with a higher total Gorky painting score.
[2]Excluded variables are those that do not have a significant impact on the ELA scale score.

IV. PRINCIPAL FINDINGS: STUDENT CASE STUDIES (2005-06 ONLY)

Throughout the 2005-06 school year, RK&A conducted case studies of four treatment school students. Each case study consisted of two to four observations of each student, two to four in-depth interviews with each student, with each student's classroom teacher, with each student's teaching artist, and with each student's parent (see page 7 for a description of the methodology).

CASE STUDY ONE

Student one, a nine-year-old girl, was a third-grade student at P.S. 86 identified as high-achieving.

RK&A interviewed student one on three occasions and observed her for four 90-minute blocks throughout the school year. In addition to interviewing student one, RK&A interviewed her classroom teacher, teaching artist, and mother at the end of the school year.

Findings

Observations and interviews indicate that Case Study One is a student who functions best when working independently on assignments with specific rules and guidelines. Her classroom teacher said Case Study One, "really follows directions, follows rules for the most part." In each observation, Case Study One performed best when asked to sit at her desk and complete a close-ended writing or reading assignment, including a spelling test and an exercise that required her to identify compound words in a text excerpt. In these and other similar instances, Case Study One completed her work quickly and accurately. In interviews, Case Study One described herself as a "good" student, especially in reading and math. Her mother and classroom teacher concurred.

Though Case Study One performed well in structured lessons, she displayed little enthusiasm for her school work. She was often observed stalling before an assignment by sharpening her pencil, retying her shoes, or moving slowly toward her desk. While she completed independent work quickly, afterward she would lay her head on her desk, fidget, or daydream. Case Study One's mother perceived this behavior as an inability to concentrate, saying that Case Study One is a "good student, but easily gets off track." However, other interviewees suggest that Case Study One's lack of excitement may be a result of her reserved personality. The teaching artist and classroom teacher described her as "quiet," "timid," and lacking initiative, and Case Study One suggested that one reason she is quiet is because she is shy. Her lack of enthusiasm also suggests that she may be bored with activities that come easily to her.

Though Case Study One is high-achieving by conventional academic pen-and-paper standards, she appeared challenged by open-ended assignments—a hallmark of *LTA*. Observations indicated that Case Study One had difficulty starting and completing art-making assignments. In fact, she displayed little effort in doing most art projects and once complete, they were mediocre at best. Again, she showed little enthusiasm for these activities. These activities, which seemed to stretch Case Study One's comfort level, caused her to withdraw. For instance, during a *LTA* session in which students were asked to paint a gray scale (strips of color from white to black),

Case Study One struggled to complete the assignment, and rather than ask for help from the teaching artist or nearby students (as other students did), she fidgeted and pretended to "look busy."

Inquiry lessons also challenged Case Study One because of the open-ended nature of the questions (no right or wrong answers) and the fact that she had to speak in front of a group. The teaching artist, who did not know Case Study One in the regular classroom or her achievement level, described her as an average student based on her performance in *LTA* (see the quotation below).

> I noticed that she seems pretty distracted and not really paying very close attention. Eventually she would, I mean, she raised her hand occasionally but only once in a while. She wasn't one of those very vocal students. It took her a long time to formulate answers in front of the class. [teaching artist]

When asked in interviews about her participation in group discussions, Case Study One said she always participated, but observations indicated otherwise. Observations showed that Case Study One paid minimal attention during inquiry lessons, and instead played with her hair or looked off into the room. Sometimes she would raise her hand and volunteer a response (sometimes repeating something another student had said; other times raising an original idea), but other times she did not participate. Her classroom teacher said that there were times when Case Study One would simply not engage (see the quotation below).

> There were times when, as I said before, I don't know if it's personality or learning modality, but I think there were times when she did not do well [in inquiry lessons]. I don't know if she didn't like it or something, but she would sit there and quietly kind of listen to the conversation, but there were times when we were looking at a piece of art when she wouldn't have much to say, and she didn't share. It didn't matter how much we pushed and prodded; she wasn't into it. [classroom teacher]

Nevertheless, Case Study One's classroom teacher suggested that *LTA's* challenges had a positive impact on her. She said that even high-achieving students have limitations, and *LTA* helped Case Study One address and work on some of her weaknesses (see the quotation below).

> [Case Study 1] is a high-achieving student, but she has her own struggles, and she has been able to use kind of the *Learning Through Art* project as an opportunity to increase her confidence [in those areas she is weakest]. [She] had a chance to play with her creativity in her mind and feel confident about those things. It was certainly wonderful for her. . . . I've definitely seen her kind of blossom into a student who is more comfortable with and excited about learning with a group . . . which is really important. [classroom teacher]

Additionally, the teaching artist said that, by the end of the program, Case Study One became slightly more vocal during inquiry lessons. On the other hand, observations and interviews with the student did not show any change in Case Study One's enthusiasm or participation in the program. Though her parent had seen some of Case Study One's artwork, she was unaware of

LTA as a discrete program, indicating Case Study One had not talked about the program by name at home. The only instance of enthusiasm displayed by Case Study One displayed during observations was after she had received some unsolicited help and encouragement from the classroom teacher and teaching artist while she was making her Russian costume. For a brief time after the encouragement, Case Study One worked deliberately and happily on her costume before seemingly losing interest again.

Nevertheless, though Case Study One appeared relatively untouched by *LTA*, there were some hints that at least one aspect of the program had influenced her. Though she did not seem to pay much attention in inquiry lessons, she may have been listening, thinking, and looking at the works of art more thoroughly than was observable. For instance, when asked in interviews, she recalled a great deal of detail from paintings she had seen in the Guggenheim Museum, indicating she had observed the paintings closely (see the quotation below where she gives a thorough description of one painting).

> [The painting] had eyes all over the place. Then they had clothes on and there were eyes all over the place. [The eyes] were looking at the bridge, and they were standing together. And one looked like he was turned the one way, but the eyes were looking the other way. [Case Study One]

The classroom teacher noticed this as well, twice referring to Case Study One's memory of works of art. The classroom teacher described this skill as a kind of visual literacy that she had acquired by practicing looking at works of art. She recounted an example of Case Study One's visual acuity by telling of an instance when she had become engaged in painting while listening to music; she seemed easily able to translate her response to the music to visual form (see the quotation below).

> She certainly hooked into the poetry and painting connection. I remember watching her one day when the [students] had to paint while they were listening to music. And she was so focused. I loved it. It was one of those couple of memories to keep after a year of being berated with things. I'll really remember how she was changing her brush strokes when the music would change. She was very absorbed with the task at hand and how what she was hearing was changing what she was doing with her hand. So the painting project for her became something she really learned from. [classroom teacher]

CASE STUDY TWO

Student two, a nine-year-old girl, was a third-grade P.S. 86 student identified as low-achieving.

RK&A interviewed student two on two occasions and observed her four times throughout the school year. In addition to interviewing student two, RK&A interviewed her classroom teacher, teaching artist, and mother at the end of the school year.

Findings

Observations and interviews indicate that Case Study Two is a student with low self esteem who struggles to do well in school. She demonstrated difficulty staying on task, and was easily distracted during regular classroom and *LTA* sessions. In observations, Case Study Two would often fluctuate between engagement and complete lack of interest with any given activity. For instance, in one observation, Case Study Two failed to follow the teaching artist's instructions, wandered about the classroom, and talked with classmates before finally attempting to work on her project. Sometimes it was not until the classroom teacher or teaching artist reminded her to get to work that she returned to the task at hand.

She sometimes displayed frustration when trying to complete an assignment and would verbally berate herself, calling herself "stupid" during one art-making activity and referring to her art work as "ugly" in another. In interviews, Case Study Two had a difficult time being reflective enough to answer the questions and repeatedly expressed concerns about "not getting into trouble" and being promoted to the fourth grade. The classroom teacher spoke of her hunch that Case Study Two's difficult home life, especially the fact that her mother has limited English and provides little support, impacted her performance (see the quotation below). In fact, in the parent interview, her mother demonstrated little awareness of Case Study Two's school work. Observations twice demonstrated that Case Study Two was hungry and had not eaten breakfast, one factor that could explain some of her distraction.

> A number of times, [Case Study Two] would tell me, "My mom says I can't write." Somebody reinforced over and over that she couldn't do these things. The words she was writing [in assignments] usually didn't make sense, and the math that she was doing . . . things were just not coming together in her mind. It could possibly be related to some kind of language issue. When she would go home and have struggles with things, I know it was her mom who was taking care of her, and her mom doesn't understand English. [classroom teacher]

Nevertheless, Case Study Two demonstrated an enthusiasm that could sometimes counteract these challenges. For instance, in observations, Case Study Two seemed to move between distraction and focus relatively easily. During one inquiry lesson of a Kandinsky painting, she chatted with a neighbor, played with her hair, and stared at her feet, yet raised her hand excitedly and responded to five different questions the classroom teacher posed, often giving an insightful response. In two cases, she said she agreed with another student, indicating she had been listening closely. Both the teaching artist and classroom teacher noted that Case Study Two thrived in inquiry lessons (see the two quotations below).

> She enjoyed talking and getting to share her ideas with people and looking at work. She's definitely observing things. [teaching artist]

> According to the standards in reading, writing, or math that I have to use to grade her against, she is still a low achieving student, but throughout this [*LTA*] project, she is adamant about raising her hand, and participating in the conversations, and getting really excited to look at the paintings. . . There was one day that she was very quick to raise her hand and say, "Oh, this painting . . . because it's this color it means you feel this way." I mean that's remarkable. Some of the kids really didn't get into that, so I was really pleased that she did. [classroom teacher]

Observations demonstrate another instance where enthusiasm prevailed over challenges when Case Study Two struggled to begin an assignment requiring her to design and make a costume. Though the assignment was difficult for her in the beginning, once she started, she showed clever problem-solving skills, proudly helped her classmates, and demonstrated her costume design in front of the class. She seemed to come alive after receiving positive feedback from the classroom teacher and teaching artist. The classroom teacher recalled this particular instance (see first the quotation below). The teaching artist also said Case Study Two's enthusiasm for art was apparent, especially by the end of the school year (see the second quotation).

> And her first project on Russia when they had to design clothing, she understood the concept she needed to make a long skirt. It was going to be cold in Russia, and a long skirt ended up tying it all together. [classroom teacher]

> By the end of the year, she was definitely engaged in the art-making. She is still quite talkative, and last week she was walking around the room, holding her canvas in her hands and painting on it and talking about it. It was awesome. [teaching artist]

Crediting *LTA*, the teaching artist and classroom teacher noticed that Case Study Two's self esteem and critical thinking abilities improved over the year. The teaching artist recalled Case Study Two as a student who was easily frustrated, especially in the beginning of the year, but had noticed a marked improvement in her persistence over the course of the program. The classroom teacher said that *LTA* had positively impacted Case Study Two in two ways: it gave her a chance to use her visual learning abilities, which may have been a new experience for her; and it allowed her to speak in class without others judging her response (see the quotation below).

> What's apparent to me from seeing how much she's been affected by this project is that we used this incredible tool [inquiry] to get into her little mind because she's a visual learner. I think being a visual learner is a wonderful thing, and I don't know that she was given an opportunity to explore that area before. . . . [*LTA*] was a chance for her to look at something and share an idea. It was an opportunity for her to not be judged and not give a wrong answer. [classroom teacher]

CASE STUDY THREE

Student three, a nine-year-old male, was a third-grade P.S. 148 student who been identified as high-achieving.

RK&A interviewed student three twice and observed him two times throughout the school year. In addition to interviewing student three, RK&A interviewed his classroom teacher, teaching artist, and mother at the end of the school year.

Findings

Interviews and observations indicate that Case Study Three is a high-achieving student with strong analytical and comprehension abilities, yet inconsistent in his classroom performance. Observations show that he was either highly involved in classroom activities or completely disengaged to the point of ignoring the teacher. For example, during one observation of an inquiry lesson, Case Study Three raised his hand in response to every question the teaching artist asked. If called upon, he excitedly answered, then immediately put his head down in his hands; if not called upon, he would leave his hand up but put his head down. And during one regular classroom observation, Case Study Three chose to stay at his desk with his head down for over one hour during a math activity and an inquiry lesson. Nevertheless, when all the other students returned to their desks to complete an assignment, he did the assignment (writing a story) and then enthusiastically volunteered to tell his story to the class (yet he clearly told the story impromptu rather than reading what he had written).

Moreover, Case Study Three exhibited awkward interpersonal skills, which may explain some of his behavior described in the previous paragraph. He was seen telling on students who were misbehaving, yelling at another student, and loudly dominating conversations among a group of boys to the degree that his voice could be heard throughout the room. In fact, he always talked loudly and quickly and often stuttered. Unless attention was focused on him directly, such as when he explained a collage he had made or when responding during an inquiry, he showed no interest in classroom activities or other students. The classroom teacher described Case Study Three as "competitive" and "craving attention," and, in fact, when asked how *LTA* made him feel, Case Study Three said, "Like I can be ahead of everyone else." Moreover, he seemed unable to maintain a two-way conversation. For example, during interviews, he did not always answer the question appropriately or did so quickly but then wandered into a tangent, often about animals or Africa, his two favorite subjects (see the quotation below).

> (Interviewer: I notice you raise your hand to answer questions a lot in class. Why is that?) Because I like to wave, I like to wave, but some people just raise up their hands. I don't see how they really focus on [the answer], giving off the dates and stuff. Sometimes when I'm on the rug [where the classroom gathers for group discussions] and my teacher is reading, usually I like sitting close. But after awhile my eyes start hurting because I'm tired because I stayed up late typing up stuff about tigers and sent it to my friends. [Case Study Three]

Case Study Three was highly enthusiastic about *LTA.* His mother said he talked about the

program often, telling his extended family about it. She knew of his visits to the Guggenheim Museum and had seen his artwork (see the first quotation below). In the interview, Case Study Three excitedly recalled his visit to the Guggenheim Museum. And even though his behavior was inconsistent, the classroom teacher said Case Study Three thrived in *LTA*. She explained that he performed best when allowed to express himself verbally, and *LTA* gave him many opportunities to do so (see the second quotation).

> He talked about everything he did in that program. He enjoyed it so much, and he's excited about being part of the art program. He talks about the paintings and the artists which he learned about. He brought it home to us so we could see it. He's very excited about the Guggenheim. . . . Everyone in our house got to know all about [*LTA*]. He tells his cousins and uncle, everybody. He's really enjoying the program fully. [parent]

> Verbally he can come across with a lot of good ideas, and I find that he really can stand with the best students. He's very good at that part [of school]. I felt like verbally, he can talk about most anything, a painting, a book, you know he pretty much comprehends how to do that stuff. [classroom teacher]

The classroom teacher and teaching artist agreed that Case Study Three was most influenced by *LTA* inquiry lessons. They explained that the approach was ideal for his verbal willingness and analytical skills, especially when it came to his own artwork. The teaching artist said she believed the predictability and structure of questioning in inquiry helped Case Study Three access his reflective abilities (see the first quotation below). And because of the open-ended nature of inquiry lessons, Case Study Three sometimes used his interest in Africa and animals to inform his explanations of art (see the second quotation). Moreover, his mother noticed that he had become more interested in talking about his own works of art (see the third quotation). Finally, the classroom teacher said that his performance in the lessons helped reduce his stuttering and increased his confidence.

> I would say any kind of questioning is better with [Case Study Three] than an open-ended writing [assignment]. He seems better when [the line of questioning is] very directed. [For instance, I could ask of his own artwork,] 'What's this here?' 'Why did you add this again?' He seems like somebody who really responds to going back into what he's done. [teaching artist]

> I remember that he was talking about a painting he made and it was about the symbols that he made, what color to paint this or that. He was able to interpret what the color meant. He knew about certain colors and that type thing [because of his interest in] Africa, and that those colors and symbols matched. He was able to take that [information] and absorb it into his own [interpretation]. [classroom teacher]

> [*LTA*] caused him to want to do more artwork at home. He likes to try to seek out new things to actually create and do that relate to the Guggenheim program. And he's pointing out things that he made and comparing them to a picture at the Guggenheim. So it's just made a big change in his outlook on everything he does look at. [parent]

CASE STUDY FOUR

Student four, a nine-year-old female, was a third-grade P.S. 148 student who been identified as low-achieving.

RK&A interviewed student four on four occasions and observed her four times throughout the school year. In addition to interviewing Student 4, RK&A interviewed her classroom teacher, teaching artist, and mother at the end of the school year.

Findings

Though identified as a low-achieving student, Case Study Four demonstrated just the opposite in all four observations. In fact, Case Study Four appeared to be a model student in every sense of the word. She consistently displayed high levels of confidence and self-esteem; had a high level of participation and engagement in all activities observed; listened actively and was fully focused and participatory throughout the ninety-minute observation periods; always connected with those she spoke with through eye contact or facial expressions; and, was extremely outgoing and friendly. In fact, the teaching artist, who did not know Case Study Four had been identified as low-achieving, assumed she was one of the top students in the class based on the ease with which she responded to the inquiry lessons (see the quotation below).

> [Case Study Four is the] kind of kid who's probably relatively successful at school and seems to be an easy-going kid who always participates in every level of the inquiry, from giving specific examples in the beginnings of inquiries where we're describing what we see to providing analysis later on when we're thinking about the meaning of the work. [teaching artist]

In an interview, the classroom teacher confirmed that Case Study Four had been labeled low-achieving based on her low reading levels and comprehension in the second grade, but that she has dramatically improved throughout her third grade school year (see the first quotation below). The teacher said Case Study Four showed great confidence in her own skills by always wanting to show and read her work to her peers. To explain her abilities, the classroom teacher said that even though Case Study Four's parents have limited English abilities, her parents want her to do well and provide her with tutoring after school (see the second quotation). Observations show that Case Study Four values school work and wants to do well, and that it is important for her to please her teachers and family.

> She really has done much better with reading comprehension. She's actually is at the level, she's getting up there. I think she went up a couple of levels [in reading]; it was pretty low at the end of last year. [classroom teacher]

> I don't think her mother helps too much at home because she has a hard time with basic English. But [her parents] are very strict with her. They're very concerned about her. She really works hard and wants to do well. [classroom teacher]

Observation findings are full of examples of Case Study Four's high-achieving type behaviors.

For instance, in two inquiry lessons—one of a painting and one comparing two texts—Case Study Four's responses demonstrated close looking and listening as well as an ability to interpret and make connections to other areas in her life, such as other books and television programs. Case Study Four was so competent in inquiry lessons that other students followed her lead. For instance, because she was the first one in the group to speak, several other students built on what she said, demonstrating that they valued her comments. Moreover, when she commented on similarities between two different versions of the same story, the whole class discussion changed direction (to a comparison) as a result. Her enthusiasm and engagement extended to every classroom activity observed, from unscrambling anagrams to multiplication tables to making a clay sculpture.

The teaching artist and classroom teacher talked at length about Case Study Four's critical thinking abilities as displayed in *LTA* inquiry lessons (see the first and second quotations below). The classroom teacher said that inquiry has helped her in all her subjects. Additionally, she said that *LTA* has helped Case Study Four develop better reading and comprehension skills by improving her decoding and focusing skills. Case Study Four recognized her own abilities, and said that *LTA* makes her proud of herself (see the third quotation). Finally, her mother said that Case Study Four now wants to be an artist when she grows up (see the fourth quotation).

> She always is very specific in her observations. [For instance, if she was looking at a particular work of art] she would probably say, 'That'd be a curvy line here and it looks like it's moving quickly because it's, you know, going up and down.' Something like that. So she would be able to identify specific portion of the artwork, and then make an analysis from that portion of it. The skills have given her a lot confidence. She also is very thoughtful. [teaching artist]

> I don't think she even realized that she was doing [inquiry]. She once asked me [why I ask them to support their ideas and] find evidence. [Inquiry] really makes her think even deeper and then she comes up with more and more [evidence for] why she says [something]. If I put a question on the board, [she'll remind me] to ask, 'why [do you] say that?' [classroom teacher]

> [*LTA*] makes me feel proud because I do a lot of hard work, and I thought of my own thing. I thought it in my head. I'm proud because I did something with my brain. I used my brain. [Case Study 4]

> She's a very interested [in] art. Sometimes she says, 'Mommy, when I'm going to grow up, I want to be an artist.' [parent]

V. PRINCIPAL FINDINGS: TEACHER QUESTIONNAIRES

RK&A surveyed participating classroom teachers in May 2005 and May 2006 (see Appendix K for the teacher questionnaire). Teachers completed the questionnaires while their students were being interviewed and returned the completed questionnaires in sealed envelopes to the data collectors.

Teacher questionnaire results are presented independently for the 2004-05 and 2005-06 years since some teachers participated in both years of the study (and completed questionnaires for both years) while others participated in just one year of the study.

BACKGROUND INFORMATION

Of 26 teachers in the study, eight participated only in the 2004-05 school year (two teachers in Treatment Group A and six teachers in the Control Group), ten participated in the 2004-05 and 2005-06 school years (four teachers in Treatment A and six teachers in Treatment B), and eight participated only in the 2005-06 school year (two teachers in Treatment A and six teachers in the Control Group) (see Table IV.1 below).

Table V.1 Teachers Who Participated in the Study

School	Group	Classroom Teacher[1]	Number of Classes	Study Year(s)	
				2004-05	2005-06
P.S. 86 (Bronx)	Treatment A	C.T. 0101	1 class	X	
		C.T. 0102/1101	2 classes	X	X
		C.T. 0105/1105	2 classes	X	X
		C.T. 1104	1 class		X
P.S. 86 (Bronx)	Treatment B	C.T. 0103/1102	2 classes	X	X
		C.T. 0104/1103	2 classes	X	X
		C.T. 0106/1106	2 classes	X	X
P.S. 148 (Queens)	Treatment A	C.T. 0302/1302	2 classes	X	X
		C.T. 0303/1303	2 classes	X	X
		C.T. 0305	1 class	X	
		C.T. 1304	1 class		X
P.S. 148 (Queens)	Treatment B	C.T. 0301/1301	2 classes	X	X
		C.T. 0304/1305	2 classes	X	X
		C.T. 0306/1306	2 classes	X	X
P.S. 94 (Bronx)	Control	C.T. 0201	1 class	X	
		C.T. 0202	1 class	X	
		C.T. 0203	1 class	X	
		C.T. 1201	1 class		X
		C.T. 1202	1 class		X
		C.T. 1203	1 class		X
		C.T. 1204	1 class		X
		C.T. 1205	1 class		X
		C.T. 1206	1 class		X
P.S. 149 (Queens)	Control	C.T. 0401	1 class	X	
		C.T. 0402	1 class	X	
		C.T. 0403	1 class	X	

[1]Classroom teachers are referred to by a code number assigned to them for this study.

CLASS CHARACTERISTICS

Class Size and Student Population

In 2004-05 and 2005-06, teachers had an average class size of 22 students (see Table V.2). **There was one statistically significant difference: in both years of the study, Treatment classes had a smaller average class size than did Control classes.**

Table V.2
Average Class Size 2004-06

Group Treatment *n*=12, Control *n*=6, Total *n*=18	**2004-05 Class Size[1]**			
	Mean	**±**	**Minimum**	**Maximum**
Treatment	**21.1**	2.8	15	25
Control	**25.2**	2.6	22	28
Total	22.4	3.3	15	28
Group Treatment *n*=12, Control *n*=6, Total *n*=18	**2005-06 Class Size[2]**			
	Mean	**±**	**Minimum**	**Maximum**
Treatment	**20.1**	2.4	15	24
Control	**25.2**	1.6	24	28
Total	22.3	3.0	15	28

[1]F=8.765; *df* =1, 16; *p*=.009
[2]F=16.131; *df* =1, 16; *p*=.001

The 2004-05 teachers reported that most of their students were mainstream (81 percent overall), with some ESL (13 percent overall), and a few special education (6 percent overall) (see Table V.3). Eight of twelve Treatment Group teachers and only one of six Control Group teachers completed the student population question on the 2004-05 survey.

The 2005-06 teachers reported that the majority of their students were mainstream (69 percent overall). There were considerably more ESL students in the Control Group (29 percent) than in the Treatment Group (13 percent). Nine of twelve Treatment Group teachers and all six Control Group teachers completed the student population question on the 2005-06 survey.

Table V.3
Student Population 2004-06

	2004-05 Students		
Student Population (Treatment *n* = 171, Control *n* = 24, Total *n* = 195)[2]	**Treatment (%)**	**Control (%)**	**Total (%)**
Mainstream	80.1	83.3	80.5
English as a second language (ESL)	14.6	4.2	13.3
Special education	5.3	12.5	6.2
Gifted	0	0	0
	2005-06 Students		
Student Population (Treatment *n* = 193, Control *n* = 151, Total *n* = 344)[3]	**Treatment (%)**	**Control (%)**	**Treatment (%)**
Mainstream	69.4	68.9	69.2
English as a second language (ESL)[1]	**13.5**	**29.1**	20.3
Special education	6.2	2.0	4.4
Gifted	10.9	0	6.1

[1] x^2=30.131, df=3, p=.000.
[2] Information on 2004-05 students was provided for eight of 12 classes in the Treatment Group and one of six classes in the Control Group.
[3] Information on 2005-06 students was provided for nine of 12 classes in the Treatment Group and all six classes in the Control Group.

TEACHER CHARACTERISTICS

Teaching Experience

In 2004-05, Control Group teachers had more experience than did Treatment Group Teachers (Control mean = 11.7 years and Treatment mean = 5.6 years). In 2005-06, Control and Treatment Group teachers had similar teaching experience (total mean = 6.4 years) (see Table V.4a).

Table V.4a
Total Years of Teaching Experience 2004-05 and 2005-06

Group Treatment *n* = 12, Control *n* = 6, Total *n* = 18	**2004-05 Teachers Total Number of Years Teaching[1]**			
	Mean	**±**	**Minimum**	**Maximum**
Treatment	**5.6**	3.5	1	12
Control	**11.7**	10.6	1	29
Total	7.6	7.0	1	29
Group Treatment *n* = 12, Control *n* = 6, Total *n* = 18	**2005-06 Teachers Total Number of Years Teaching**			
	Mean	**±**	**Minimum**	**Maximum**
Treatment	6.9	3.3	2	13
Control	5.3	3.2	1	8
Total	6.4	3.3	1	13

[1]F=6.022; *df* =1, 16; *p*=.026

For both 2004-05 teachers and 2005-06 teachers, the average number of years teaching at their current school was five years (see Table V.4b).

Table V.4b
Years Teaching at Current School 2004-05 and 2005-06

Group Treatment *n* = 12, Control *n* = 6, Total *n* = 18	2004-05 Teachers Total Number of Years Teaching at Current School			
	Mean	**±**	**Minimum**	**Maximum**
Treatment	4.4	3.5	1	12
Control	6.0	4.5	1	14
Total	4.9	3.5	1	12
Group Treatment *n* = 12, Control *n* = 6, Total *n* = 18	**2005-06 Teachers** **Total Number of Years Teaching at Current School**			
	Mean	**±**	**Minimum**	**Maximum**
Treatment	5.4	3.5	2	13
Control	4.5	3.0	1	8
Total	5.1	3.3	1	13

For both 2004-05 teachers and 2005-06 teachers, the average number of years teaching third grade was three years (see Table V.4c). **There was a statistically significant difference among 2004-05 teachers: Control Group teachers had taught third grade for more years than had Treatment Group teachers (Treatment group mean = 5.3 years and Control Group mean = 2.1 years).**

Table V.4c
Years Teaching Third Grade 2004-05 and 2005-06

Group Treatment *n* = 12, Control *n* = 6, Total *n* = 18	**2004-05 Teachers Total Number of Years Teaching Third Grade[1]**			
	Mean	**±**	**Minimum**	**Maximum**
Treatment	**2.1**	1.5	1	5
Control	**5.3**	4.5	1	12
Total	3.2	2.0	1	12
Group Treatment *n* = 12, Control *n* = 6, Total *n* = 18	**2005-06 Teachers Total Number of Years Teaching Third Grade**			
	Mean	**±**	**Minimum**	**Maximum**
Treatment	3.5	1.8	2	7
Control	2.8	2.1	1	6
Total	3.3	1.9	1	7

[1]F=6.022, *df*=1, 17; *p*=0.026

LITERACY EFFORTS

In 2004-05 and 2005-06, most Treatment and Control Group teachers used the Teacher's College Reading and Writing Project as their literacy model (n = 21 and n = 20, respectively) (see Table V.5).

Table V.5
Literacy Model Used 2004-05 and 2005-06

Literacy Model Treatment n = 12, Control n = 6, Total n = 18	**2004-05 Teachers** Treatment ***n***	Control ***n***	Total* ***n***
Teacher's College Reading and Writing Project	14	7	21
Reading First	4	0	4
Literacy Model Treatment n = 12, Control n = 6, Total n = 18	**2005-06 Teachers** Treatment ***n***	Control ***n***	Total* ***n***
Teacher's College Reading and Writing Project	12	8	20
Reading First	6	0	6

*The total column exceeds the 18 teachers in the 2004-05 sample and the 18 teachers in the 2005-06 sample because some teachers used more than one literacy model.

The 2004-05 teachers reported spending an average of 12 hours a week on literacy and literacy-related activities, and 2005-06 teachers reported spending an average of 11 hours a week on literacy and literacy-related activities (see Table V.6). Teachers spent widely varying amounts of time on literacy, demonstrated by the large standard deviations (± 4 hours) for both 2004-05 and 2005-06 teachers.

Table V.6
Average Time Spent on Literacy and Literacy-Related Activities
2004-05 and 2005-06

	2004-05 Teachers			
Group Treatment *n* = 12, Control *n* = 5, Total *n* = 17	**Mean Hours Per Week**	**±**	**Minimum**	**Maximum**
Treatment	12.0	4.2	5.0	20.0
Control	13.2	5.0	7.0	20.0
Total	12.4	4.3	5.0	20.0
	2005-06 Teachers			
Group Treatment *n* = 10, Control *n* = 6, Total *n* = 16	**Mean Hours Per Week**	**±**	**Minimum**	**Maximum**
Treatment	11.4	4.9	5.0	20.0
Control	10.3	2.9	6.0	15.0
Total	11.0	4.2	5.0	20.0

EXPERIENCES WITH THE ARTS

Teachers' Reporting of Student Participation in the Arts

Teachers reported their classes' participation in arts programs (see Table V.7). In 2004-05 and 2005-06, some Treatment and Control Group classes participated in music/theater/dance programs (Treatment $n = 3$ and Control $n = 4$ for 2004-05 and Treatment $n = 3$ and Control $n = 4$ for 2005-06). As specified by the research design for 2004-05 and 2005-06, all of the Treatment Group classes participated in *LTA*, while none of the Control Group classes participated in any visual arts programs.

Table V.7
Classes' Participation in Arts Programs 2004-05 and 2005-06

	2004-05 Classes		
Type of Arts Program Treatment $n = 12$, Control $n = 6$, Total $n = 18$	**Treatment** ***n***	**Control** ***n***	**Total*** ***n***
Visual Arts	12	0	12
Music/theater/dance	3	4	7
Creative Writing	0	1	1

	2005-06 Classes		
Type of Arts Program Treatment $n = 12$, Control $n = 6$, Total $n = 18$	**Treatment** ***n***	**Control** ***n***	**Total*** ***n***
Visual Arts	12	0	12
Music/theater/dance	3	4	7
Creative Writing	0	1	1

*The total column exceeds the 18 teachers in the 2004-05 sample and the 18 teachers in the 2005-06 sample because some teachers used more than one arts program.

Teachers also reported their classes' art museum attendance (see Table V.8). In 2004-05, all twelve Treatment classes visited only the Guggenheim Museum. One Control Group teacher reported visiting an unspecified art museum. In 2005-06, all twelve Treatment classes visited only the Guggenheim Museum. None of the Control Group classes visited any art museums.

Table V.8
Classes' Visits to Art Museums 2004-05 and 2005-06

Visits to Art Museums During School Hours Treatment *n* = 12, Control *n* = 6, Total *n* = 18	**2004-05 Classes** **Treatment** ***n***	 **Control** ***n***	 **Total*** ***n***
None	0	5	5
Guggenheim only	12	0	12
Other art museum	0	1	1
Visits to Art Museums During School Hours Treatment *n* = 12, Control *n* = 6, Total *n* = 18	**2005-06 Classes** **Treatment** ***n***	 **Control** ***n***	 **Total*** ***n***
None	0	6	6
Guggenheim only	12	0	12
Other art museum	0	0	0

Teachers' Training in the Visual Arts

In 2004-05, teachers in the Treatment and Control Groups reported having similar levels of training in the visual arts (see Table V.9). On a scale from 1 (I have no training in the visual arts) to 7 (I have a lot of training in the visual arts), the 2004-05 teachers' overall mean rating was 3.1.

In 2005-06 there was one statistically significant difference: Treatment Group teachers reported having more training in the visual arts than did Control Group teachers (Treatment mean = 3.5 vs. Control mean = 1.7). Since all six 2005-06 Treatment Group B teachers had professional development in 2004-05 through their participation in *LTA*, it is not surprising that the Treatment Group teachers reported having more training in the arts.

Table V.9
Teachers' Training in the Visual Arts 2004-05 and 2005-06

	2004-05 Teachers					
Rating Scale	**Treatment**		**Control**		**Total**	
Treatment *n* = 12, Control *n* = 6, Total *n* = 18	**Mean**	**±**	**Mean**	**±**	**Mean**	**±**
I have no training in the visual arts (1) / A lot (7)	2.9	1.6	3.3	2.6	3.1	1.9
	2005-06 Teachers					
Rating Scale	**Treatment**		**Control**		**Total**	
Treatment *n* = 12, Control *n* = 6, Total *n* = 18	**Mean**	**±**	**Mean**	**±**	**Mean**	**±**
I have no training in the visual arts (1) / A lot (7) [1]	**3.5**	1.5	**1.7**	0.8	2.9	1.5

[1] F=8.169; df 1, 16; p=.011

Of 2004-05 teachers, several reported having taken college courses in art education (total *n* = 10 teachers), art history/appreciation (total *n* = 7), and studio art (total *n* = 6), or having professional development in teaching with art (total *n* = 6) (see Table V.10).

In 2005-06 there was one statistically significant difference: more Treatment Group teachers reported having professional development in the arts (*n*= 7) than did Control Group teachers (*n* = 0). Since all six 2005-06 Treatment Group B teachers had professional development in 2004-05 through their participation in the *LTA* program, it is not surprising that more Treatment Group teachers reported having professional development in the arts.

Table V.10
Teachers' Training in the Arts 2004-05 and 2005-06

	2004-05 Teachers		
Type of Arts Training Treatment *n* = 12, Control *n* = 6, Total *n* = 18	**Treatment** ***n***	**Control** ***n***	**Total**[1] ***n***
No formal training	3	3	6
College coursework in art education	6	4	10
College coursework in art history/appreciation	6	1	7
Studio art courses	5	1	6
Professional development in teaching with art	4	2	6
	2005-06 Teachers		
Type of Arts Training Treatment *n* = 12, Control *n* = 6, Total *n* = 18	**Treatment** ***n***	**Control** ***n***	**Total**[1] ***n***
No formal training	3	3	6
College coursework in art education	2	2	4
College coursework in art history/appreciation	6	2	8
Studio art courses	1	0	1
Professional development in teaching with art[2]	**7**	**0**	7

[1]The total column exceeds the 18 teachers in the 2004-05 sample and the 18 teachers in the 2005-06 sample because some teachers reported more than one type of arts training.
[2]x^2=5.727, df=1, p=.017.

The 2004-05 teachers occasionally incorporated art projects in their lessons, reporting a mean rating of 4.1 on a scale from 1 (I never incorporate art projects in my lessons) to 7 (I often incorporate art projects in my lessons). They occasionally incorporated looking at and discussing artwork in their lessons, as well, reporting a mean rating of 4.2 on a scale from 1 (I never incorporate looking at and discussing artwork in my lessons) to 7 (I often incorporate looking at and discussing artwork in my lessons) (see Table V.11).

The 2005-06 teachers occasionally incorporated art projects in their lessons, reporting a mean rating = 3.7 on a scale from 1 (I never incorporate art projects in my lessons) to 7 (I often incorporate art projects in my lessons). **In 2005-06, there was one statistically significant difference: on a scale from 1 (I never incorporate looking at and discussing artwork in my lessons) to 7 (I often incorporate looking at and discussing artwork in my lessons), Treatment Group teachers incorporated looking at and discussing art work in their lessons more often than did Control Group teachers (Treatment Group mean = 4.1 and Control Group mean = 2.5).**

Table V.11
Teachers' Use of the Visual Arts in the Classroom 2004-05 and 2005-06

Rating Scale Treatment *n* = 12, Control *n* = 6, Total *n* = 18	**2004-05 Teachers**					
	Treatment		**Control**		**Total**	
	Mean	**±**	**Mean**	**±**	**Mean**	**±**
I never incorporate art projects in my lessons (1) / Often (7)	3.8	1.2	4.5	2.2	4.1	1.6
I never incorporate looking at and discussing art in my lessons (1) / Often (7)	4.0	1.3	4.7	2.4	4.2	1.7
Rating Scale Treatment *n* = 12, Control *n* = 6, Total *n* = 18	**2005-06 Teachers**					
	Treatment		**Control**		**Total**	
	Mean	**±**	**Mean**	**±**	**Mean**	**±**
I never incorporate art projects in my lessons (1) / Often (7)	3.7	1.2	3.8	1.5	3.7	1.3
I never incorporate looking at and discussing art in my lessons (1) / Often (7)[1]	**4.1**	1.2	**2.5**	1.7	3.6	1.5

[1]F=5.275; df 1, 16; p=.035

Visitation of and Attitudes Toward Art Museums

In 2004-05, more than half of the teachers (total n = 11) reported visiting an art museum during their leisure time at least once in the past 12 months (see Table V.12). In 2005-06, fewer than half of the teachers (total n = 8) reported visiting an art museum during their leisure time at least once in the past 12 months.

Table V.12
Teachers' Art Museum Visits During Their Leisure Time 2004-05 and 2005-06

Number of Art Museum Visits in Past 12 Months Treatment *n* = 10, Control *n* = 6, Total *n* = 16	**2004-05 Teachers**		
	Treatment ***n***	**Control** ***n***	**Total** ***n***
None	4	1	5
1 time	3	4	7
2 to 3 times	1	0	1
4 to 6 times	1	0	1
7 or more times	1	1	2
Number of Art Museum Visits in Past 12 Months Treatment *n* = 12, Control *n* = 5, Total *n* = 17	**2005-06 Teachers**		
	Treatment ***n***	**Control** ***n***	**Total** ***n***
None	6	3	9
1 time	1	2	3
2 to 3 times	4	0	4
4 to 6 times	0	0	0
7 or more times	1	0	1

In 2004-05 only three of twelve Treatment Group teachers had visited the Guggenheim Museum other than to attend *LTA*-related programs, and in 2005-06, only four of twelve Treatment Group teachers had visited the Guggenheim Museum other than to attend *LTA*-related programs (see Table V.13).

In 2004-05, five of six Control Group teachers said they had visited the Guggenheim Museum in the past, and in 2005-06, three of six Control Group teachers said they had visited the Guggenheim Museum in the past.

Table V.13
Teachers' Visits to the Guggenheim Museum 2004-05 and 2005-06

	2004-05 Teachers		
Visited the Guggenheim[1] Treatment *n* = 12, Control *n* = 6, Total *n* = 18	**Treatment** ***n***	**Control** ***n***	**Total** ***n***
No	9	1	10
Yes	3[2]	5[3]	8
	2005-06 Teachers		
Visited the Guggenheim[1] Treatment *n* = 12, Control *n* = 6, Total *n* = 18	**Treatment** ***n***	**Control** ***n***	**Total** ***n***
No	8	3	11
Yes	4[4]	3[5]	7

[1]Treatment teachers were asked, "Not including *LTA*-related programs, have you visited the Guggenheim Museum in the past 12 months?" Control teachers were asked whether they had ever visited the Guggenheim Museum.
[2]One teacher visited the Guggenheim with family/friends, one visited with family/friends and other teachers, and the third teacher visited alone.
[3]Four teachers visited the Guggenheim with family/friends, and one visited with students.
[4]Two teachers visited the Guggenheim with family/friends, one visited alone, and one visited with other teachers.
[5]All three teachers visited the Guggenheim with family/friends.

Overall, teachers expressed positive attitudes toward art and art museums (see Table V.14). Both 2004-05 and 2005-06 teachers reported that they enjoy visiting art museums. On a scale from 1 (I do not enjoy visiting art museums) to 7 (I enjoy visiting art museums), 2004-05 teachers' mean rating was 6.2 and 2005-06 teachers' mean rating was 5.9.

The 2004-05 and 2005-06 teachers also reported a high comfort level looking at art. On a scale from 1 (I am uncomfortable looking at most types of art) to 7 (I am very comfortable looking at most types of art), 2004-05 teachers' mean rating was 6.1 and 2005-06 teachers' mean rating was 6.0.

The 2004-05 and 2005-06 teachers expressed a lower comfort level talking about art. On a scale from 1 (I am uncomfortable talking about most types of art) to 7 (I am very comfortable talking about most types of art), 2004-05 teachers' mean rating was 5.4 and 2005-06 teachers' mean rating was 5.3. Additionally, both 2004-05 and 2005-06 teachers indicated only moderate confidence in their ability to interpret art. On a scale from 1 (I find most types of art difficult to interpret) to 7 (I find most types of art easy to interpret), 2004-05 teachers' mean rating was 5.0 and 2005-06 teachers' mean rating was 4.9.

Table V.14
Teachers' Attitudes Toward Art and Art Museums 2004-05 and 2005-06

Rating Scales Treatment *n* = 12, Control *n* = 6, Total *n* = 18	2004-05 Teachers					
	Treatment		Control		Total	
	Mean	±	Mean	±	Mean	±
I do not enjoy visiting art museums (1)/Enjoy (7)	6.3	1.0	6.2	2.0	6.2	1.4
I am uncomfortable looking at most types of art (1)/Very comfortable (7)	6.3	1.1	5.7	2.0	6.1	1.4
I am uncomfortable talking about most types of art (1)/Very comfortable (7)	5.5	1.2	5.3	2.3	5.4	1.5
I find most types of art difficult to interpret (1)/Easy to interpret (7)	5.1	1.4	4.8	1.7	5.0	1.5
Rating Scales Treatment *n*=12, Control *n*=6, Total *n*=18	**2005-06 Teachers**					
	Treatment		**Control**		**Total**	
	Mean	**±**	**Mean**	**±**	**Mean**	**±**
I do not enjoy visiting art museums (1)/Enjoy (7)	5.9	1.1	6.0	1.5	5.9	1.2
I am uncomfortable looking at most types of art (1)/Very comfortable (7)	6.1	1.1	5.8	1.5	6.0	1.2
I am uncomfortable talking about most types of art (1)/Very comfortable (7)	5.5	1.1	5.0	2.0	5.3	1.4
I find most types of art difficult to interpret (1)/Easy to interpret (7)	5.2	1.3	4.3	1.6	4.9	1.5

Teachers' Experiences with LTA *(Treatment Group Only)*

Treatment Group teachers gave the teaching artists' lessons high ratings, particularly in 2004-05 (see Table V.15). They reported that the art-making projects were a high-quality experience and the art discussions worked well for their students (on seven-point scales, each of these ideas had a mean rating of 6.9 in 2004-05 and each had a mean rating of 6.4 in 2005-06). Treatment teachers also said the teaching artists' lessons supported the curriculum (on a seven-point scale, the mean rating was 6.4 in 2004-05 and the mean rating was 6.3 in 2005-06.)

Table V.15
Teachers' Ratings of the *LTA* Teaching Artists' Lessons 2004-05 and 2005-06

Rating Scales 2004-05 Treatment *n* = 12	**2004-05 Treatment Teachers**	
	Mean	**±**
The art-making projects were a low-quality experience for my students (1)/High-quality experience (7)	6.9	0.3
Looking at and discussing works of art did not work well for my students (1)/Worked really well (7)	6.9	0.3
The artist's lessons did not at all support what I'm teaching in class (1)/Very much supported (7)	6.4	1.0
Rating Scales 2005-06 Treatment *n* = 12	**2005-06 Treatment Teachers**	
	Mean	**±**
The art-making projects were a low-quality experience for my students (1)/High-quality experience (7)	6.4	1.2
Looking at and discussing works of art did not work well for my students (1)/Worked really well (7)	6.4	1.3
The artist's lessons did not at all support what I'm teaching in class (1)/Very much supported (7)	6.3	1.1

Treatment Group teachers gave the *LTA* program high ratings as well (see Table V.16). Teachers reported that the *LTA* program was enriching for their students (on a seven-point scale, 2004-05 teachers' mean rating was 6.8 and 2005-06 teachers' mean rating was 6.4). The program increased their confidence in discussing artwork with their students (on a seven-point scale, both 2004-05 and 2005-06 teachers' mean ratings were 6.8). They reported that they learned new strategies for teaching with art (on a seven-point scale, 2004-05 teachers' mean rating was 6.3 and 2005-06 teachers' mean rating was 6.1). They indicated that they would participate in the program again (on a 7-point scale, both 2004-05 and 2005-06 teachers' mean ratings were 6.3).

Table V.16
Teachers' Ratings of *LTA* 2004-05 and 2005-06

Rating Scales 2004-05 Treatment *n* = 12	**2004-05 Treatment Teachers**	
	Mean	**±**
The *LTA* program was not at all enriching for my students (1)/Very enriching (7)	6.8	0.4
The *LTA* program decreased my confidence in discussing artwork with my students (1)/Increased my confidence (7)	6.8	0.6
In the *LTA* program, I did not learn any new strategies for teaching with art (1)/Learned many new strategies (7)	6.3	1.1
I would not want to participate in the *LTA* program again (1)/Very much want to participate again	6.3	1.7
Rating Scales 2005-06 Treatment *n* = 12	**2005-06 Treatment Teachers**	
	Mean	**±**
The *LTA* program was not at all enriching for my students (1)/Very enriching (7)	6.4	1.0
The *LTA* program decreased my confidence in discussing artwork with my students (1)/Increased my confidence (7)	6.8	0.6
In the *LTA* program, I did not learn any new strategies for teaching with art (1)/Learned many new strategies (7)	6.1	1.1
I would not want to participate in the *LTA* program again (1)/Very much want to participate again	6.3	1.6

Both 2004-05 and 2005-06 Treatment Group teachers said that having a professional, working artist in the classroom was their favorite aspect of the *LTA* program (*n* = 11 teachers both years) (see Table V.17).

Table V.17
Favorite Aspects of *LTA* 2004-05 and 2005-06

Aspect 2004-05 Treatment *n* = 12	**2004-05 Teachers[1]** **Treatment** ***n***
Having a professional, working artist in the classroom	11
Learning new ideas for teaching art	5
Professional development at the Guggenheim Museum	3
Exhibition of student artwork at the Guggenheim Museum	2
Access to art supplies	1
Access to the Guggenheim Museum	1
Other[2]	1
Logistical and supervisory support of Guggenheim staff	0

Aspect 2005-06 Treatment *n* = 12	**2005-06 Teachers[1]** **Treatment** ***n***
Having a professional, working artist in the classroom	11
Exhibition of student artwork at the Guggenheim Museum	4
Learning new ideas for teaching art	3
Logistical and supervisory support of Guggenheim staff	3
Access to art supplies	3
Professional development at the Guggenheim Museum	2
Access to the Guggenheim Museum	1
Other[3]	1

[1]The total column exceeds the 12 teachers in the Treatment Group because teachers identified their two favorite aspects of *LTA*.
[2]"Other" comment: "Exposing the children to art while allowing them to create art themselves. We don't have a school wide art program."
[3]"Other" comment: "Offering my class the opportunity to engage in analytical discussions and art interpretation."

VI. PRINCIPAL FINDINGS: OBSERVATIONS (2004-05 ONLY)

To determine the degree to which *LTA* was being implemented as intended, data collectors observed the teaching artists at P.S. 86 in the Bronx and P.S. 148 in Queens during their lessons. Data collectors observed the two teaching artists a total of 35 times: 17 times with Treatment Group A classes (*LTA* program only) and 18 times with Treatment Group B classes (*LTA* program and teacher professional development).

To determine *LTA*'s impact on teacher professional development, data collectors also observed the classroom teachers at P.S. 86 in the Bronx and P.S. 148 in Queens during their two *LTA*-related activities: art inquiry and read-aloud lessons. Data collectors observed the six classroom teachers who received the *LTA* professional development (i.e., Treatment B Group) a total of 22 times.

BACKGROUND INFORMATION

Data Collection

To avoid potential biases, RK&A hired and trained data collectors—who did not know the research hypotheses—to score the teaching artists' and classroom teachers' behaviors using an observation tool (see Appendix N). Two data collectors simultaneously and independently conducted each teaching artist and teacher observation, so that inter-rater reliability could be measured.

Data Analysis and Reliability

RK&A hired a research assistant—who did not conduct the observations or know the research hypotheses—to enter the observation data. To test inter-rater reliability, RK&A used percent-agreement with a consensus estimate of 65 percent or greater.[31] The two data collectors had a 71 percent agreement rate for all 35 teaching artist observations and a 67 percent agreement for all 22 classroom teacher observations.

Once inter-rater reliability was determined, the research assistant examined the discrepancies between the observers. The research assistant selected the lower score unless the observer's notes made a better case for the higher score.

Reporting Method

The percentages and summary statistics for the total sample—which for the teaching artist observations are Treatment Group A and B combined and for the classroom teacher observations only Treatment Group B—are shown in all the tables for this section. Additionally, some data appear by teaching artist or classroom teacher (identification codes are used in place of names to

[31] Stemler, S. E. (2004). A Comparison of Consensus, Consistency, and Measurement Approaches to Estimating Inter-Rater Reliability. *Practical Assessment, Research, & Evaluation*, 9(4). http://PAREonline.net.

protect participants' identities). **Only statistically significant differences—when they could be determined from the modest sample size—are described in the text.**

TEACHING ARTIST OBSERVATIONS

Teaching Artist Observation Data Collection

Two teaching artists—one from P.S. 86 and one from P.S. 148—were observed a total of 35 times in the spring of 2005 (see Table VI.1).

Table VI.1
Teaching Artist Observations 2004-05

Teaching Artist[1]	School	Treatment A Classes Observed	Treatment B Classes Observed	Total Number of Classes Observed[2]
Teaching Artist 2	P.S. 86	9	9	18
Teaching Artist 1	P.S. 148	8	9	17

[1]Teaching artists are referred to by a code number assigned to them for this study.
[2]The research plan specified that each teaching artist would be observed 18 times (three times with each of three Treatment A classes and three times with each of three Treatment B classes), making a total of 36 observations. However, because of an unexpected school assembly and scheduling issues, Treatment A classes were observed 17 times.

Student Behaviors during Teaching Artists' Lessons

During the teaching artists' lessons, RK&A recorded the degree to which students displayed 10 student behaviors outlined in the *LTA* program rubric (see Table VI.2). During more than two-thirds of the observations (69 percent), most students were engaged while making artwork, working carefully and diligently on their projects. Most students also expressed enthusiasm when responding to works of art (40 percent of observations). Many students demonstrated active listening by making eye contact during discussions with other students and displayed decision making in their artwork during nearly one-half of the observations (49 percent and 46 percent, respectively). Two facets of active listening were the least observed behaviors: during 74 percent of the observations none or few students restated others' comments, and during 60 percent of the observations none or few students built on others' comments when discussing works of art.

Table VI.2
Individual Student Behaviors during Teaching Artists' Lessons 2004-05
(*n* = 35 observations)

	Degree to which Students Displayed Behaviors (% of observations)			
Student Behavior[1]	**None/Few Students**	**Some Students**	**Many students**	**Most Students**
Art-making engagement	5.7	11.4	14.3	68.6
Enthusiasm toward art	11.4	25.7	22.9	40.0
AL: eye contact[2]	2.9	14.3	48.6	34.3
Art-making experimentation	17.1	22.9	31.4	28.6
Discussion participation	25.7	20.0	25.7	28.6
Art-making decision making	0.0	34.3	45.7	20.0
Art-making problem-solving	25.7	37.1	31.4	5.7
AL: asking questions[2]	40.0	40.0	14.3	5.7
AL: restating comments[2]	74.3	14.3	8.6	2.9
AL: building on comments[2]	60.0	25.7	11.4	2.9

[1]Student behaviors are defined in the Teaching Artist Observation Form, Appendix N. [2]AL= active listening

Total scores for students' behaviors were calculated for each teaching artist and for both artists combined (see Table VI.3). Overall, students scored an average of 24.6, with the highest possible score being 40.0. The total scores were statistically analyzed by different variables, including Treatment Groups A and B. **There was one statistically significant difference: students of Teaching Artist 1 scored higher on individual student behaviors than did those of Teaching Artist 2.**

Table VI.3
Total Score for Individual Student Behaviors during Teaching Artists' Lessons 2004-05
(Teaching Artist 1 *n* = 17, Teaching Artist 2 *n* = 18, Total *n* = 35)

	Total Score[1]			
Teaching Artist[2,3]	**Minimum**	**Maximum**	**Mean**	**±**
Teaching Artist 1	23.0	32.0	28.0	3.0
Teaching Artist 2	13.0	30.0	21.3	4.9
Total	13.0	32.0	24.6	5.3

[1]For each teaching artist, the 10 individual student behaviors were assigned a score using the following scale: None/Few=1; Some=2; Many=3; Most=4. Then a mean score was calculated for each teaching artist.
[2]Teaching artists are referred to by a code number assigned to them for this study.
[3]F=23.230; *df*=1, 34; *p*=0.000

During about one-half of the teaching artist observations, students demonstrated self-expression, analysis, and description when discussing works of art (60 percent, 46 percent, and 46 percent, respectively) (see Table VI.4). During a few observations (14 percent), students connected the works of art to their own lives.

Table VI.4
Whole Class Behaviors during Teaching Artists' Lessons 2004-05
(*n* = 35 observations)

Student Behavior during Discussions about Works of Art*	Whether Whole Class Displayed Behaviors (% of observations)	
	Yes	No
Self-expression	60.0	40.0
Analysis	45.7	54.3
Description	45.7	54.3
Artistic process	28.6	71.4
Prior knowledge	17.1	82.9
Personal response	14.3	85.7

*Student behaviors are defined in the Teaching Artist Observation Form, Appendix N.

Total scores for whole class behaviors were calculated for each teaching artist and for both artists combined (see Table VI.5). Overall, classes scored an average of 2.1 of a possible score of 6.0. The total scores were statistically analyzed by different variables, including Treatment Groups A and B. **There was one statistically significant difference: the classes of Teaching Artist One scored higher on whole class behaviors than did those of Teaching Artist Two.**

Table VI.5
Total Score for Whole Class Behaviors during Teaching Artists' Lessons 2004-05
(Teaching Artist 1 *n* = 17, Teaching Artist 2 *n* = 18, Total *n* = 35)

Teaching Artist[2,3]	Total Score[1]			
	Minimum	Maximum	Mean[2]	±
Teaching Artist 1	0.0	6.0	2.9	1.6
Teaching Artist 2	0.0	4.0	1.3	1.5
Total	0.0	6.0	2.1	1.7

[1]For each teaching artist, the six whole class student behaviors were assigned a score using the following scale: no=0; yes=1. Then a mean score behaviors was calculated for each artist.
[2]Teaching artists are referred to by a code number assigned to them for this study.
[3]F=9.215; *df*=1, 34; *p*=0.005

Teaching Artists' LTA Implementation

During the teaching artists' lessons, RK&A scored the artists on five behaviors from the *LTA* literacy rubric (see Table VI.6). Teaching artists displayed active listening, provided a positive classroom climate, and demonstrated art techniques at a level four (i.e., the highest proficiency as defined by the rubric), during more than one-half of the observations (71 percent, 63 percent, and 51 percent, respectively). During most of the observations, teaching artists encouraged student reflection on their artwork at a level three (40 percent) and helped students problem solve when they were making artwork at levels two and three (37 percent and 34 percent).

Table VI.6
Level of Teaching Artists' Behaviors 2004-05
(*n* = 35 observations)

	Level of Teaching Artists' Behaviors (% of observations)			
Teaching Artist Behavior*	**Level 1**	**Level 2**	**Level 3**	**Level 4**
Active listening	2.9	5.7	20.0	71.4
Positive classroom climate	11.4	2.9	22.9	62.9
Art-making demonstration	20.0	0.0	28.6	51.4
Critique/reflection of student artwork	14.3	22.9	40.0	22.9
Art-making problem solving	17.1	37.1	34.3	11.4

*Teaching artist behaviors and levels one to four are defined in the Teaching Artist Observation Form, Appendix N.

Total scores for the teaching artists' behaviors were calculated for each teaching artist and for both artists combined (see Table VI.7). Overall, the classes scored an average of 15.2 of a possible score of 20.0. The total scores were statistically analyzed by different variables, including Treatment Groups A and B. **There was one statistically significant difference: Teaching Artist One scored higher for teaching artists' behaviors than did Teaching Artist Two.**

Table VI.7
Total Score for Teaching Artists' Behaviors 2004-05
(Teaching Artist 1 *n* = 17, Teaching Artist 2 *n* = 18, Total *n* = 35)

Teaching Artist[2,3]	Total Score[1]			
	Minimum	Maximum	Mean	±
Teaching Artist 1	14.0	20.0	16.5	2.0
Teaching Artist 2	9.0	18.0	13.9	2.2
Total	9.0	20.0	15.2	2.5

[1]For each teaching artist, the five teaching artist behaviors were assigned a score of one to four, corresponding to the level of the behavior. Then a mean score for each teaching artist was calculated.
[2]Teaching artists are referred to by a code number assigned to them for this study.
[3]F=19.099; *df*=1, 34; *p*=0.001

During the teaching artists' lessons, RK&A noted whether artists used six inquiry strategies from the *LTA* literacy rubric (see Table VI.8). During 80 percent of observations, teaching artists asked open-ended questions. Teaching artists also used wait time and follow-up questions and asked students for evidence in more than one-half of the observations (57 percent and 51 percent, respectively). The least-observed inquiry strategies were integrating factual information and asking questions that support curriculum-based themes (34 percent and 31 percent of observations, respectively).

Table VI.8
Teaching Artists' Use of Inquiry Strategies 2004-05
(*n* = 35 observations)

Inquiry Strategy*	Whether Teaching Artist Uses Strategy (% of observations)	
	Yes	No
Asks open-ended questions	80.0	20.0
Uses wait time/follow-up questions	57.1	42.9
Asks for evidence	51.4	48.6
Encourages thorough description	40.0	60.0
Integrates factual information	34.3	65.7
Asks questions that support themes	31.4	68.6

*Inquiry strategies are defined in the Teaching Artist Observation Form, Appendix N.

Total scores for the teaching artists' use of inquiry strategies were calculated for each teaching artist and for both artists combined (see Table VI.9). Overall, the teaching artists scored an average of 2.9 of a possible score of 6.0. The total scores were statistically analyzed by different variables, including Treatment Groups A and B. **There was one statistically significant difference: Teaching Artist One scored higher for use of inquiry strategies than did Teaching Artist Two.**

Table VI.9
Total Score for Teaching Artists' Use of Inquiry 2004-05
(Teaching Artist 1 *n* = 17, Teaching Artist 2 *n* = 18, Total *n* = 35)

Teaching Artist[2,3]	Total Score[1]			
	Minimum	Maximum	Mean	±
Teaching Artist 1	0.0	6.0	4.2	0.8
Teaching Artist 2	3.0	4.0	1.8	1.8
Total	0.0	6.0	2.9	1.8

[1]For each teaching artist, the six inquiry strategies were assigned a score using the following scale: no=0; yes=1. Then a mean score for each teaching artist was calculated.
[2]Teaching artists are referred to by a code number assigned to them for this study.
[3]F=26.109; *df*=1, 34; *p*=0.000

During the teaching artists' lessons, RK&A noted whether artists used 14 cumulative strategies from the *LTA* program rubric (see Table VI.10). During about three-quarters of the observations, teaching artists used the following strategies: encouraged students to participate in class discussions, discussed and demonstrated different art materials, and discussed how to employ different art techniques when making artwork (83 percent, 74 percent, and 74 percent, respectively). Teaching artists modeled decision-making and used discussions of art to inspire students' own art-making in nearly two-thirds of observations (66 percent and 63 percent, respectively). The least-observed cumulative strategies were querying students about their choices, using journals, and discussing curriculum information as part of the art-making process (26 percent, 26 percent, and 23 percent, respectively).

Table VI.10
Teaching Artists' Cumulative Strategies 2004-05
(*n* = 35 observations)

	Whether Teaching Artist Displayed Behavior (% of observations)	
Strategy*	**Yes**	**No**
Encourages student participation in discussions	82.9	17.1
Discusses and demonstrates various art materials	74.3	25.7
Art-making synthesis: techniques	74.3	25.7
Artistic process: models decision-making	65.7	34.3
Art-making synthesis: discussions of artwork	62.9	37.1
Art-making synthesis: elicited class feedback	45.7	54.3
Art-making synthesis: elicited imagination	45.7	54.3
Art-making brainstorming	37.1	62.9
Art-making problem-solving	28.6	71.4
Art-making synthesis: elicited personal response	28.6	71.4
Artistic process: discussion	28.6	71.4
Artistic process: query about choices	25.7	74.3
Artistic process: journals	25.7	74.3
Art-making synthesis: curriculum information	22.9	77.1

*Cumulative strategies are defined in the Teaching Artist Observation Form, Appendix N.

Total scores for the teaching artists' use of cumulative strategies were calculated for each teaching artist and for the two artists combined (see Table VI.11). Overall, the teaching artists scored an average of 6.5 of a possible score of 14.0. While Teaching Artist One scored higher for use of cumulative strategies than did Teaching Artist Two, the difference was not statistically significant and there were no other statistically significant relationships.

Table VI.11
Total Score for Teaching Artists' Use of Cumulative Strategies 2004-05
(Teaching Artist 1 *n* = 17, Teaching Artist 2 *n* = 18, Total *n* = 35)

	Total Score[1]			
Teaching Artist[2]	**Minimum**	**Maximum**	**Mean**	**±**
Teaching Artist 1	4.0	12.0	7.3	2.4
Teaching Artist 2	2.0	10.0	5.7	2.2
Total	2.0	12.0	6.5	2.4

[1]For each teaching artist, the 14 cumulative strategies were assigned a score using the following scale: no=0; yes=1. Then a mean score for each teaching artist was calculated.
[2]Teaching artists are referred to by a code number assigned to them for this study.

RELATIONSHIP BETWEEN CLASSROOM TEACHERS AND TEACHING ARTISTS

During the teaching artists' lessons, RK&A scored the role of the classroom teacher using four levels described in the *LTA* literacy rubric (see Table VI.12). During 40 percent of observations, classroom teachers interacted with the teaching artist at level four, indicating that in these observations, classroom teachers played a highly effective role during the artists' lessons. During few observations (3 percent), classroom teachers received a level one for their interactions with the teaching artist.

Table VI.12
Role of the Classroom Teacher during the Teaching Artists' Lessons 2004-05
(*n* = 35 observations)

Level of Classroom Teachers' Participation* (% of observations)			
Level 1	**Level 2**	**Level 3**	**Level 4**
2.9	28.6	28.6	40.0

*The classroom teachers' participation levels one to four are defined in the Teaching Artist Observation Form, Appendix N.

Total scores for the role of classroom teachers during the teaching artists' lessons were calculated for each teaching artist and for the two artists combined (see Table VI.13). Overall, classroom teachers scored an average of three of a possible score of four. **There were no statistically significant relationships for classroom teacher participation scores.**

Table VI.13
Total Score for Classroom Teacher Participation 2004-05
(Teaching Artist 1 *n* = 17, Teaching Artist 2 *n* = 18, Total *n* = 35)

	Total Score[1]			
Teaching Artist[2]	**Minimum**	**Maximum**	**Mean**	**±**
Teaching Artist 1	1.0	4.0	3.0	1.0
Teaching Artist 2	2.0	4.0	3.1	0.8
Total	1.0	4.0	3.1	0.9

[1]For each teaching artist, the classroom teachers' level of participation was assigned a score of one to four, then a mean score was calculated.
[2]Teaching artists are referred to by a code number assigned to them for this study.

CLASSROOM TEACHER OBSERVATIONS

Classroom Teacher Observation Data Collection

Six teachers from Treatment Group B were observed 22 times in the spring of 2005 (see Table VI.14).

Table VI.14
Classroom Teacher Observations 2004-05

Treatment Teacher[1]	School	Number of Lessons Observed by Lesson Type			
		Art Inquiry	Read Aloud	Combined[2]	Total[3]
C.T. 0304	P.S. 148	2	1	0	3
C.T. 0301	P.S. 148	3	1	0	4
C.T. 0306	P.S. 148	3	1	0	4
C.T. 0104	P.S. 86	3	1	0	4
C.T. 0103	P.S. 86	2	1	1	4
C.T. 0106	P.S. 86	2	1	0	3

[1]Classroom teachers are referred to by a code number assigned to them for this study.
[2]The art inquiry and read aloud lessons were supposed to be taught separately; however, one teacher combined the two types of lessons.
[3]The research plan specified that each teacher would be observed during three art inquiry lessons and one read aloud, making a total of 24 observed lessons. However, because of scheduling issues, observations took place 22 times.

Student Behaviors during Classroom Teachers' Inquiry Lessons

During the classroom teachers' inquiry lessons, RK&A noted whether students displayed six behaviors in the *LTA* literacy rubric (see Table VI.15). The student behavior observed to the greatest extent was hypothesizing (59 percent of the observations). Two behaviors were demonstrated somewhat by students: extended focus and evidential reasoning (each 50 percent of observations).

The degree to which students' demonstrated the other behaviors varied. Building schema occurred somewhat in 41 percent of observations and greatly in another 41 percent. Thorough description occurred about equally in each degree (not at all in 32 percent of observations, somewhat in another 32 percent, and greatly in 36 percent). Students' expression of multiple interpretations was bimodal—the behavior was absent in 46 percent of observations but greatly demonstrated in another 46 percent.

Table VI.15
Prevalence of Student Behaviors during Classroom Teachers' Inquiry Lessons 2004-05
(*n* = 22 observations)

	Degree to which Students Displayed Behaviors (% of observations)		
Student Behavior*	**Not at All**	**Somewhat**	**Greatly**
Hypothesizing	13.6	27.3	59.1
Extended focus	4.5	50.0	45.5
Multiple interpretations	45.5	9.1	45.5
Evidential reasoning	9.1	50.0	40.9
Building schema	18.2	40.9	40.9
Thorough description	31.8	31.8	36.4

*Student behaviors are defined in the Classroom Teacher Observation Form, Appendix L.

Total scores for students' behaviors were calculated for the classroom teachers' two types of inquiry lessons (art inquiry and read aloud) and for the two lessons combined (see Table VI.16). Overall, students of C.T. 0301 and C.T. 0106 received the highest average scores for both lessons combined, while those of C.T. 0104 received the lowest (16.8, 16.7, and 11.3, respectively, of a possible score of 18).

For art inquiry lessons, students of C.T. 0301 received the highest average score (16.7 of a possible score of 18), followed by those of C.T. 0106 and C.T. 0103 (each an average score of 16.0). C.T. 0104 received the lowest average score (11.0).

For the read aloud lesson, students of C.T. 0106 received the highest score (18 points—the maximum score possible), followed by those of C.T. 0301 (17 points). Students of C.T. 0103 received the lowest score (10 points).

Table VI.16
Total Score[1] for Student Behaviors during Classroom Teachers' Inquiry Lessons 2004-05

Classroom Teacher[2]	**Total Number of Observations**	**Art Inquiry**		**Read Aloud Score[3]**	**Total**	
		Mean Score	**±**		**Mean Score**	**±**
C.T. 0301	4	16.7	1.2	17.0	16.8	1.0
C.T. 0106	3	16.0	1.2	18.0	16.7	1.5
C.T. 0103	4	16.0	1.4	10.0	14.5	3.1
C.T. 0306	4	13.3	3.1	11.0	12.8	2.8
C.T. 0304	3	13.0	1.4	11.0	12.3	1.5
C.T. 0104	4	11.0	2.0	12.0	11.3	1.7

[1]Each of the six whole class student behaviors was assigned points using the following scale: Not at all=1; Somewhat=2; Greatly=3. Then a mean score for all six behaviors was calculated for the art inquiry lessons, read aloud lesson, and both lessons combined.
[2]Classroom teachers are referred to by a code number assigned to them for this study.
[3]There was only one read aloud lesson for each teacher, so the mean was not calculated.

Classroom Teacher Behaviors during Inquiry Lessons

During the classroom teachers' inquiry lessons, RK&A scored the teachers on 17 behaviors from the *LTA* literacy rubric (see Table VI.17). Teachers elicited multiple responses and accepted/validated many interpretations at the accomplished level during nearly three-quarters of observations (77 percent and 73 percent, respectively). During more than one-half of observations, teachers asked for interpretations, showed enthusiasm for the lesson, demonstrated schema building, and asked appropriate, open-ended questions at the accomplished level (68 percent, 59 percent, 55 percent, and 55 percent, respectively).

The behaviors least often displayed at the accomplished level were: responded to unfounded questions, elicited multiple interpretations, elicited responses to one interpretation, prompted evidence from artwork/text, and used multiple strategies (each 18 percent).

Table VI.17
Level of Classroom Teachers' Behaviors 2004-05
(*n* = 22 observations)

	Level of Teachers' Behaviors (% of observations)		
Teacher Behavior*	**Beginning**	**Developing**	**Accomplished**
Elicits multiple responses	4.5	18.2	77.3
Accepts/validates many interpretations	27.3	0.0	72.7
Asks for interpretations	31.8	0.0	68.2
Shows enthusiasm	13.6	27.3	59.1
Demonstrates schema building	45.5	0.0	54.5
Asks appropriate questions	0.0	45.5	54.5
Encourages thorough description	18.2	40.9	40.9
Focuses description on artwork or text	22.7	36.4	40.9
Observes wait time	9.1	50.0	40.9
Image/text selection	13.6	45.5	40.9
Summarizes	59.l	0.0	40.9
Demonstrates transfer	59.1	9.1	31.8
Responds to unfounded answers	36.4	45.5	18.2
Elicits multiple interpretations	18.2	63.6	18.2
Elicits responses to one interpretation	31.8	50.0	18.2
Prompts evidence from artwork or text	36.4	45.5	18.2
Uses multiple strategies	45.5	36.4	18.2

*Teacher behaviors and "beginning," "developing," and "accomplished" levels are defined in the Classroom Teacher Observation Form, Appendix L.

Total scores for classroom teachers' behaviors were calculated for the two types of inquiry lessons (art inquiry and read aloud) and for both lessons combined (see Table VI.18). Overall, C.T. 0106, C.T. 0301, and C.T. 0103 received the highest average scores for both lessons combined, while C.T. 0104 received the lowest (39.7 points, 39.5 points, 39.3 points, and 30.0 points, respectively, of a possible 51 points).

For art inquiry lessons, C.T. 0103 received the highest average score, followed by C.T. 0306 and C.T. 0301 (43.0 points, 40.3 points, and 40.0 points, respectively, of a possible 51 points). C.T. 0104 received the lowest average score (30.7 points).

For the read-aloud lesson, C.T. 0301 received the highest score, followed by C.T. 0106 (38 points and 37 points, respectively, of a possible 51 points). C.T. 0103 received the lowest score (26 points).

Table VI.18
Total Score[1] for Classroom Teachers' Behaviors 2004-05

Classroom Teacher[2]	Total Number of Observations	Art Inquiry		Read Aloud Score[3]	Total	
		Mean Score	±		Mean Score	±
C.T. 0106	3	37.9	6.0	37.0	39.7	3.1
C.T. 0301	4	40.0	7.0	38.0	39.5	5.8
C.T. 0103	4	43.0	2.8	26.0	39.3	9.0
C.T. 0306	4	40.3	6.4	28.0	37.3	8.1
C.T. 0304	3	33.5	2.1	31.0	32.7	2.1
C.T. 0104	4	30.7	1.2	28.0	30.0	1.6

[1]For each classroom teacher, the 17 teacher behaviors were assigned a score using the following scale: Beginning=1; Developing=2; Accomplished=3. Then a mean score for all 17 behaviors was calculated for the art inquiry lessons, read aloud lesson, and both lessons combined.
[2]Classroom teachers are referred to by a code number that was assigned to them for this study.
[3]There was only one read aloud lesson for each teacher, so the mean was not calculated.

VII. PRINCIPAL FINDINGS: TEACHING ARTIST AND CLASSROOM TEACHER INTERVIEWS (2004-05 AND 2005-06)

2004-05 INTERVIEWS

In June 2005, RK&A conducted telephone interviews with the two teaching artists and 11 Treatment Group classroom teachers who participated in the study (see Appendices M and O for the interview guides).[32]

TEACHING ARTIST INTERVIEWS

The interviewer asked the teaching artists to discuss their experiences with the *LTA* program and opinions of the professional development Guggenheim staff provided, as well as their perceptions of the program's impact on their teaching practice, on classroom teachers, and on students.

Experiences with and Opinions of LTA

Both teaching artists said they had positive experiences working with their assigned schools. They found the schools receptive to the program and accommodating to their needs (see the first quotation below). Additionally, teaching artists said their interactions with the classroom teachers were productive and collaborative, especially in developing lessons and making connections between the visual arts and the curriculum. They also appreciated that the classroom teachers assisted them and actively participated during their lessons (see the second quotation).

> The school I was working with was really flexible. So, for instance, some of the technology [provided by the Guggenheim that] we were using—the school itself was having trouble hooking up the projector I was given to some of their computers. The school itself was able to give me a laptop to use, so [any problems I encountered] were solved, because the teachers were so flexible. [teaching artist]

> (Can you talk a little bit about how you and the classroom teachers worked together over the course of the school year?) We made our projects together. We . . . studied their curriculum—they got a few ideas from that, and then I came up with some ideas, and then . . . we discussed how we would go about . . . integrating the curriculum and the art project—bringing them both together. [The classroom teachers] worked very closely with me in the class and it was very much a partnership program. . . . When they did the art workshop with me they knew . . . what I would be doing. They knew the layout of the lessons, and they were just very, very supportive during the class. They didn't sit back in any respect. They very much . . . helped out with communicating the project to the kids. They were involved in the actual workshop itself. [teaching artist]

[32]Originally, all 12 classroom teachers who participated in the research study were to be interviewed; however, scheduling conflicts prohibited interviewing one teacher from Treatment Group A.

Both teaching artists also praised their interactions with Guggenheim staff. They appreciated the staff's logistical and material support, including coordinating with the schools and providing access to technology to enhance lessons (see the first quotation below). The teaching artists also said they felt that Guggenheim staff responded to their needs and were proactive when asking for feedback and making changes to *LTA* (see the second quotation).

> It's a tremendously well-run program. I think . . . they really stay on top of what the artist brings to the school and how it's working throughout the year. They don't just allow the artist in and things just evolve as they feel it should. . . . We're kept up to the task—the whole program is kept to the task. I think the school feels this and the students feel this. I think it's great. It's one of the best places I've ever worked for. I couldn't speak more highly of it. [teaching artist]

> I think the staff—the three administrative staff—were all really top-notch and excellent. Something that I thought particularly stands out about this program is that the staff [are] always trying to make things better. They're always getting feedback from us and always giving feedback in a really constructive way, so that I felt like we were a team trying to make things work . . . together. I think that that's unique for a program to be so self-reflective, and I think that it is really part of the program's success. [teaching artist]

When asked how they might modify their lessons next year, both teaching artists said they would try to integrate their lessons with the curriculum earlier in the planning process. One said that a detailed schedule of when topics were being taught helped her align her lessons with the classroom teachers' curriculum. One also would have liked to see more emphasis on creating art (e.g., technical skills, experimenting with different materials) to balance the current classroom content.

Responses to LTA *Professional Development*

Both teaching artists complimented *LTA's* professional development component, describing it as useful and noting that they applied what they had learned in developing and executing their lessons. They complimented Guggenheim staff for balancing theory and practice in the professional development. In particular, they appreciated learning inquiry strategies to engage students with works of art and brainstorming and learning from other teaching artists (see the two quotations below). Both teaching artists said they readily integrated what they had learned in the *LTA* professional development into their lessons.

> (Can you talk a little about your experiences with the *LTA* professional development?) I thought it was really well organized, especially the professional development at the beginning of the year. I was very impressed with . . . the balance between practical development and more theoretical development. It felt like a good amount of theory but what was really helpful was . . . the time that we had to brainstorm actual lessons with each other and to do sort of mockups. (What if anything have you learned from the *LTA* professional development?) I learned a lot about inquiry learning, open-ended . . . questioning. I also learned a lot about integrating works of art into the lesson. And then throughout the year [at the weekly meetings], I was able to learn from other teaching

> artists in terms of lessons that they [were] doing—just . . . pick up tips in terms of the kinds of materials that they used, the kind of tools that they used. [teaching artist]
>
> (Can you talk a little about your experiences with the *LTA* professional development?) They had quite a lot of training in how students look at artwork and how they look for . . . proof of what they're seeing. It recapped how I work with students but also really helped me to . . . engage students while looking at artwork. (What if anything have you learned from the *LTA* professional development?) How to help children . . . see artwork, talk about artwork and how to discuss what they're seeing, give proof of what they're seeing. . . . (How might the professional development be modified to improve it?) I couldn't say. I was very happy with it to be honest. I . . . really felt that they [Guggenheim staff] truly gave me a tremendous understanding of the value of the students' looking at artwork and, again, really getting them to stay with what they were looking at and giving proof of what they saw. I really felt this . . . open-ended discussion that you have with students—I really understood . . . the benefits of it. And it really helped me to . . . have wonderful discussions with the children this year. [teaching artist]

Impact of LTA

Both teaching artists said *LTA* had positively impacted them, the classroom teachers with whom they worked, and the students with whom they interacted.

<u>On Teaching Artists</u>

The teaching artists stressed that *LTA* improved their teaching practice. Learning inquiry strategies was a particularly powerful experience for them and made them fully appreciate how showing and discussing works of art complements art-making processes (see the two quotations below).

> In terms of my teaching, I think it's really influenced a lot of the inquiry that I do. I teach in other . . . [institutions], and I've noticed a shift . . . in terms of the way that I've been doing inquiry. I've been doing a lot more open-ended questioning, because that seems to be really, really effective with the kids. And so that is a permanent shift in my teaching. [teaching artist]
>
> (Overall, what impact, if any, do you think the *LTA* program has had on your teaching?) It has completely changed, [and] I have taught art now for [several] years. It has truly shown me the value of opening the child's mind to the world around them through looking at artwork. I've seen the tremendous value in actually bringing artwork in and having these open-ended discussions with students. As far as I'm concerned, it's essential. It's truly essential . . . that they're inspired before they begin their project, that they get the opportunity to talk and give their opinions and become confident in that way. Because as far as I'm concerned, they became much more able to talk about artwork and far better critical thinkers than I have ever experienced before. So this will be something I will always bring into class and see as a tremendous value [in] looking at artwork, exposing children to museums and artwork within museums, encouraging them to go

there and look at the artwork within the museum, and bring it back and connect it to the project that they're doing. I think it gives a whole . . . other viewpoint of understanding [for] creating art. [teaching artist]

On Classroom Teachers

The teaching artists said that *LTA* helped classroom teachers feel more comfortable looking at and deciphering artworks. Additionally, they thought the classroom teachers were also using inquiry strategies and learning how to integrate art-making with their students (see the quotation below).

> (What impact, if any, do you think the *LTA* program has had on the classroom teachers with whom you worked?) I felt like the teachers became a lot more comfortable with artwork themselves. One teacher in [particular] comes to mind. She would come in after a week and [say], 'This weekend I was walking by an art print store and I saw this piece that we talked about or that I saw at the Guggenheim.'. . . By June . . . they could form an opinion of an artwork—like or dislike it—and enjoy it or find meaning in it. So I noticed a big shift in that. I also felt like they were picking out and getting ideas about how they could integrate actual art-making into their classroom themselves. I think a lot of . . . the inquiry—open-ended questions and things that we were doing with [students]—[that] some of the teachers [did] additional inquiry with the students. I think that was shift [in the classroom teachers' teaching practices] because of the program. [teaching artist]

On Students

Both teaching artists said *LTA* broadened students' experiences and helped them feel more comfortable looking at works of art and visiting museums (see the first quotation below). Moreover, they felt *LTA* enabled students to develop a relationship with art (see the second quotation).

> (What impact, if any, do you think the *LTA* program has had on the students with whom you've worked?) I think they've been transformed by it—that they've had a tremendous year. . . . My classes went three times this year to the Guggenheim Museum and prior to this, they'd never really been inside a museum before and knew little or nothing about it. It's had a huge impact on them—just even to have had the experience of being in a museum, to look at artwork, and to know that it exists outside of . . . a book. . . . They've been introduced to a whole other world outside of their community. [teaching artist]

> (What impact, if any, do you think the *LTA* program has had on the students with whom you've worked?) I think it's had a really large impact on them. . . . At [the] end of the year, students in some of their classrooms [had] to write what they liked about this school year. . . . The teachers showed me, and several of them, they talked about the art lessons and visiting the Guggenheim. So I think that [*LTA*] has been a really key part of their school year. I had students who would come in and . . . tell me about buildings that they saw during the week that we had studied in class together. They would talk about artworks that they saw in a certain book that we had looked at together. In general, they

were much more comfortable . . . looking at art, forming opinions about art, and [forming] a relationship with art itself. [teaching artist]

CLASSROOM TEACHER INTERVIEWS

RK&A interviewed five teachers from Treatment Group A and six from Treatment Group B. The interviewer asked the classroom teachers to discuss their experiences with *LTA* and their perceptions of the program's impact on their teaching practice and students. RK&A also asked Treatment Group B teachers their opinions of the extended professional development Guggenheim staff provided as part of the research plan.

Experiences with and Opinions of LTA

All of the classroom teachers praised *LTA* for providing their students with engaging and enjoyable experiences. Specifically, all thought their students enjoyed and benefited from working with the teaching artist and having a chance to visit the Guggenheim. In particular, several classroom teachers appreciated the nonjudgmental environment the teaching artist created—both in discussing and in making art. Several others said it was a pleasure participating in the program because it was well-organized and managed. All but one of the Treatment Group B classroom teachers also said the inquiry strategies and literacy connections were successful aspects of the program. In a related comment, three Treatment Group B teachers said the professional development was worthwhile. Three quotations below exemplify the responses.

> (Overall, what is your opinion of the *LTA* program?) It was unbelievably beneficial for the children. . . . It was an amazing experience for the children and . . . I would do it every year if I could—it was great. (What aspects of the program, if any, worked really well for you?) I'd have to say to the hands-on demonstrations with the kids—doing art and showing them other artwork. Of course the museum trips—that was definitely beneficial. . . . The children looked forward to the [teaching artists'] lessons. It was a highlight of their week. [classroom teacher]

> I would say the program is excellent. It's been a huge asset to my classroom and to my kids. Certainly, regarding enthusiasm and motivation for a content area, using art is really great, and then also more practically speaking [the program] has helped support our . . . literacy goals. It certainly has supported a number of skills involved in building literacy. . . . (What aspects of the program, if any, worked really well for you?) I would say . . . the artist-in-residence and then also the inquiry-based learning—those are the two components for me. (What about the artist?) The artist-in-residence who was assigned [to] my class was a positive aspect. My kids were enthusiastic to have someone who was an experienced artist and encouraged them to do hands-on projects and didn't dictate the way they were supposed to do those projects, which is how other art is taught in school so often. [classroom teacher]

> I thought the program was excellent. My kids—they completely benefited from it. It was run very well. The teaching artists did an outstanding job with the planning. They

> provided us with a lot of training to do what we were doing. The kids thoroughly enjoyed it. None of them were ever absent on a Friday. (What aspects of the program, if any, worked really well for you?) Having the teaching artists come and do art projects with the children [and] exposing them to artwork that I know most of them probably have never seen or will never see. A lot of my quietest kids actually spoke and said things . . . that even adults didn't. They noticed things in the artwork that even teachers didn't notice. My kids enjoyed the trips to the [Guggenheim] Museum and I just really feel that it enriched their lives. [classroom teacher]

All but one classroom teacher said they enjoyed working with the teaching artists. They described their interactions with the teaching artists as collaborative, with the goal of developing art projects relevant to the curriculum (see the first quotation below). A few classroom teachers also appreciated that the teaching artists accommodated the students' needs (see the second quotation). In contrast, one classroom teacher in Treatment Group A said she did not interact with the teaching artist. Rather she said, "The [teaching artist] knew what she was doing so I let her do her thing."

> (Can you talk a little bit about how you worked with the teaching artists over the year?) Myself, the two other [classroom] teachers, the teacher artists, and their assistants all met about five times during the year. We sat down to discuss the curriculum and . . . what we'd be teaching at a certain time so that we could incorporate [this] into the art—which we did, which was good. We just had great open communication. [classroom teacher]

> We had planning meetings with . . . the two other teachers on the grade where . . . we [bounced] topics off of each other. . . . We . . . let her see things we were working on and together we worked to make something that would . . . work for the children. . . . When she made suggestions we would modify it to try [to] fit with the needs of the kids in the classroom. So I think the teaching artist I worked with was great and very flexible. We gave feedback to each other and that worked out really well for everyone—me and the children. [teaching artist]

When asked how *LTA* could be improved next year, nearly all the classroom teachers praised the program again and could not provide suggestions for improvement. One teacher suggested that materials could be more effectively distributed, noting that her school did not have enough posters for all the teachers. Another did not like having to spend Saturdays attending the professional development for Treatment Group B teachers.

Connection between LTA *and the Curriculum*

All but two classroom teachers said the teaching artists' lessons and projects connected to the curriculum. Most often, the teaching artists' lessons connected to social studies, but in several cases the lessons also focused on science (see the first quotation below). Three classroom teachers—one from Treatment Group A and two from Treatment Group B—drew parallels between the art projects and the literacy activities (see the second quotation).

> (In what ways, if any, did the teaching artists' activities connect with what you were

> teaching?) Yes, we met a few times without the children and discussed the content areas that I'd be [teaching] in both social studies and science, and then how we could implement an art project with the children. She was very accommodating. . . . Nothing in the curriculum needed to be changed. It only enhanced the curriculum. ([With] what topics in social studies and science did the art lessons connect?) We were studying in social studies communities around the world. We talked about symbols and monuments that are important in communities and why they are important. Then the kids actually created their own models and monuments and discussed why they [had] chosen the monument they did, what it represented, [and] why it was important to them. And then for science we were studying rain forests around the world and the kids learned with the teaching artists the different . . . the layers of the rain forests. The kids studied the plant life in the rain forest and created their own flower and created a background of rain forest. [classroom teacher]
>
> (In what ways, if any, did the teaching artists' activities connect with what you were teaching?) The first project we did was a project on maps, so that's an area of social studies for the third grade that is required in the Standards for kids to have exposure to and understand. What was interesting and artistic about the project was that it was connected to that area of the curriculum, but then at the same time [it gave] these kids another perspective. Since there are such a variety of maps, they were able to create something that was more conceptualized [than just a] regular map. The second project we did was using art to serve as a piece of propaganda but more on a personal basis. They were trying to persuade somebody to do what they would like to do if they had an entire day to themselves. And [for] my kids that was directly connected to the writing curriculum where the kids are encouraged to write a persuasive letter. The concepts of persuasion and convincing [others] both in writing and art [show] how [these disciplines] can . . . serve those kinds of roles. [classroom teacher]

In contrast, two classroom teachers from Treatment Group A saw no relationship between the teaching artists' lessons and the curriculum. While one of these teachers acknowledged that she did not interact much with the teaching artist during the planning stage, she also complained that there was little overlap between the Guggenheim's exhibitions and her curriculum (see the first quotation below). The other teacher said the benefits of exposing students to art outweighed the fact that she saw no connections with her curriculum (see the second quotation).

> (In what ways, if any, did the teaching artists' activities connect with what you were teaching?) It really didn't. (What prevented the two from being connected?) Really, the Museum itself. (How so?) I felt that the curriculum that we had did not really reflect what was on display in the exhibits in the Museum. [classroom teacher]

> (In what ways, if any, did the teaching artists' activities connect with what you were teaching?) It didn't that much. I mean I'm not going to lie and say that it did. Honestly, it's not like the curriculum was flowing in. I know that's what it was supposed to happen. But it didn't even matter . . . because . . . it opened their eyes to something to which they were really never exposed. Probably most of them won't be exposed to it. So it almost didn't even matter that it [did not] follow what we were doing in the curriculum. There were some links with literature or social studies—but real light—not solid

connections to what the kids were learning. [classroom teacher]

Responses to the LTA *Professional Development (Treatment Group B Only)*

Guggenheim staff provided classroom teachers in Treatment Group B with extended professional development, focusing on how to use inquiry with works of art and texts. All the teachers found the professional development highly useful, noting that they gained experience and confidence in using inquiry both with works of art and texts (see the first quotation below). Two added that the professional development had made them more comfortable with art—as a teacher and personally (see the second quotation). Another noted that she enjoyed developing professional relationships with the Guggenheim staff and other teachers.

> (Can you talk a little about your experiences with the program's extended professional development?) I thought it was very helpful. . . . I thought everyone there was very friendly and open to discussion. . . . They answered as many questions as we had, because at first it . . . was kind of intimidating, but they made us so comfortable and they really helped us. So I thought it was a great experience. (What, if anything, did you learn from the Guggenheim's professional development?) How to do inquiry, because it's kind of difficult in the classroom. It's something that we're always working on by just trying to keep questions open-ended. It was a big thing that we worked on a lot and we trained a lot [in] our professional development. We practiced with each other and we helped each other come up with questions and how to phrase different things. So I thought that was really helpful, and it helps me now to be a little more aware of my questioning with the children when I'm doing any type of reading or writing activity, especially. [Treatment Group B teacher]

> (Can you talk a little about your experiences with the program's extended professional development?) I didn't really know much about art. It taught me a little bit more about art and exposed me to the different artists and stuff like that. Basically . . . how to read art, so if I go to a museum—even without my kids [students]—I can enjoy it. (Can you talk about ways you've integrated what you learned into your classroom?) When we talked about the artwork, I asked the kids questions [and they] always had answers, but [then I] asked them [what] made them think that—so it was more open[-ended]. And then I [did] the same thing when [they were] reading passages—I started asking them the same questions. [Treatment Group B teacher]

When asked how the professional development could be improved, most of the classroom teachers said it was overwhelmingly successful and they did not have any suggestions. Two mentioned scheduling issues: one said meeting on Saturdays was difficult because of childcare issues, and the other said the number of sessions could have been reduced. One classroom teacher, who was in her first year of teaching, would have appreciated additional time to practice inquiry with the other teachers.

2005-06 INTERVIEWS

In June 2006, RK&A conducted telephone interviews with the three teaching artists and 11 Treatment Group classroom teachers who participated in the study (see Appendices M and O for the interview guides).[33]

TEACHING ARTIST INTERVIEWS

The interviewer asked the teaching artists to discuss their experiences with *LTA* and their opinions of the professional development Guggenheim staff provided, as well as their perceptions of the program's impact on their teaching practice, on classroom teachers, and on students.

Experiences with and Opinions of LTA

All the teaching artists said that *LTA* is important, and, aside from its direct impact on students, that it improves schools, provides enriching opportunities to young people who would otherwise not have them, and presents a model of excellence for other similar programs (see the two quotations below). All the teaching artists indicated that they are contributing to a valuable mission, and that the Guggenheim is a supportive and trustworthy leader.

> In the particular school where I worked, they do not have an art teacher. So on a very basic level the students get to view materials and express themselves creatively and develop their own creative ideas. [teaching artist]

> I think there are a lot of programs where the administration is not as organized as the Guggenheim's Learning Through Art program is. And because the program is so organized, it [has] really created this excellence model. [teaching artist]

While teaching artists unanimously had positive experiences with students, they expressed more frustration about their collaborations with classroom teachers. In describing the difference between a successful collaboration and a frustrating one, teaching artists pointed to three crucial elements: planning, communication and meeting expectations. Two teaching artists said their classroom teachers were not invested in the collaboration (see the first quotation below). Also, while the other teaching artist had nothing but good things to say about her classroom teachers, she was aware of tensions posed by more challenging collaborations (see the second quotation).

> It's hard when [classroom teachers are] like, 'Great, great, the Guggenheim's coming, and we're so glad that our kids are getting to do an art project,' and [then] they kind of slack on [the] curriculum stuff, themselves. It's like we're setting up to help build their curriculum, but they're not there teaching the curriculum alongside. [teaching artist]

[33]Originally, all 12 teachers who participated in the research study were to be interviewed; however, scheduling conflicts prohibited interviewing one teacher from Treatment Group B.

> I've been really lucky in terms of getting the teachers who are very supportive and on board with the program. I think that's always a potential barrier in this kind of program [with] such a specific goal. [teaching artist]

Regarding the program's administration, teaching artists praised the Guggenheim's organization and recognized it as a model for best practices (see the first quotation below). One teaching artist had a few concerns. While this artist said the Guggenheim supported her, she also felt stress between her commitments to *LTA* and other areas of her professional work (see the second quotation).

> The best way that this program teaches the idea of reflection, and self-improvement and moving forward is that the administration is always saying, 'What can we do better?' And then as teaching artists, we give suggestions, and they're actually responsive. [The administration] is always seeking to do what it does even more efficiently and stronger, and I think that's really unique in a program. [teaching artist]

> [The program's administration is] really organized. They're very supportive of us as teachers. My one concern is there is a lot of extra stuff that's required of us. It seems like not everyone in this program is actually getting work as an artist because they're so busy teaching. [teaching artist]

Responses to the LTA *Professional Development*

Overall, teaching artists most appreciated the *LTA* Professional Development for the opportunity to share with and learn from one another. All three teaching artists spoke about this enthusiastically, saying they traded tips and techniques (see the quotation below). Moreover, teaching artists asked for more professional development opportunities. Teaching artists also praised the presentations by knowledgeable professionals. In particular, teaching artists found Anne Rhodes to be "inspiring" and "phenomenal."

> This year [there was an] emphasis on us learning from each other as teaching artists; so we had several sessions in our fall training, and [then] throughout the monthly meetings where teaching artists were presenting a certain idea or problem, and then we would troubleshoot as a group. I found that really helpful. [teaching artist]

Barriers to Implementation

When asked what barriers were particularly imposing, teaching artists spoke about different things. One explained that she felt challenged from the start when classroom teachers coerced her into teaching art forms outside her field (see the first quotation below). Another said she struggled throughout the program to find a comfortable place in the teachers' classrooms (see the second quotation). The third teaching artist said that some classroom teachers were too concrete when thinking about how to apply art to classroom learning (see the third quotation).

> [One barrier I faced was that] I had to pick up a project that was out of my area and even though I thought of other projects, too, [the teachers] really gravitated towards [an art

form] that I wasn't really good at. [teaching artist]

I think a difficult thing is coming into another person's environment and classroom and being sensitive to their space, their needs, and the way that they articulate themselves to their students. Coming in once a week for 20 weeks and [trying] to make that transition very smooth can be difficult. [teaching artist]

The barrier is sometimes working with teachers to come up with ways to use the exhibitions. I feel there usually are ways that [the curriculum and art] relate, but sometimes they are not very concrete, and that can be a challenge or a barrier for a teacher to see. For example, you can always use a piece of artwork and write about it, or, as a starting place for a piece of poetry, or you can talk about the way that the artist went through their trial and error process [and relate that] to the scientific process. [Teachers] get really hung up on the concrete things. Like, 'Oh, we have an exhibition of Russia. Let's study Russia this year.' And that doesn't always make sense or really honor the art that's on view. [teaching artist]

Impact of LTA

Teaching artists said *LTA* had positively impacted them, the classroom teachers with whom they worked, and the students with whom they interacted.

On Teaching Artists

All three teaching artists said that participating in *LTA* has led them to try things with students that they had never done before, and that they have changed their teaching styles as a result of their positive experiences. In particular, the implementation of art inquiries has especially influenced teaching artists. Through this practice, teaching artists said they discovered value in leading discussions about artwork with children by asking open-ended questions. One teaching artist added that by allowing students to respond to open-ended questioning, she has become a better listener, and is thus more in tune with her students (see the quotation below). Teaching artists also mentioned that through the program they had become more organized in their teaching.

The whole idea of inquiry has really changed my teaching. Before this program, I was hesitant about talking about works of art with students, and felt there wasn't time. With the Guggenheim you have an hour and half with these students, and that is huge. [Having this much time] can increase the time students have to build their vocabulary and sensitivity to looking. That also [has taught] me a lot about listening to their insights. [teaching artist]

On Classroom Teachers

Teaching artists repeatedly said the program allows classroom teachers to discover hidden talents in their students and learn new methods for reaching students who have been known to be non-participatory or below-average in their performance. As one said, these students came alive

during art inquiries, showing confidence in their participation and capabilities that had been dormant until then (see the first quotation below). Teaching artists also said the program shows classroom teachers how to help students use new skills in other areas (see the second quotation).

> [Classroom teachers] get to see the value of other ways of teaching, and other ways of dealing with students, and they get to see [a certain student] who never speaks out in class continually excel. They get to see different ways that kids are learning, and maybe learn other ways to pull them into the class. It's often the kids that are really on the periphery in the regular class day [that] get a chance to shine when we come in. [teaching artist]

> I think [classroom teachers] realize that [inquiry] really is enhancing critical thinking skills, observation skills [and] sensitivity to the world around us. The same thing happens during the reflection. The teachers [become] aware of the validity of the arts in general [and of] how they can build on so many different aspects of a student's character. [teaching artist]

<u>On Students</u>

According to teaching artists, the lessons students learned through *LTA* extend far beyond those that apply to curricula. Teaching artists said that by learning to look at and create art, students learned to observe, appreciate, interact with, and contribute to everything surrounding them (see the first two quotations below). Teaching artists also said the program expands students' geography and scope of opportunities, and often is their first experience with art, museums, and creative materials (see the third quotation). Further, teaching artists said *LTA* may be some students' only art experience, as they come from backgrounds with limited resources.

> [The children] learned a lot about looking at art, looking at the world around them, trusting their own decision-making capabilities and creative thoughts, and [how] to take ownership in this way of the world around them. [teaching artist]

> [The students] come from different backgrounds, and so this idea of appreciating anybody's work of art and really accepting other people's views and beliefs will hopefully weave into other aspects of their [lives] and make them more accepting and open to people. [teaching artist]

> I think a program like this really opens up these students' eyes, these students who maybe don't get out of their neighborhood very much. It gives them the opportunity to go to the museum and have a real relationship with this cultural institution. Hopefully, they'll want to bring their family, and [there will] be this domino effect of getting people interested in this and other museums. [teaching artist]

CLASSROOM TEACHER INTERVIEWS

RK&A interviewed six classroom teachers from Treatment Group A and five classroom teachers from Treatment Group B. The interviewer asked the classroom teachers to discuss their

experiences with the *LTA* program and perceptions of the program's impact on their teaching practice and students. RK&A also asked Treatment Group B teachers their opinions of the extended professional development Guggenheim staff provided as part of the research plan.

Experiences with and Opinions of LTA

All the classroom teachers praised *LTA* for providing their students with engaging and enjoyable experiences. Overall, classroom teachers said they were satisfied with the program and its outcomes. According to a number of teachers, the students in their classes had little exposure, if any, to art previous to their experiences with the Guggenheim. To this, a number of teachers added that without the Guggenheim, their classrooms would not be the place for these students to gain such exposure (see the first and second quotations below).

> Overall I like [*LTA*]. I think it's a great program. It exposes the kids to art, something that they don't really get in the classroom. [classroom teacher]

> [*LTA* is] one of the best parts of the school year. It gives the kids the opportunity to be working with [a] teaching artist and using materials that they wouldn't normally use, and it exposes them to a lot of art. [classroom teacher]

Classroom teachers cited a number of additional qualities of the program and its teaching artists as being noteworthy. For instance, they named structure, reliability, and consistency (see the first quotation below). Classroom teachers also said they appreciated the program's integration of art into their curriculums and the abilities of the teaching artists to make this happen (see the second quotation). Further, when speaking about the program in general, a number of classroom teachers said the professional development was good and the training worked particularly well for them.

> I think the best thing about [*LTA*] is the consistency. It's something the kids look forward to every week. [classroom teacher]

> The artist that I work with is really good about connecting the activity she does with what we're doing in the classroom. So it has a connection to what [the students are] learning about. It really helps their learning. [classroom teacher]

Most classroom teachers had no complaints or suggestions for improvement. Nevertheless, a few classroom teachers said they believed teaching artists could do more to help students make better art pieces (see the first quotation below). Other suggestions for improvement were idiosyncratic, and included introducing the students to more artists, increasing the frequency of teaching artists' visits, having museum visits to allow students to see the whole museum as opposed to focusing on particular pieces, and being provided with more posters for inquiry lessons.

> I would have to say the projects [could be improved]. It's great that the kids are able to come up with their own ideas, but I feel that sometimes it's too loose. It needs a bit more structure. It's great that the kids use their imagination, but at the same time, when

> somebody else looks at [the finished piece], they're not really going to understand what the kids are trying to convey. And [another thing] we could improve is certain techniques that the kids need to work on. For example, if they're doing a painting, it would be good if the kids can learn different strokes. [classroom teacher]

Responses to the LTA *Orientation*

Classroom teachers' responses to the *LTA* orientation ranged from highly positive to highly averse with a few more moderate reviews in-between. Most classroom teachers offered positive reviews, highlighting that the orientation helped them plan solid curricula and become prepared to teach them (see the first quotation below). Some second-year teachers said that this year's orientation was the same as last year's, but that planning during orientation was helpful (see the second quotation). The few who gave negative reviews said they did not like the orientation's length and content (see the last quotation).

> The orientation was perfect. It really prepared us for what was going to happen in the classroom. It also gave us a chance to begin planning what we were going to [teach] for the year, instead of waiting until the last minute. [classroom teacher]

> The first orientation was basically similar to the first orientation last year. But I felt that the second orientation we had with the teaching artists went really well because we got to focus in on one area of the curriculum that we wanted to teach the kids through art, and we were able to research the lessons and build [them]. [classroom teacher]

> It does nothing. I've done it every year, and I love the program, but that orientation seriously doesn't do anything. It has nothing to do with anything we do during the year, and we're told [over a whole day] what we could be told in an hour. [classroom teacher]

Collaborations with Teaching Artists

When asked how they worked with teaching artists throughout the year, classroom teachers talked about their collaborative planning efforts. Several classroom teachers said they allowed the teaching artist to take the lead in planning (see the first quotation below). Several said they had equal partnerships with classroom teachers when it came to planning (see the second quotation), and one said she took the lead (see the third quotation). The structures and frequencies of planning meetings varied. Most had a number of face-to-face meetings at the beginnings and ends of sessions, over lunch periods, or both. Some classroom teachers communicated with teaching artists constantly by e-mail. Some met only at times prescribed by the program. Almost all classroom teachers felt that their collaborations worked fairly smoothly and achieved positive results.

> [The teaching artist] would let me know what was going to be going on that week, and if [there] was something that I had to prep the kids [for], or if there was a lesson that we thought I should teach beforehand. [classroom teacher]

> We met several times, and we talked about what we'd be studying in class, and we

> created units and the art projects that the kids did. We planned everything out together. [classroom teacher]
>
> I tell her what we're studying, and then she thinks of activities we can do based on what we're studying. [classroom teacher]

When discussing how well the teaching artists' activities connected with their curricula, classroom teachers were, for the most part, pleased. Most classroom teachers provided examples of where connections were made. Of these examples, most were concrete and were determined by the curriculum or available artwork (see the first and second quotations below). In instances when the curriculum's content clashed with that of the available artwork, some teachers became frustrated (see the third quotation). Lastly, several teachers spoke enthusiastically about an activity a teaching artist created that used painting to engage students in studying poetry.

> [The teaching artist's] first activity was a sculpture about clothing in Russia. We were studying Russia at the time. [classroom teacher]
>
> Whatever we were doing in social studies, [the teaching artist] would back it up through historical background related to the artist. She would bring in artwork that reflected those countries or those periods of time in history. We also studied holidays, and she was able to bring in artwork that reflected images of those holidays. [classroom teacher]
>
> One project linked because it was [about] Russia, and we made a point to discuss Russia with the children. But the second project, which revolved [around] the David Smith exhibit, had nothing to do with anything we were doing. I showed [the class] the David Smith book, and things like that, but I wasn't teaching this to my kids.

When asked what they learned while observing teaching artists in their classrooms, most said that teaching artists were good models for them, and that watching them lead inquiries was enlightening (see the first quotation below). One even mentioned that she used to teach in a similar way to the teaching artist, and wished the school system would still allow it (see the second quotation). Lastly, classroom teachers said they learned how to use and incorporate art materials into their classrooms (see the last quotation); a few said they were surprised how easily this could be done.

> [I learned about] the kind of questions that I should be asking the kids by watching somebody else doing it. It puts everything in perspective and helps out a lot when we actually do it with the kids on our own. [classroom teacher]
>
> [The teaching artist] teaches in a little bit of a different style than we're used to in the city school system now because we have a new curriculum. It's refreshing to see the ways that she teaches because it's kind of the old style that we used to [use], and it's to me one of the ways that is . . . more effective with the kids. [classroom teacher]
>
> I'm not familiar with doing art projects because we never have time for them. So getting exposed to using the materials, and [learning to] make it manageable in the classroom

[was good]. It was definitely helpful to see how it could work out. [classroom teacher]

All but one classroom teacher said they have taken techniques and approaches they acquired through *LTA* and applied them successfully in other places, citing vocabulary and language used during art inquiries as helpful in language arts and social studies discussions (see the first quotation below). Also, they said that the style of questioning used in art inquiries seems to encourage more and better participation in those discussions (see the second quotation). Furthermore, several classroom teachers said they noticed increased student enjoyment while participating in discussions (see the third quotation). One classroom teacher said that she now leads discussions about the pictures in picture books and social studies texts, something she did not do prior to *LTA* (see the fourth quotation).

> The words that [the teaching artist] used, as far as the 'mood' and 'shading' and 'tone,' completely tied into reading and writing. [For example] setting the mood in the writing piece or figuring out the mood [while] reading. [We were given] tons of vocabulary that we were able to extract and then use. [classroom teacher]

> [The class is now] better able to talk about not just art, but for instance, social studies. [And I'm] using better questioning techniques with the kids to get more out of them, not just a Wal-Mart answer. [classroom teacher]

> My kids have gotten used to talking freely. For example, whenever we talk about art, they tend to say they agree, they don't disagree, they disagree, you know? So, when they're talking about anything else in the classroom, they tend to do the same thing, too. We've done this in art, and here they are trying to send it to other subjects. [classroom teacher]

> When I'm reading with my kids, I look more closely at picture books, and I find myself sometimes doing mini-inquiries. And in social studies I'm spending more time focusing on some of the artwork [in the textbook], and I realized that you can learn so much by looking at the illustrations. [classroom teacher]

Responses to the LTA *Professional Development (Treatment Group B Only)*

Overall, classroom teachers who participated in the extended professional development had positive experiences. They said they found the opportunity to share ideas with other *LTA* teachers, planning and researching time with teaching artists, learning to lead inquiries, and establishing a rapport with the program's leaders especially helpful. All together, classroom teachers felt that these elements and others prepared them for the program and gave them real tools and confidence to implement it.

When asked what they learned during the extended professional development, most of them named leading an inquiry and applying its strategies to literacy learning and other subjects. One classroom teacher admitted that she learned "not to be afraid of art," which "can be kind of intimidating." She added that she hoped she could share this with her students and help them be more comfortable questioning things, in general, and in "looking at things in a different way."

Classroom teachers said that they took concrete things from the extended professional development and used them in their classes. Among them, they mentioned that they have used overheads and posters provided through the extended professional development to teach reading, writing, and textual analysis. Also, they said that they have used open-ended questioning in their classroom discussions, and some of the lesson plans they developed together.

Classroom teachers suggested few modifications to the extended professional development. One suggested that the length of the session could be cut back without affecting its value. Meanwhile, a second classroom teacher suggested that a few more sessions should be hosted throughout the school year. Finally, another offered that while the planning day with the teaching artist was beneficial, the rest merely repeated things she had learned as a *LTA* classroom teacher the previous year.

Impact of LTA

Nearly all classroom teachers said *LTA* had positively impacted their teaching practice, and all said it had enhanced their students' personal and intellectual development.

Classroom Teachers

Classroom teachers said that their experiences with the Guggenheim had two noticeable impacts on their teaching. Most said that since participating in the program, they have found more ways to incorporate art and creativity into their classrooms. Other classroom teachers said that the different teaching techniques they learned have impacted their teaching, enabling them to reach more students, including some who have historically been difficult to engage.

On Students

When speaking about their students' participation in *LTA*, most classroom teachers excitedly related the "positive," "profound," and "tremendous" impacts it has had on them simply by exposing them to so many new experiences at once. Among these experiences, classroom teachers most frequently repeated that creating art and visiting the Guggenheim were especially momentous (see the two quotations below).

> They've learned about artistic techniques and mixing colors and using plaster. They were introduced to things that they'd probably never tried or seen. [classroom teacher]

> I think it's opened them up to a world that they probably never knew. I don't think any of my students have ever been to the Guggenheim Museum, let alone even an art museum. And even just the fact of going into Manhattan and being exposed to the museum in such an intimate way [was great for them]. [classroom teacher]

A few classroom teachers expressed that some of these new experiences were particularly important for struggling students. These teachers said that prior to *LTA*, these students were known mostly for the challenges they posed to teachers and students around them, and these

students knew they caused problems. According to these classroom teachers, some of these students completely turned around through the program (see the quotations below). They revealed talents, discovered their own abilities, and developed some much needed self-esteem.

> A few of my kids that have been struggling [in reading and other areas]. They really take to the art. [*LTA*] makes them build their confidence. [It] makes them feel good about themselves. [classroom teacher]

> I think that there were children that were not good students at all, [but] they were good artists. And so, as a result [of the Program] they were able to increase their self-esteem based on their success in art. [classroom teacher]

Furthermore, some classroom teachers said *LTA* built new character qualities in students who were not necessarily struggling previously. For example, classroom teachers said of their students that "they're becoming independent and inquisitive," "their self-confidence has been better," and "they were so proud at the end." Classroom teachers said they also recognized that students acquired some transferable skills through the program. For example, one classroom teacher was especially pleased that her students "learned how to speak to one another." Another added that practicing speaking with one another made the students more comfortable asking questions, in general, as well as asking for help in other areas (see the quotation below).

> I think they've become more comfortable with themselves, and they really enjoy it. They like talking to one another about [art]. And I think it made them more comfortable to ask questions when they . . . have a problem in [for example] math or reading. [classroom teacher]

APPENDICES

APPENDIX A
Goals and Objectives of *LTA*

Goal: Students will develop and display creativity.

Objectives: (1) Experimentation - students will explore choices and generate several ideas.
(2) Engagement - students will work carefully toward a final product and work on their projects to the completion of the assignment.

Goal: The teaching artist will develop an atmosphere conducive to creativity.

Objectives: (1) Classroom climate - the teaching artist will encourage all students to experiment, give students time to investigate media, and let students know their ideas are valued.
(2) Critique and reflection - the teaching artist will observe children and their work (one-on-one or in groups), asking questions to encourage them to explain their work and choices.
(3) Demonstration- the teaching artist will show students how to use materials or employ new techniques, and then circulate around the room reminding students of the techniques.
(4) Media and materials - the teaching artist will spend time speaking about or demonstrating materials or techniques.
(5) Brainstorming - brainstorming about themes, in the form of an open-ended discussion, will occur when a new unit is begun. Ideas will be applied to the students' work.

Goal: The teaching artist will engage students in a sustained, process-oriented experience.

Objectives: (1) Skill development - student work will build on most previously learned skills, as well as on what students have learned from each other's work and ideas.
(2) Decision-making - students will identify and explain the choices they make. Each student's work will be unique.

Goal: Students will deepen their understanding of a targeted curriculum area through art-based exploration.

Objectives: (1) Classroom connections - the classroom teacher will make connections to the *LTA* program through discussions, activities, or homework.
(2) Classroom teacher participation - the classroom teacher will take an active role during each *LTA* session.

Goal: Students will engage in a sustained, process-oriented experience that cultivates creativity and risk-taking while reinforcing critical thinking and communication skills.

Objectives: (1) Problem-solving I - students recognize and communicate when they have hit a problem; they can describe problems and suggest ways to fix problems in their own artwork and that of their classmates.
(2) Problem solving II - the teaching artist encourages frustrated students to identify problems and to think about ways to change their work/solve problems.
(3) Synthesis of information - the teaching artist introduces a variety of types of information and ideas, and models, discusses, or reflects on how to combine these ideas/information into a unique artwork.
(4) Active listening I - when talking, students respond to and further develop what others in the group have said.
(5) Self-expression I - students display comfort in responding to works of art.
(6) Describing artistic process I - students can articulate (verbally or in writing) choices they made and information related to their artworks; they can answer questions from

teaching artists or students related to their artworks.

(7) Active listening II - the teaching artist models active listening: s/he responds to what students have said as well as synthesizes the students' comments.

(8) Self-expression II - the teaching artist gives all students the opportunity to individually respond to an idea or artwork (possibly through pair or small-group work, or time for individual written response), and validates a wide range of responses offered.

(9) Describing artistic process II - teaching artist asks questions that challenge students to think about, describe, and/or explain choices they made related to their artworks.

Goal: Students will respond to and analyze works of art.

Objectives:

(1) Prior learning - students refer to artworks previously viewed and information and techniques previously learned when looking at new works of art. This might be demonstrated through comments comparing artworks, or use of art terminology.

(2) Analysis - when responding to art, students draw conclusions about a work of art and support it with evidence.

(3) Personal response - students demonstrate opinions/personal reactions to works of art.

(4) Description - students offer accurate and informative descriptions of artworks during class discussions.

(5) Inquiry - the teaching artist uses inquiry to lead open-ended, focused discussions about artwork.

Goal: Students will become comfortable at the Guggenheim Museum and begin to understand museums and other cultural institutions as valuable resources to which they might return on their own or with their families.

Objectives:

(1) Self-initiated visit - students use family passes to visit the Guggenheim with their families.

(2) Comfort - students demonstrate comfort on their visit to the Guggenheim.

(3) Familiarity - students recognize and express interest in the Guggenheim Museum.

(4) Impact - students remember and can articulate what they saw and learned on their visit to the Guggenheim.

Goal: By working in collaboration with experienced teaching artists, classroom teachers will learn new strategies and techniques for supporting learning through the arts.

Objectives:

(1) Attitude - classroom teacher expresses that process is as important as product and shows interest in student creativity.

(2) Presence of art - classroom teacher integrates art into the classroom to support a particular curricular area and student learning.

(3) Ongoing communication - *LTA* staff stay in contact with classroom teachers.

(4) Professional development - *LTA* staff provide classroom teachers with professional development to help them continue with *LTA* strategies post-residency.

(5) Resource access - *LTA* staff provide art resources to classroom teachers

APPENDIX B
New York State English Language Arts Learning Standards 1:
Teacher and Student Outcomes

Teacher Outcomes

Art-related Outcomes	Language Arts-related Outcomes
Classroom teachers and teaching artists who work with *LTA* will use the following techniques to facilitate discussions about art: • Open-ended questions (i.e., questions that have numerous correct answers) • Designing question series that lead students from observation through analysis (similar to Bloom's taxonomy) • Asking questions that challenge students to describe artworks, make connections between artworks and other knowledge, consider and relate personal responses to artworks, ask questions about artworks, and make and defend hypothesis about artworks.	Classroom teachers who work with *LTA* will use the following techniques to facilitate discussions about texts: • Open-ended questions (i.e., questions that have numerous correct answers) • Designing question series that lead students from observation/listing knowledge through analysis (similar to Bloom's taxonomy) • Asking questions that challenge students to state knowledge about texts, make connections between texts and other knowledge, consider and relate personal responses to texts, ask questions about texts, and make and defend hypothesis about texts.

Student Outcomes

Art-related Outcomes	Language Arts-related Outcomes
Students who participate in the *LTA* program will: State facts based on looking at an artwork. Offer interpretations of artworks, including ideas based on facts identified in an artwork. Compare and contrast two or more artworks. Apply ideas generated in relation to one artwork to a different artwork.	Students who participate in the *LTA* program will apply analytical skills developed in response to artworks to their work with texts, including the ability to: Identify and state facts outlined in a text. Offer interpretations of texts. Compare and contrast two or more texts. Apply ideas generated in relation to one text to a different text.

APPENDIX C
Literature Review
Author: Jackie Delamatre, Guggenheim Museum

Part I: Review of Relevant Research

Burchenal, Margaret. "Thinking Through Art, Museum of Fine Arts, Boston." ***Journal of Museum Education*****. Vol. 23, No. 2, pp. 13-15.**

This journal piece is a review of the VUE (or VTS) research at the MFA. See the description of the DeSantis and Housen studies for more information.

Clyde, Jean Anne. "Stepping Inside the Story World: The Subtext Strategy–A Tool for Connecting and Comprehending." ***The Reading Teacher*****. Vol. 57, No. 2, October 2003.**

In this piece, Clyde gives anecdotal evidence of how looking at and interacting with art can lead to improvements in how students work with text. She adapts a performance/inquiry strategy for "becoming" the characters in a work of art to her strategies for classroom literacy instruction. She uses illustrated texts in the classroom to get students to 1) make personal connections with the text, 2) develop strategic inference skills, 3) empathize with characters, and 4) understand perspectives that are not their own.

Davis, Jessica. "Metacognition and Multiplicity: The Arts as Models and Agents." ***Educational Psychology Review*****. Vol. 12, No. 3, pp. 339-359.**

This article suggests and reviews "art-related metacognitive activities that engage inquiry, access, and reflection." Students learn how to enter topics ranging from science to art through multiple entry points (based on Howard Gardner's theory of multiple intelligences). They explicitly discuss these entry points (or learning strategies) as a class and, in doing so, learn about themselves as learners.

DeSantis, Karen and Abigail Housen. "Report on the Pilot Assessment Project Thinking Through Art, 1997-8." Prepared by Visual Understanding in Education for the Museum of Fine Arts, Boston, Education Department. February 1999. (Referred to as: The Program Portfolio Case Study)

In this study, DeSantis and Housen asked teachers who had been trained in using the inquiry method with art (by Visual Understanding in Education which employs the Visual Thinking Strategies method explained in the Tishman article description) to find evidence of skill development and attitudinal changes in student writing and conversation. Teachers found evidence of improvements in their students' ability to make careful observations, to articulate ideas, and to use evidence to support their interpretations.

DeSantis, Karen and Abigail Housen. "Report to the Museum of Fine Arts, Boston, on the Teacher Interview Case Study of the ***Thinking through Art Program*****, Spring 2000." Prepared by Visual Understanding in Education.**

In this study, DeSantis and Housen asked teachers who had been trained in using the inquiry method with art (also using the Visual Thinking Strategies method) to keep track of three students in their classroom and take careful notes on their progress throughout the program. Teachers

found similar evidence to the above study.

Housen, Abigail. "Aesthetic Thought, Critical Thinking, and Transfer." ***Arts and Learning Research Journal*****. Vol. 18, No. 1, 2001-2002. Visual Understanding in Education.**

In this study, Housen investigated changes in students' ability to offer "supported observations" and "speculations" about art and non-art images through analysis of their spoken responses. She also investigated two different kinds of transfer: context and content. She defined "context transfer" as students' ability to learn thinking skills in a group context and then apply those same skills in an individual context. She defined "content transfer" as students' ability to use these same analytical skills learned by looking at art for thinking about non-art images.

Tishman, Shari. "Investigating the Educational Impact and Potential of the Museum of Modern Art's Visual Thinking Curriculum, FINAL REPORT." November 1999, Harvard Project Zero.

In this study, Harvard's Project Zero investigated the effect of MOMA's Visual Thinking Curriculum on evidential reasoning, observation skills, and students' awareness of subjectivity. To do this, the researchers pre- and post-tested all students involved with the MOMA program as well as a control group of students not involved with the program. They gave each student an art image—a Dubuffet or a Shahn—and asked them to answer, in writing, the following two questions: What is going on in this picture? What do you see that makes you say that? (These two questions are central to the Visual Thinking Strategies, or VTS, inquiry method.) They also gave students a non-art image—a fossil record of two sets of animal footprints—to investigate the transfer of learning to the area of science. Along with this fossil image (labeled "Footprints from the Past"), they asked the students the same two questions as they had asked for the art image.

Project Zero also conducted classroom observations and student interviews that offer insights for the design of professional development for teachers and for the assessment of students' attitudinal changes.

Tishman, Shari. "ArtWorks for Schools." Harvard Project Zero. Summary on: www.pz.harvard.edu/Research/ArtWks.htm

ArtWorks seeks to improve four high-level thinking dispositions in students that it views as central to responding to and making art. These dispositions include: 1. the disposition to explore diverse perspectives; 2. the disposition to find, pose, and explore problems; 3. the disposition to reason and evaluate; and 4. the disposition to find and explore metaphorical relationships. According to Tishman: "These areas of thinking are characterized as dispositional in nature, rather than skill-centered, because they involve attitudes, emotions, and sensitivities, as well as cognitive skills."

Visual Understanding in Education. "Notes on Transfer of VTS Skills." From VUE Web site: http://www.vue.org/whatisvts.html

This piece is a summary of the research that has been done around the Visual Thinking Strategies technique. The technique was developed by Abigail Housen and Philip Yenawine while they were at the Museum of Modern Art in New York. Their organization—through which they conduct teacher training and program evaluations—is called Visual Understanding in Education. Their research has included teacher interviews, case studies, student interviews, classroom observations, and writing assessments and has found evidence of internalization of inquiry strategies, meta-strategic transfer of these strategies to other subject areas, and substantial effects

on writing skills (from attitudinal changes to more detailed observations). They argue that conducting directed reflections about how VTS strategies can be used in other areas of learning with students in the older grades is essential to the transference of skills.

Part II: Studies and Findings Relevant to Analytical Sub-Objectives

1) Careful Observation:

- "Visual Understanding Education. "Notes on Transfer of VTS Skills." From VUE Web site: http://www.vue.org/whatisvts.html
  - The written statements of students involved in an inquiry program "include more observations."
- Tishman, Shari. "Investigating the Educational Impact and Potential of The Museum of Modern Art's Visual Thinking Curriculum, FINAL REPORT." November 1999, Harvard Project Zero.
  - Students involved in an inquiry program used a significantly larger number of words when offering evidence to support an interpretation.
  - There was difficulty, however, finding evidence in student writing of improvement in the quality of their written observations.
    - Why? Possibly because observation skills don't improve as robustly as evidential skills, possibly because questions captured evidential reasoning rather than quality of student perceptions, possibly because of the written and/or individual nature of the test.

2) Paraphrasing or Language Flexibility:

- DeSantis, Karen and Abigail Housen. "Report on the Pilot Assessment Project Thinking Through Art, 1997-8." Prepared by Visual Understanding for Education for the Museum of Fine Arts, Boston, Education Department. February 1999. (Referred to as: The Program Portfolio Case Study)
  - Inquiry discussions "fostered the development of oral language which is a natural predecessor of written language" (pg. 15).

3) Interpretation and 4) Evidential Reasoning:

"Notes on Transfer of VTS Skills":

Students' written statements "are likely to supply reasons to back up opinions" if they have participated in an inquiry-based art program.

Tishman, Shari. "Investigating the Educational Impact and Potential of The Museum of Modern Art's Visual Thinking Curriculum, FINAL REPORT." November 1999, Harvard Project Zero.

If students didn't provide evidence to support their interpretations, then they engaged in circular reasoning instead—supporting their interpretation with a restatement of their interpretation.

The study found a significant increase in the number of words students used to give the evidence to support an interpretation about either an art or a non-art image.

5) Inferential Reasoning:

Clyde, Jean Anne. "Stepping Inside the Story World: The Subtext Strategy – A Tool for Connecting and Comprehending"

The inquiry technique helped students make inferences about how characters were feeling or thinking.

7) Speculating:

"Notes on Transfer of VTS Skills":

In written statements, students in the inquiry program were more likely to "speculate among possible conclusions."

Housen, Abigail. "Aesthetic Thought, Critical Thinking, and Transfer." *Arts and Learning Research Journal*. Vol. 18, No. 1, 2001-2002. Visual Understanding in Education.

Housen found an improvement in the skill of "speculation" among students in an inquiry program.

8) Awareness of Subjectivity:

- Tishman, Shari. "Investigating the Educational Impact and Potential of The Museum of Modern Art's Visual Thinking Curriculum, FINAL REPORT." November 1999, Harvard Project Zero.
  - Students in an inquiry program were more aware of which statements about images were subjective and which were factual.

One more possible sub-category: Metacognition:

"Notes on Transfer of VTS Skills"

Students in an inquiry program performed meta-strategic transfer of inquiry thinking skills.

Davis, Jessica. "Metacognition and Multiplicity: The Arts as Models and Agents." *Educational Psychology Review*. Vol. 12, No. 3, pgs. 339-359.

Argues that students who learn about art through many different entry points—including drawing, inquiry, and narrative creation—and then explicitly discuss the effect of these entry points on their learning are more successful in other areas of the curriculum.

Part III: Studies and Findings Relevant to Attitudinal Outcomes

More Positive Attitude toward Writing:

"Notes on Transfer of VTS Skills"

Students in inquiry program expressed a more positive attitude toward writing. They also wrote longer answers and in more complete sentences.

More Positive Attitude toward "culture of listening," "making careful observations," and expressing opinions and/or thinking for yourself:

Tishman, Shari. "Investigating the Educational Impact and Potential of The Museum of Modern Art's Visual Thinking Curriculum, FINAL REPORT." November 1999, Harvard Project Zero.

In the student interviews section, students expressed more interest in, excitement about, and confidence about the above aspects of inquiry.

Disposition to Problem-Solve, to Reason, etc.

Tishman, Shari. "ArtWorks for Schools." Harvard Project Zero. Summary on: www.pz.harvard.edu/Research/ArtWks.htm

These are not findings so much as they are an experience- and research-based design for a program.

Part IV: Studies and Findings Relevant to Professional Development Design

Metacognition:

"Notes on Transfer of VTS Skills":

Students—especially those in the older grades—who are asked to reflect on inquiry strategies

and think about them explicitly as strategies can transfer skills to other subject areas and situations.

Davis, Jessica. "Metacognition and Multiplicity: The Arts as Models and Agents." *Educational Psychology Review*. Vol. 12, No. 3, pgs. 339-359.

Argues that students who learn about art through many different entry points—including drawing, inquiry, and narrative creation—and then explicitly discuss the effect of these entry points on their learning are more successful in other areas of the curriculum.

Questioning Emphasis/Style:

Tishman, Shari. "Investigating the Educational Impact and Potential of The Museum of Modern Art's Visual Thinking Curriculum, FINAL REPORT." November 1999, Harvard Project Zero.

In the classroom observations on pages 50-1: "The quality and quantity of the descriptive details students observed seemed to be strongest when teachers encouraged students' awareness of subjectivity and evidential reasoning." Classrooms in which teachers did not focus on evidence collection to the exclusion of interpretation experienced richer discussions and reasoning.

APPENDIX C (Continued)
Literature Review
Author: Randi Korn & Associates, Inc.

Richards, Allan G., "Arts and Academic Achievement in Reading: Functions and Implications," *Art Education*, November 2003.

Type of Resource: Professional publication.

Central Idea: An arts literacy strategy (wherein visual arts are integrated into kindergarten and first-grade classrooms) helps young children make connections to reading and writing concepts. These connections improve students' academic achievement in reading, according to the author.

Methodology: Observation of students. Arts literacy classrooms were filled with art prints, sculptures, CDs and books about the arts and world cultures. Students explore all of these materials and make art throughout the year.

Findings:

- Kindergarteners and first-graders in classrooms rich in the arts (visual art, music and books about musicians and artists) could look at the entire word as they would an art piece and put meaning to it, rather than trying to guess at a word by its initial sound.

- The arts literacy strategy strengthened students' expression in writing. Their experience with producing art seemed to add to their ability to come up with ideas for writing topics.

- The author suspects from his observations that the experiences students gained from studying the elements of visual art (lines, shapes, colors, unity/space, emphasis) heighten print awareness and facilitate word comprehension and other reading skills. For example, lines in art enhance the writing of letters and the training of eyes to be used to the rhythm of reading; the identification of letters and words are associated with positive and negative shapes; by knowing colors, students can identify and link objects to words in text, i.e. the purple cow; by studying unity and space in art, students recognize that there are differences in spaces between letters, words and paragraphs as they learn to read; and emphasis in visual art can be likened to emphasis in writing (punctuation, capitalization, etc.).

- The arts are a rehearsal process that facilitates changing abstract concepts to concrete ones used in reading. According to the author, "the arts afford children hands-on experiences through different art forms, media, subject matter and motifs so that they can explore their environment" and this awareness indicates the learning of various competencies needs to recognize print and other reading skills.

Housen, Abigail, "Methods for Assessing Transfer from an Art-Viewing Program," AERA, Seattle, Washington, March 2001.

Type of Resource: This appears to be a speech or paper presented at the AERA conference.

Central Idea: Do the thinking patterns developed by students in the VTS program transfer to other subjects? Does the VTS curriculum teach critical thinking and what role does it play in student education and achievement?

Terminology:
Transfer: To convey or pass the skills learned and used to acquire knowledge and understanding in one discipline to the acquiring of skills and knowledge in another discipline.

Methodology:
Housen performed a five-year study on students in Byron, Minnesota public schools who participated in the VTS curriculum to assess the type and degree of transfer between the art-viewing curriculum and other subject disciplines. The Byron study was designed to provide a window into the kinds of thinking and learning that occur when elementary age students respond to works of art over an extended period. Data were collected from 25 experimental and 25 control subjects in two age groups for five years from experimental teachers. Research instruments included material object interviews, demographic questionnaires, content questions, writing samples, teacher logs, parent and administrator comments, videotapes and student debriefing.

Findings:
- Housen found that students who participated in the VTS curriculum for five years demonstrated a transfer of critical thinking skills into other disciplines.
- Students in VTS scored higher on standardized tests, as measured against the control group. Byron school administrators said that students in the program learned critical thinking skills that they could apply to other areas, that the increase in reading skills was attributable to the VTS program, and that VTS students produced more descriptive and detailed writing and had a more sophisticated vocabulary.
- When asked what VTS taught them, most students spontaneously said "it taught me to think," without being prompted.
- Students in the VTS program showed more evidentiary reasoning, even with non-art content, than the control group.
- "Our Byron study convinced us that reasoning about art may be one of the best ways to pursue one of education's elusive goals: the development of critical thinking. In fact, while art should not have to be justified by improvement in other subjects, certainly we should not feel compelled to disregard any of the ways art can impact our lives." --Housen

Burchenal, Margaret, "Thinking About Art, Museum of Fine Arts, Boston," *Journal of Museum Education*, Volume 23, No. 2

Type of Resource: Professional publication

Central Question: How can the museum's education staff persuade classroom teachers to teach their own students in the galleries during school visits, rather than relying on MFA gallery instructors?

Terminology:
VUE stands for Visual Understanding in Education, the developmentally-based research group that created VTS for engaging students with works of art, first used at the Museum of Modern Art and New York City Public Schools. Founders are Philip Yenawine and Abigail Housen.
VTS stands for Visual Thinking Strategies, the VUE curriculum that asks teachers to ask students three questions to generate discussion and critical thinking about works of art:
1. What is going on in this picture?
2. What do you see that makes you say that?
3. What else can you find?

Methodology: In the summer of 1996, the Museum began working with VUE to pilot its VTS curriculum

with a small self-selected group of Boston public school teachers. Teachers, paired with a gallery instructor, attended an all-day workshop. They learned the structured VTS three-question approach and received slides and curriculum materials to use in the classroom. They also attended debriefing sessions at the museum to discuss and share their experiences and to ask questions. Subsequently, these teachers successfully taught their own students in the galleries.

Findings:
The 14-hour training program succeeded because:

- The teaching technique is simple and clearly structured.
- The VTS training does not require the teacher to know art history or have all the answers.
- The training is organized to combine theory and practice.
- The training, like VTS, is based on facilitated discussion. This discussion of practice builds teachers' self-confidence with the technique.
- VTS is fun and energizing for both teachers and students, and it is a powerful learning experience.

Learning to teach the VTS curriculum required teachers and museum educators to undergo a paradigm shift; instead of teaching *about* works of art, teachers teach *from* objects. Observations and ideas come from the students and the method allows for multiple interpretations.

Stavropoulos, Carol Susann, "Alternative Methodology for Diagnostic Assessment of Written and Verbal Responses to Works of Art," in *Handbook of Research on Teaching Literacy Through the Communicative and Visual Arts*. Eds. James Flood, Shirley Brice Heath, and Diane Lapp. A Project of the International Reading Association, Simon & Schuster Macmillan, 1997, Chapter 20, pages 239-263.

Type of Resource: Professional handbook.

Central Idea: Existing evaluation instruments did not assess students' written statements about works of art to adequately account for cognitive conceptions of learning. The author's "Diagnostic Profile" is designed to allow discrimination between lower and higher-order understanding and misunderstanding reflected in written statements. When students write about works of art, their thinking processes can unfold and their understandings are revealed, and the Diagnostic Profile provides evaluators a method for detailed analysis and understanding of student learning.

Terminology:
Prior knowledge is the sum of what an individual already knows. Prior knowledge has two facets: knowledge base and knowledge-seeking strategies.
Transfer is the result of employing knowledge-seeking strategies to make connections between the characteristics of artworks and the student's accumulated knowledge or knowledge base.

Methodology: The author designed a "Diagnostic Profile" to assess students' understanding of art from the students' written and/or transcribed verbal statements about works of art. A teacher performs this diagnostic profile (with its 27 scorable items) on a student's writing to assess—both qualitatively and quantitatively—the student's knowledge base and employment of knowledge-seeking strategies. The profile is based on the four dimensions (formal, descriptive, interpretive and historical) of visual arts education.

Findings:
The Diagnostic Profile contributes to the advancement of the field of art education by providing a means to assess student understandings of visual art. It can be used to:

- assess understanding of students in grades K-12.
- judge the effectiveness of teaching.
- assess alternative art education programs, such as discipline-based art education (DBAE);
- serve as a curriculum scheme for the design of curriculum and to guide instruction.

Luke, Jessica, Adams, Marianna, Abrams, Courtney, and John Falk, "Art Around the Corner: Longitudinal Evaluation Report," National Gallery of Art, Institute for Learning Innovation, Annapolis, Maryland, 1998.

Type of Resource: unpublished evaluation study

Central Questions:
How does participation in Art Around the Corner influence students' ability to interpret and discuss works of art over a period of one to three years?
Does participation in Art Around the Corner affect students' attitudes toward works of art and art museums?

Terminology:
Personal Meaning Mapping: a quantitative tool for measuring change in learning relative to a specific concept or experience. The tool measures vocabulary use, breadth of understanding, depth of understanding and the facility with which someone uses their understanding.

Methodology: This quantitative study, designed to explore the long-term impact of the program on a larger number of AAC graduates, was done to complement three previous qualitative evaluations. The evaluation included three parts: 1) Background Survey: Students filled out a background survey asking about previous experience with art and museums. 2) Personal Meaning Mapping: Students were shown an art reproduction and asked to respond with a written interpretation. This section was scored with a detailed rubric designed to analyze the Personal Meaning Map. 3) Focus group: A subset of AAC students and controls participated in focus group discussions of art works and museums.

Findings:
- Graduates of AAC used rich, detailed vocabulary to describe the painting, while non-participants were much less descriptive.
- Graduates supported their interpretations with clear, thoughtful evidence from the painting.
- ESL student graduates provided higher quality responses overall than control students whose first language was English.
- The study results did not support the hypothesis that Art Around the Corner significantly affects students' attitudes toward works of art and art museums.
- Ninth-grade students showed a marked decline in interest in both art and art museums. This may be attributable to the onset of adolescence and peer pressure, and/or the lack of opportunities for these students to learn through the arts at the junior high level. This implies a need for a follow-up multi-visit art museum program in junior high school.

Catterall, Professor James S., and Waldorf, Lynn, "Chicago Arts Partnerships in Education Summary Evaluation," in *Champions of Change, The Impact of the Arts on Learning*, ed. Edward B. Fiske, The Arts Education Partnership, Washington, D.C., 1999, pages 47-62.

Type of Resource: compilation of research studies on arts and learning

Central Questions:
Do CAPE students perform better on standardized tests than students in schools without integrated arts and academics?
Which arts disciplines were most frequently enlisted and which academic subjects were most commonly integrated? What was the impact on teachers and students?

Terminology:
CAPE: Chicago Arts Partnership in Education schools bring together teachers and artists to develop curricular units in which an art form is integrated with an academic subject.

Methodology: Two evaluations took place; both collected test data on student achievement in reading and mathematics. One study also used large-scale surveys of teachers and students to gain a generalized portrait of the program and classroom practices. The other study focused on best integrated curricular practices by probing selected artist-teacher pairs and their lessons. It also asked observers to note work and life skills demonstrated in the art- and non-art integrated classrooms.

Findings:
Study 1:
- CAPE students outperformed control students in math and reading; the difference was significant at the elementary level but not at the high school level.
- Teachers chose most frequently (41%) to integrate visual arts (painting, drawing, sculpture, ceramics) above the other arts. (theater 25%, music 19%, dance 9%)
- Reading was the most popular discipline to integrate, followed by social studies.
- Positive changes in school climate resulted from CAPE, based on school community surveys.
- CAPE succeeded in getting teachers and artists to collaborate, with more success in co-planning than in co-teaching.

Study 2:
- Observers reported that arts-integrated lessons contributed to life skills—e.g., speaking, motivation, decision-making. They also reported that CAPE students move around more, bring creativity to problem solving, and have better focus and attitude in the classroom.
- Best practices for art partnerships include: students should see connections and walk away with bigger ideas, the content lesson and the artistic lesson should be of equal importance, the expressions and activities in the arts should genuinely speak to important curricular areas.

Henry D. Wong, Ph. D., The Asheville Art Museum, Literacy through Art Program, Impact Study 2004, June 22, 2004

Type of Resource: Evaluation Study

Central questions:
What is the impact of the Literacy Through Art (LTA) program on 4th graders who participated in the program at the Asheville Museum? Are there significant differences between pre- and post-rubric scores in visual and language arts among participants and non-participants (control group)?

Methodology: Seventy-three 4th graders from three western North Carolina districts participated in the ten-lesson LTA program. The program consisted of 10 lessons an hour in length that met selected NC Standard Course of Study goals and objectives in the visual and language arts for 4th grade delivered over a 10-week period beginning in January 2004.

Raters independently assessed the students' work via rubrics for art and language. Telephone interviews with teachers about their experiences with LTA were conducted. LTA students were compared to a control group of ten non-participating students. Using students' products pre- and post-LTA program, three raters independently assessed the students' work via rubrics for art and language.

Findings:

- Literacy Through Art students scored significantly higher than the Control group on five variables of the rubrics for visual art and language art skills. LTA students scored higher on the Visual Arts rubric in the areas of: a) skill application in the use of media to express creative ideas, b) use of elements like line, value, color, texture, emotions, concepts, balance and movement, and c) creativity for originality and understanding of theme.
- For the Language Arts rubric, students scored higher in the areas of: a) composition for following a theme, planning, and organization, and b) elaboration for originality, level of creativity, personal style, and understanding of theme.
- Data suggests positive benefits can accrue for enhancing student knowledge and skills in the visual and language arts though LTA's interdisciplinary approach.
- Teachers were most impressed with the visual arts portion. Some teachers suggested program improvements to coordinate the writing plans more closely with the fourth grade curriculum and conducting the LTA program in the fall to develop writing skills.

Hogsten, Jennifer F; Peregoy, Pamela A., "An Investigation of Reading Attitudes and Self-Perceptions of Students Reading On or Below Grade Level," University of Virginia, May 1999.

Type of Resource: Research report

Central Question: What is the relationship between reading attitudes, self-perceptions and reading achievement among 2nd and 6th graders?

Methodology: A group of 84 second-grade and 71 sixth-grade students answered two questionnaires: 1) the Estes Attitudes Scales measured students' attitudes toward three content areas (reading, math, science), and 2) the About Myself Scale measured self-perception.

Findings:

- Second-graders had more positive attitudes than sixth-graders on all scales.
- Below-grade level readers—both second- and sixth-graders—score more negatively on all scales (reading, math, science and self-perception) than did on-grade level readers.
- At both grade levels, boys had less positive attitudes toward reading than did girls.

Discussion:

- Academic intrinsic motivation declines as students age; as a result, educators must provide positive feedback in higher grades.
- The fact that there was no correlation between reading level and reading attitudes and between reading level and self-perception at the sixth-grade level suggests that older students who experience prolonged difficulty may discount the importance of reading in their lives—a type of self-protection.

Estes, Thomas, "Attitudes Toward Reading: Alternatives in Assessment," March 1975.

Type of Resource: Paper presented at the Annual Reading Conference at Lehigh University.

Central Idea: Students' *attitude* toward what they learn is more important than what they learn; affective feeling toward learning is more important than cognitive gains. Estes says he believes that positive attitudes toward reading depend on both a student's success with reading and the pleasure a student feels while learning and using reading.

Discussion:
The author outlined the two types of reading attitude assessments:

- Direct method. Students know what is being measured and are asked to agree or disagree with statements directly related to books and reading (referred to as the Likert method). Because students know what's being measured, they may not answer truthfully (if for some reason they choose to mask their true feelings.)
- Indirect method: Students do not know what is being measured. With indirect methods, researchers cannot be certain that the affective response measured is justified because other factors can come into play.

What type of scale provides the more accurate picture of students' attitudes toward reading? In 1975, research favored the direct Likert scale. (Note: the previous 1999 study by Hogsten used the Estes Reading Attitude Scale: Estes attitude scales are used widely by educational researchers. It is inferred that the Estes scale is similar to the Likert scale.)

The following summary articles were published in "Critical Links: Learning in the Arts and Student Academic and Social Development," a compendium of research compiled by arts researchers James Catterall, Lois Hetland, and Ellen Winner and edited by Richard Deasy. Arts Education Partnership, Washington, D.C., 2002.

1. Kristin Burger and Ellen Winner, "Instruction in Visual Art: Can It Help Children Learn to Read?," *Journal of Aesthetic Education*, Fall 2000, 34, (304): 277-293.

Type of Resource: Summary article in research compendium

Central Questions: Can reading skills be enhanced by instruction in visual arts?
Meta Analysis 1 studied the cognitive-transfer-of-skill hypothesis: Can art instruction by itself improve reading?
Meta Analysis 2 studied the motivational-entry-point hypothesis: Is teaching reading through art more effective than teaching reading alone?

Methodology: The authors conducted two meta-analyses of studies that test the hypothesis that instruction in the visual arts improves reading. They reviewed over 4,000 individual recorded studies and 41 journals and invited over 200 art education researchers to submit unpublished research. From this, they selected 10 studies that met their criteria.

Findings:

- The authors did not find a relationship between arts instruction and reading improvement except in the area of reading readiness. This may be explained by the observation that reading readiness measures depend to a larger extent than reading achievement on visual or figural items, rather than linguistic items.
- The most important contribution is that only a small number of studies met the researcher's standards for acceptable scientific rigor; i.e. the field needs more disciplined research.

- Art-based reading instruction promotes better reading, largely through the added motivation that

art offers for learning. But the more indirect connection between the transfer of doing art and increased reading achievement is harder to document.

2. Karen G. DeJarnette, "The Arts, Language and Knowing: An Experimental Study of the Potential of the Visual Arts for Assessing Academic Learning by Language Minority Students," Unpublished Doctoral Dissertation, University of California, Los Angeles, 1997

Type of Resource: Summary article in research compendium

Central questions:
Can sixth-grade students' understanding of history be assessed through a combination of writing and drawing, and does this kind of assessment reveal more history knowledge than assessments using only writing? Does the opportunity to show understanding through drawing along with writing particularly help students with limited English skills?

Methodology:
Two groups of sixth-grade history students were assessed in their history learning either by writing alone or a combination of writing and drawing. In both assessments students were asked to describe, through words alone, or words and drawings, important aspects of the history lessons.

Findings:
- Students achieved higher scores for content knowledge when they both wrote and drew than when they only wrote. Students also achieved higher interdisciplinary scores (showing they brought in more information from other subjects) when they both wrote and drew.

- Limited English ability students scored higher on the writing/drawing assessment.

- The study showed the difficulties in creating and calibrating a scoring system to assess student artwork.

3. Shari Tishman, Dorothy MacGillivray, and Patricia Palmer, "Investigating the Educational Impact and Potential of the Museum of Modern Art's Visual Thinking Curriculum: Final Report," Unpublished report, Museum of Modern Art, New York, NY, 1999.

Type of Resource: Unpublished research report.

Central Question: When children aged nine to 10 are trained to look closely at works of art and reason about what they see, can they transfer the same skills to a science activity?

Terminology:
For a description of the VTS method and terms, see the above summary of Margaret Burchenal's article, "Thinking About Art, Museum of Fine Arts, Boston," *Journal of Museum Education*, Volume 23, No. 2

Methodology:
After one year of participating in the VTC curriculum with art images, students were shown an art image, immediately followed by a non-art image from the domain of science (a picture of a fossil record of animal footprints) and asked the same two VTC questions: What's going on in this picture? And What do you see that makes you say that? Responses to the footprint image were scored in terms of amount of reasoning about evidence used.

The goal of the study was to determine if the skills learned in looking and reasoning about art would

transfer to the similar task of looking and reasoning about a science image.

Findings:
- The study demonstrated that skills in looking and reasoning about art transferred to the task of looking and reasoning with a biological image. Students trained to look at art carefully showed higher reasoning ability when asked to make inferences about the footprint image.
- One reviewer wrote that this study shows that the arts "add value" and that "engaging in art criticism is a worthy skill to develop, as a tool for art appreciation and thinking well in other disciplines."
- VTC teachers whose students have the highest overall gains tend to push individual students to make detailed observations about works of art and to justify their interpretations with perceptual evidence in the image. At the same time, they encourage a culture of conversation in the class by soliciting comments from many students and encouraging students to respond to one another directly and to reason collaboratively.
- Teachers whose students have the lowest gains tend to encourage students to list observations of details in works of art, and tend to discourage students from thinking broadly about the meaning of an image and from exploring disagreements about, or citing evidence for, their individual interpretations.

4. Jeffrey D. Wilhelm, "Reading *Is* Seeing: Using Visual Response to Improve the Literary Reading of Reluctant Readers," *Journal of Reading Behavior*, 1995, 27 (4): 467-503.

Type of Resource: professional journal.

Central question: Can the visual arts be used to help reluctant, learning-disabled readers begin to enjoy reading?
Methodology: Two 7th grade boys who were learning disabled and reluctant readers were helped in a nine-week session to visualize stories through the visual arts. They created cutouts or found objects that would represent characters and ideas in the story they were reading and used these things to act out the story. They were also asked to draw a picture of strong visual impressions formed while reading and they discussed how pictures in books work along with the words. They also did picture mapping to depict key details in nonfiction texts.

Findings:
- The boys became much more sophisticated readers during the visualization training. They began to interpret text rather then just passively reading.

- The researcher suggests that visual art provides a concrete "metacognitive marking point: that allowed readers to see what they understood. The study shows the value of the arts as an intermediary in the educational process.

The study needs to be conducted with a larger group to see if the findings would generalize.

5. Burton, Judith M, Robert Horowitz, and Hal Abeles, "Learning in and Through the Arts: The Question of Transfer," *Studies in Art Education*, 2000, 41 (3): 228-257.

Type of Resource: professional journal

Central questions:
Do children in arts-rich schools show more creativity and higher academic self-concept than those in arts-poor schools? Do arts-rich schools have different climates than arts-poor schools?

Terminology:
Art-rich/arts-poor schools are defined by their quality of arts programming.

Methodology:
The study examined the experiences of 2,406 students in 18 public schools. Students (fourth, fifth, sixth and eighth-graders) responded to: a questionnaire about how many in-school arts and private art lessons they received; a figural creativity test (the Torrance); a self-concept test; and a questionnaire about their arts experiences. Teachers answered three questionnaires: in one they rated perceptions of students' imagination, risk-taking, expression and cooperative learning; in another they rated school climate and in a third they rated how much they integrate the arts, collaborate with art specialists and use the arts as a tool to teach other subjects.

Findings:
- High-arts children scored higher on the figural creativity test and on expression, risk-taking, creativity, imagination and cooperative learning.
- High arts students scored higher on academic self-concept.
- Teachers and principals in schools with strong arts programs said the arts led their teachers to be more innovative, to have increased awareness of different aspects of their students' abilities and to find school a more enjoyable workplace.

6. Caterall, James S., "Involvement in the Arts and Success in Secondary School," Americans for the Arts Monographs, 1998, 1 (9), Washington, D.C.

Type of Resource: compilation of professional education research

Central question: Do students in middle and high school with high involvement with the arts perform better than those with low arts involvement on a variety of academic indicators? If so, does this relationship hold up when the sample is restricted to students from the lowest socioeconomic quartile in the U.S.?

Terminology:
Arts involvement was measured by the number of arts courses taken, number of out-of-school arts courses, and museum attendance.

Methodology:
Data from 25,000 students (in 8th through 12th grades) in the National Educational Longitudinal Study were examined. Students in top and bottom quartiles of art involvement were compared on academic measures, including grades in English, standardized test scores, and drop out rate. A sub-study was conducted on 6,500 students from the lowest socioeconomic quartile.

Findings:
- The relationship between high arts involvement and academic achievement were positive in 8th and 12th grades. High arts students had higher grades and higher standardized test scores. They also performed more community service, watched less television, and reported less boredom in school.
- The same results emerged when examining low socioeconomic status students. They had higher scores, were less likely to drop out, and had a more positive self-concept.

7. Seaman, Michael, "The Arts in the Basic Curriculum Project: Looking at the Past and Preparing for the Future, Unpublished evaluation report, College of Education, University of South Carolina, S.C. 1999.

Type of Resource: unpublished research.

Central Question:
Did the Arts in the Basic Curriculum (ABC) project affect test scores in non-arts subjects?

Terminology:
Arts in the Basic Curriculum (ABC) is a program in South Carolina schools founded on the belief that arts are important in themselves and that they increase student learning potential, complement learning in other disciplines and establish a foundation for school success and lifelong learning. ABC includes artists-in-residence and the development of state art standards.

Methodology:
Evaluators conducted interviews with principals, arts and classroom teachers and students in ABC schools. Standardized test scores were collected to compare ABC student scores to non-participant scores. This report gives only non-arts data (test scores).

Findings:
- Scores were comparable across ABC and non-participating schools. Researchers concluded that the comparability of test scores and the increased time spent on art at ABC schools did not lead to lower test scores. Unlike most evaluations that begin with the premise that the arts will raise test scores, this survey started with the opposite hypothesis: that the arts might lower test scores because students in arts-rich schools would spend less time on academics. This is significant for educators who need to show that the inclusion of the arts won't compromise students' academic performance.
- Teachers and administrators rated the ABC program very positively.

APPENDIX D
Principal Questionnaire
Removed for Proprietary Reasons

APPENDIX E
Parent/Guardian Consent Forms (English versions, Spanish versions were also available)

[Pretest Schools Parent/Guardian Consent Form Printed on RK&A Letterhead]
<Date>

Dear Parent or Guardian:

For the 2004-2005 school year, your child's school, [name of school], has been chosen to participate in a study for the Guggenheim Museum that was funded by the U.S. Department of Education. Our company, Randi Korn & Associates, Inc., has been hired to conduct the study.

We are planning to look at how students feel about school, art, and museums. We are also planning to study students' ability to understand artwork and literature.

We would like your child to complete a questionnaire and participate in a face-to-face interview with one of our researchers. The questionnaire and interview will take about 15 minutes of your child's time. All data will be collected during school hours. Principal [name of principal] at [name of school] has agreed to set aside class time for us to conduct this study.

We would like to tape record the interview. We will listen to the tapes, type out exactly what students say, and then examine their comments. The information on the questionnaires will be entered into a computer and analyzed. Both the tapes and questionnaires will be destroyed when the study is finished.

We will not share your child's information with anyone, and we will not use your child's name when we talk about the results of the study. Your child's participation is voluntary, and your child may leave the study at any time with no consequences. If you have any questions, please feel free to contact me at our toll-free number (888) 396-0376.

Please let us know whether or not we have your permission to include your child in our study. Please keep one copy of the letter for your records. Please sign the other copy and return it to your child's teacher in the envelope provided.

Thank you,

Randi Korn, Director

☐ I agree to let my child _____(print name) participate in the study described above.

☐ I do not agree to let my child _____(print name) participate in the study described above.

Parent/guardian's Signature:_____

[Treatment School Parent/Guardian Consent Form Printed on RK&A Letterhead]
<Date>

Dear Parent or Guardian:

During the 2004-2005 school year, your child's class will be participating in an arts program called *Learning Through Art*, run by the Guggenheim Museum and funded by the Department of Education. Our company, Randi Korn & Associates, Inc., has been hired to study the *Learning Through Art* program.

We are planning to look at students' experiences in the *Learning Through Art* program and to determine its effect on how they feel about school, art, and museums. We are also planning to study whether the program affects students' ability to understand artwork and literature.

We would like your child to complete a questionnaire and participate in a face-to-face interview with one of our researchers. The questionnaire and interview will take about 15 minutes of your child's time. We would also like to observe your child's class five times over the school year. All data will be collected during school hours. Principal [name of principal] at [name of school] has agreed to set aside class time for us to conduct this study.

We would like to tape record the interview. We will listen to the tapes, type out exactly what students say, and then examine their comments. The information on the questionnaires will be entered into a computer and analyzed. Both the tapes and questionnaires will be destroyed when the study is finished. We would also like to review your child's test scores on the Third Grade English Language Test. With your permission, the school would release your child's test scores to us so we can compare the scores of his/her class with other classes.

We will not share your child's information with anyone, and we will not use your child's name when we talk about the results of the study. Your child's participation is voluntary, and your child may leave the study at any time with no consequences. If you have any questions, please feel free to contact me at our toll-free number (888) 396-0376.

Please let us know whether or not we have your permission to include your child in our study. Please keep one copy of the letter for your records. Please sign the other copy and return it to your child's teacher in the envelope provided.

Thank you,

Randi Korn, Director

☐ I agree to let my child _____(print name) participate in the study described above.

☐ I do not agree to let my child _____(print name) participate in the study described above.

Parent/guardian's Signature:_____

[Control Schools Parent/Guardian Consent Form Printed on RK&A Letterhead]
<Date>

Dear Parent or Guardian:

For the 2004-2005 school year, your child's school, [name of school], has been chosen to participate in a study for the Guggenheim Museum that was funded by the U.S. Department of Education. Our company, Randi Korn & Associates, Inc., has been hired to conduct the study.

We are planning to look at how students feel about school, art, and museums. We are also planning to study students' ability to understand artwork and literature.

We would like your child to complete a questionnaire and participate in a face-to-face interview with one of our researchers. The questionnaire and interview will take about 15 minutes of your child's time. All data will be collected during school hours. Principal [name of principal] at [name of school] has agreed to set aside class time for us to conduct this study.

We would like to tape record the interview. We will listen to the tapes, type out exactly what students say, and then examine their comments. The information on the questionnaires will be entered into a computer and analyzed. Both the tapes and questionnaires will be destroyed when the study is finished. We would also like to review your child's test scores on the Third Grade English Language Test. With your permission, the school would release your child's test scores to us so we can compare the scores of his/her class with other classes.

We will not share your child's information with anyone, and we will not use your child's name when we talk about the results of the study. Your child's participation is voluntary, and your child may leave the study at any time with no consequences. If you have any questions, please feel free to contact me at our toll-free number (888) 396-0376.

Please let us know whether or not we have your permission to include your child in our study. Please keep one copy of the letter for your records. Please sign the other copy and return it to your child's teacher in the envelope provided.

Thank you,

Randi Korn, Director

☐ I agree to let my child _____(print name) participate in the study described above.

☐ I do not agree to let my child _____(print name) participate in the study described above.

Parent/guardian's Signature:_____

APPENDIX F
Case Study Parent/Guardian Consent Form (English versions, Spanish versions were also available)

[Treatment School Parent/Guardian Consent Form Printed on RK&A Letterhead]
<Date>

September 15, 2005

Dear Parent or Guardian:

During the 2005-2006 school year, your child's class will be participating in an arts program called *Learning Through Art*, run by the Guggenheim Museum and funded by the Department of Education. Our company, Randi Korn & Associates, Inc., has been hired to study the *Learning Through Art* program.

We are planning to look at students' experiences in the *Learning Through Art* program and to determine its effect on how they feel about school, art, and museums. We are also planning to study whether the program affects students' ability to understand artwork and literature. One method we have chosen for this study is case studies. In a case study, one student is studied closely through interviews and observations to identify how the program affects that student.

We will be randomly selecting two students in your child's classroom from among all those whose parents sign and return this consent form. Since the selection will be random, your child may or may not be selected. If your child is selected, we will interview him or her four times, observe your child in the classroom four times, as well as interview his or her teacher, teaching artist, and you (as the parent or guardian). These interviews and observations will take place throughout the school year.

If your child is selected to participate, we would like to tape record our interviews with him or her. We will listen to the tapes, type out exactly what your child says, and then examine the comments. To protect your child's confidentiality, the tapes will be destroyed when the study is finished.

We will not share your child's information with anyone, and we will not use your child's name when we talk about the results of the study. Your child's participation is voluntary, and your child may leave the study at any time with no consequences. If you have any questions, please feel free to contact me at our toll-free number (888) 396-0376.

Please let us know whether or not we have your permission to consider your child as one of our case studies. And please remember that because our selection of case study students will be random, your child may or may not be selected. If he or she is selected, you will be notified in writing.

Please keep one copy of this letter for your records. Please sign the other copy and return it to your child's teacher in the envelope provided.

Thank you,

Randi Korn, Director

☐ I agree to let my child _____(print name) participate in the study described above.

☐ I do not agree to let my child _____(print name) participate in the study described above.

Parent/Guardian's Signature:_____ Date_____

APPENDIX G - Case Study Interview Guides
APPENDIX H - Case Study Observation Guidelines
APPENDIX I - Student Questionnaires
APPENDIX J - Student Interview Guide (Text Selection and Image remain in the report)

APPENDIX K - Classroom Teacher Questionnaires
APPENDIX L - Classroom Teacher Observation Form
APPENDIX M - Classroom Teacher Interview Guide
APPENDIX N - Teaching Artist Observation Form
APPENDIX O - Teaching Artist Interview Guide

Removed for Proprietary Reasons

APPENDIX J
Text Selection:
Kadohata, Cynthia. *Kira-Kira*. New York: Atheneum Books for Young Readers, 2004. Page 67.

One day when we were eating roast chicken, I ripped the thigh from the drumstick with my hands. Our parents were at work. Sammy followed my example and ripped a chicken leg in two.

I said, "Let's see who can put the most food in their mouth at once!" Sammy and I filled our mouths.

Lynn said, "Katie, that's not very ladylike."

I couldn't answer because my mouth was full. Sammy and I thought that was pretty funny. When I'd finally swallowed everything, Lynn looked worried. She wiped food from my chin and said firmly, "Katie, you know you're not going to be able to act like that much longer."

She brought her plate the sink and left the room. I knew that Lynn was actually trying to help me. Usually when she was trying to help me, I didn't mind. In fact, usually I was eager to please her. But this time I didn't speak to her all the rest of that night.

Painting:
Arshile Gorky, *The Artist and His Mother*, 1926. Oil on canvas, 60 x 50 in. (152.4 x 127 cm). Whitney Museum of American Art, New York, Gift of Julien Levy for Maro and Natasha Gorky in memory of their father, 50.17. ©2003 Estate of Arshile Gorky/Artists Rights Society (ARS), New York, N. Y.. Photograph by Geoffrey Clements.

APPENDIX P
Advisors' Biographies

Literacy Advisory Team

Judith Ballester is currently an Assistant Principal at P.S. 148. Formerly, she taught third, fourth, and fifth grade, in addition to serving as a reading specialist and staff developer. Judith has co-authored a non-fiction persuasive text entitled *Should There Be Zoos?* She is proficient in Spanish and resides in New York.

Maureen Barbieri teaches literacy courses at New York University's Steinhardt School of Education and is also the co-director of NYU's Summer Writing Institute for Teachers. For most of her career, she has been a middle school language arts teacher, administrator, and staff developer. Maureen is widely published and is a co-author of *Change My Life Forever: Deeper Literacy for English Language Learners*. She lives in New York.

Sita Basu is currently an Assistant Principal for second and third grades and special education liaison at P.S. 86. Formerly, she taught special education at the middle school level and worked as a staff developer for both special education and literacy at the district level. Sita has presented several workshops at annual conferences, particularly on the topics of special education and behavior management. She lives in New York.

Mary Ehrenworth is the Director of Middle School Reading and Writing with the Teachers College Reading and Writing Project at Columbia University. She is also a manuscript reviewer for education texts with Heinemann Publishing. She has earned a Master's Degree in both Education and Art History, and is currently a doctoral candidate at Columbia University Teachers College. She is widely published and is the author of *Looking to Write: Children Writing Through the Visual Arts*. Mary has presented at many national conferences and writing institutes, and resides in New York.

Bela Kletnick is the literacy coach at P.S 86 where she acts as the writing staff developer for grades second through sixth. She also has many years experience as an early childhood head teacher. Bela has presented workshops at conferences and currently provides professional development in literacy for much of her staff. She resides in New York.

Karen Rosner is the Visual Arts Coordinator for the New York City Department of Education. She is currently working on the new Arts Curriculum with the Office of the Arts and Special Projects, NYCDOE, and is enrolled in the Art History Doctoral Program at the CUNY Graduate Center. Karen boasts many accomplishments including the development of the Museum Ambassadors Program, a city-wide professional development series to encourage teachers to integrate museum collections and pedagogy into their classrooms. Previously, Karen served as a literacy specialist, an art teacher, and a fifth- and sixth-grade teacher in New York City public schools. She lives in New York.

Statistician

Dr. Margaret Menninger, is a well-known statistician who has been working with RK&A for eight years. Margaret received her Ph.D. in educational measurement from the University of Pittsburgh. She was previously employed as an evaluator at the J. Paul Getty Museum in California and is now an independent statistical consultant.

APPENDIX Q
Student Interview Scoring Rubric

Student ID Number:_____ Interviewer's Name:_____

Goal: Students will develop the skills to use language to construct meaning from works of art and other texts .				
Individual Student Outcome Objectives	**Indicators**			
Objective	**Beginning (1)**	**Developing (2)**	**Accomplished (3)**	**Score**
Observation The student's discussions of his/her OWN ARTWORK show evidence of close and careful looking. TREATMENT GROUP ONLY	**Thorough description:** The student provides an incomplete description of the artwork as evidenced by the following: • the description is generic • the description does not directly reference aspects of the artwork, or creation process • someone else could not envision the artwork	**Thorough description:** The student provides a nominal description of the artwork as evidenced by the following: • the description is extended but generic • the description references some aspects of the artwork, including creation process • someone else would have an incomplete notion of the artwork	**Thorough description:** The student provides a thorough description of the artwork as evidenced by the following: • the description is specific to the artwork • the description directly references aspects of the artwork, including creation process • the description evokes a complete, clear mental picture of the artwork in the mind of the listener.	

Goal: Students will develop the skills to use language to construct meaning from works of art and other texts .				
Individual Student Outcome Objectives	**Indicators**			
Objective	**Beginning (1)**	**Developing (2)**	**Accomplished (3)**	**Score**
Observation The student's discussions of the GORKY PAINTING show evidence of close and careful looking.	**Extended focus:** The student does not exhibit extended focus as evidenced by the following: • not adding more detail after the initial description • not asking any questions.	**Extended focus:** The student exhibits some extended focus as evidenced by the following: • adding a few details after the initial description; OR • asking questions	**Extended focus:** The student shows evidence of full extended focus as evidenced by the following: • adding a lot of detail after the initial description; AND • asking questions linked to interpretation and/or description	
	Thorough description: The student provides an incomplete description of the artwork as evidenced by the following: • the description is generic • the description does not directly reference aspects of the artwork, or creation process • someone else could not envision the artwork	**Thorough description:** The student provides a nominal description of the artwork as evidenced by the following: • the description is extended but generic • the description references some aspects of the artwork, including creation process • someone else would have an incomplete notion of the artwork	**Thorough description:** The student provides a thorough description of the artwork as evidenced by the following: • the description is specific to the artwork • the description directly references aspects of the artwork, including creation process • the description evokes a complete, clear mental picture of the artwork in the mind of the listener.	

Goal: Students will develop the skills to use language to construct meaning from works of art and other texts .				
Individual Student Outcome Objectives	**Indicators**			
Objective	**Beginning (1)**	**Developing (2)**	**Accomplished (3)**	**Score**
Interpretation: The student's discussions of the GORKY PAINTING show evidence of explanation and meaning making.	**Hypothesizing:** The student provides no explanation for the meaning of the artwork.	**Hypothesizing:** The student provides a generic explanation for the meaning of the artwork.	**Hypothesizing:** The student proposes a specific explanation to give meaning to or to explain what's happening in the artwork.	
	Evidential Reasoning: The student provides no evidence at all.	**Evidential Reasoning:** The student supports his/her explanation by repeating the explanation and citing it as evidence (circular reasoning) AND/OR by citing evidence not related to the artwork.	**Evidential Reasoning:** The student supports his/her explanation by providing relevant evidence directly from the artwork.	
	Building Schema: The student makes no connections between his/her explanation of the artwork and prior knowledge and/or personal experience. Or, if the student does make connections they are illogical.	**Building Schema:** The student makes weak connections between his/her explanation of the artwork and prior knowledge and/or personal experience. The connections are logical but generic.	**Building Schema:** The student makes strong connections between his/her explanation of the artwork and prior knowledge and/or personal experience. The connections are logical and specific.	
	Multiple Interpretations: The student does not revise or add to his/her explanation of the artwork. S/he uses words that indicate s/he thinks there is one correct way to think about the artwork.	**Multiple Interpretations:** The student revises or adds to his/her explanation of the artwork but the response is within the same theme or idea as the previous explanation.	**Multiple Interpretations:** The student revises or adds to his/her explanation of the artwork in such a way as to generate new ideas or themes AND/OR s/he uses words that reveal his/her awareness of subjectivity such as, "I think," "possibly," "One way to think of it is."	

Goal: Students will develop the skills to use language to construct meaning from works of art and other texts .				
Individual Student Outcome Objectives	**Indicators**			
Objective	**Beginning (1)**	**Developing (2)**	**Accomplished (3)**	**Score**
Observation The student's discussions of the TEXT show evidence of close and careful looking and/or reading.	**Extended focus:** The student does not exhibit extended focus as evidenced by the following: • not adding more detail after the initial description • not asking any questions.	**Extended focus:** The student exhibits some extended focus as evidenced by the following: • adding a few details after the initial description; OR • asking questions	**Extended focus:** The student shows evidence of full extended focus as evidenced by the following: • adding a lot of detail after the initial description; AND • asking questions linked to interpretation and/or description	
	Thorough description: The student provides an incomplete description of the text as evidenced by the following: • the description is generic • the description does not directly reference aspects of the text • someone else could not envision what the text is about	**Thorough description:** The student provides a nominal description of the text as evidenced by the following: • the description is extended but generic • the description references some aspects of the text • someone else would have an incomplete notion of what the text is about	**Thorough description:** The student provides a thorough description of the text as evidenced by the following: • the description is specific to the text • the description directly references aspects of the text • the description evokes a complete, clear mental picture of the story and/or the sequence of events in the mind of the listener.	

Goal: Students will develop the skills to use language to construct meaning from works of art and other texts .				
Individual Student Outcome Objectives	**Indicators**			
Objective	**Beginning (1)**	**Developing (2)**	**Accomplished (3)**	**Score**
Interpretation: The student's discussions of the TEXT show evidence of explanation and meaning-making.	**Hypothesizing:** The student provides no explanation for the meaning of the text.	**Hypothesizing:** The student provides a generic explanation for the meaning of the text.	**Hypothesizing:** The student proposes a specific explanation to give meaning to or to explain what's happening in the text.	
	Evidential Reasoning: The student provides no evidence at all.	**Evidential Reasoning:** The student supports his/her explanation by repeating the explanation and citing it as evidence (circular reasoning) AND/OR by citing evidence not related to the text.	**Evidential Reasoning:** The student supports his/her explanation by providing relevant evidence directly from the text.	
	Building Schema: The student makes no connections between his/her explanation of the text and prior knowledge and/or personal experience. Or, if the student does make connections, they are illogical.	**Building Schema:** The student makes weak connections between his/her explanation of the text and prior knowledge and/or personal experience. The connections are logical but generic.	**Building Schema:** The student makes strong connections between his/her explanation of the text and prior knowledge and/or personal experience. The connections are logical and specific.	
	Multiple Interpretations: The student does not revise or add to his/her explanation of the text. S/he uses words that indicate s/he thinks there is one correct way to think about the artwork or text.	**Multiple Interpretations:** The student revises or adds to his/her explanation of the text but the response is within the same theme or idea as the previous explanation.	**Multiple Interpretations:** The student revises or adds to his/her explanation of the text in such a way as to generate new ideas or themes AND/OR s/he uses words that reveal his/her awareness of subjectivity such as, "I think," "possibly," or "one way to think of it is."	

Word Count:_____

Grade level:_____

APPENDIX R
Examples of Verbatim Student Interview Transcripts

Example 1
Student #030201
Treatment Group A, P.S. 148

Gorky Paining Score:		**Kadohata Text Score:**	
Extended focus	accomplished	Extended focus	accomplished
Thorough description	developing	Thorough description	accomplished
Hypothesizing	developing	Hypothesizing	accomplished
Evidential reasoning	accomplished	Evidential reasoning	developing
Building schema	developing	Building schema	beginning
Multiple interpretation	accomplished	Multiple interpretation	accomplished

Verbatim Transcript [The interviewer's questions are in parentheses.]

(I would like to show you a picture of a painting. I'd like you to think that you were talking on the phone to your friend about this painting. Describe this painting to your friends knowing that they cannot see it?)

Mmmh ah that it has like a lot of yellow and like darkishy colors and it has ahm two people and they're like in a house, and it's a man and a woman, and in the man's hand, the man's left hand it looks like he's carrying a tool and it looks like it was in the like the old times because they're wearing ahm like clothes that, that ah look like they were tents because of the things under it and they were tents. And the dresses and I think then the color mixed was white, white, yellow and a little tiny bit of orange. And over here like red, brown and white, red and purple and brown.

(On his pants' side?)

And with white. And that's about it.

(What do you know or can you guess about these people in the painting?)

They're not smiling at all, they're ahm she's sitting down and the man's standing up. And they look bored.
(What in the picture makes you say that they look bored?)

Cause their faces are not smiling, they just have and they just have their mouth straight and their eyebrows are not looking ahm diagonally or, or other ways. And like I said, it's looks like from the old times. And that's it.

(Well what in the picture makes you say that they were from the old times?)

Cause their clothes and like the houses.

(So what is it about the house?)

That ahm now we have houses that are like more, more lighter and

(The colors you mean?)

Yeah. And this one has just a little, and the bigger windows, and the clothing that now we have ahm more, more clothes and the style of their hair, and the thing, and the, the funner on their heads.

(Could someone else think something else about these people?)

Mmh. This man is like twisting his head over there and she's just straight and they also look like toys cause over here that the arm's like falling off.

(On the shoulder of the woman?)

Yeah.

(And they also look like toys cause like cause he's scratched over here.

(That's very interesting. Does the painting make you think of something or remind you of anything?)

Yes.

(Tell me more about that?)

It reminds me about the old times and it makes me think that ahm, that they're bored and stuff like that, that they're not doing anything, just this man is holding something. This look, the house, it looks like a built, that it's being built cause I see like something that some like a shape of a ladder or something.

(Okay, behind the woman?)

Yeah. That's all of course, that's about it.

(Well you told me a lot about the picture. So I was wondering what are some of the questions that you have about this picture?)

That why the, the, the artist decided to like paint ahm people like looking at the person and I think this painting would ahm would be made in like 1792.

(What makes you say that, why 1792?)

1792 because ahm because if it was made like in 1999, they would put different clothes, clothing and in 1792 they would put different like, like the clothes that other people are wearing outside. And another question would be why did he draw a man and a woman? Oh yeah, and like this woman is more like more sticking out in the picture and this man is pulled back. And that's about it, I think.

(Well those are all good questions and really good ideas. So now I to switch read a story to you. [Explains and reads story twice]. Let's say you wanted to tell your friends about this story and you didn't have a copy to show them. Can you describe what happened in this story in your own words?)

Yes, and like ahm in the story ahm there was almost about two boys named Sammy and it didn't say the name, the other name I think.

(That's okay, another person.)

That two boys that, that ahm that the first boy takes ahm ahm a leg from ahm the roasted chicken and ate

it, and this his friend, Sammy, ahm swallowed something the same thing. And then ahm Lynn I think she did it because ahm the other girl, I forgot her name, she said that, that that's not ladylike and she didn't like it and then, and in the middle of a story, ahm the ahm I think she ahm she ahm the girl Lynn, she looked worried, and she looked worried. And the ahm in the end ahm the boy didn't talk to her for the rest of the night.
(Okay. So what do you know or can you guess about these characters in this story?)

The ahm, the boy ahm thought like it ahm it was funny what he was doing and he look, and I thinking he was making a 9 years old and the other one was like 8 or like 6 or 7 because he followed what ahm the other boy did. And the girl, I think her age was 8 or 9, and the other girl I think her age was 7.

(What in the story makes you say that?)

Because ahm a 9-year-old ahm does like those stuff cause I do that, and I am, and I'm 9. I'm about to be 9 and ahhh

(So what do you do?)

I think Sammy is ahm 6 or 7, because he followed what he was gonna what the other boy did. And I think the other girl is like 7 because she did what the other boys did. And I think Lynn is 8 because she wants to be like, like more of a young lady than like an 8-year-old girl. And think that's about it.

(Could someone else think something different about these characters?)

Ah they were left alone.

(What in the story makes you say that?)

Because ahm in the story it said, our parents were at work, and I think they were doing ahm ah roasting chicken by themselves because ahm they, the parents weren't at home and they were having a party without the permission of their parents. And that's all I got to say.

(Does this story make you think of something or remind you of anything?)

Not really, not really.

(What are some of the questions that you have about the story?)

Ahm why would the author write about ahm people that did that kids were ahm left alone, and that how did he think this story up? And why did he make it about ahm kids?

(Those are really good questions.)

And that's all I have to say.

(Well you told me a lot about this story and the picture, and thank you for talking with me today. You did a really great job. Thank you.)

Example 2
Student #020220
Control Group, P.S. 94

Gorky Paining Score:		**Kadohata Text Score:**	
Extended focus	beginning	Extended focus	beginning
Thorough description	developing	Thorough description	beginning
Hypothesizing	developing	Hypothesizing	developing
Evidential reasoning	accomplished	Evidential reasoning	developing
Building schema	beginning	Building schema	beginning
Multiple interpretation	developing	Multiple interpretation	beginning

Verbatim Transcript [The interviewer's questions are in parentheses.]

(Now, I'd like to show you a picture of a painting. Let's say that you were talking to your friend on the phone and your friend cannot see this picture. So describe this picture knowing that your friend cannot see it?)

There's a girl and there's a boy with a jacket and the girl's sitting down if it's possible, and the boy is dressed with some water and in his hand and jeans I think. And jeans I think. And they're in their house, their house. And ahm it looks like a button.

(What's that?)

It looks like a button.

(What looks like a button?)

The button right there.

(You mean the one that is next to the big one?)

So I was looking at some things with the lady.

(Okay, that thing next to the lady, okay.)
Oh, and they got below. She had a happy ---- and she's sad.

(What in the picture makes you say that she's sad?)

Because her mouth is ahm looks like she's sad, just her face looks like she sad and angry. And he looks like he's sad too.

(What can do you think or guess about these people?)

They have different ears because ahm red and white.

(The boy you mean, he has different ears, one red and one, okay. Good, that's good. What can you think or guess about these two people in the painting?)

I don't know.

(What can you think about them?)

Well I think one is a father and the other is a mother.

(Could you tell me more about it? What in the picture makes you say that he is a father and she's a mother?)

Well since he's a man and she's a woman.

(Could someone else think something different about these people?)

Yes. Because ahm he might, he could be the grampa and she could be gramma.

(Does the painting make you think of something or remind you of something?)

No.

(Well you told me a lot. What questions do you have about this painting?)

I don't.
(You don't have any questions? Okay. Well let's switch to a different activity. Let's switch to the story, give you a copy of the story, I'm going to read it twice to you and then we'll talk about it. Ready? Okay. [Reads story twice]. So now let's say you wanted to tell your friend about this story and you didn't have a copy to show them. Can you describe what happened in this story in your own words?)

Ahm that the girl say to her race eating to his brother, her brother. And then ahm she was eating more and more and her mom said, ahm you know that you can't of all this time like that. And then she put ahm her plate on the stove and left the room.

(Okay. What do you know or can you guess about the characters in this story?)

Mmm like say it again.

(What can you think of or guess about the characters in this story?)

I think ah her brother, his brother is mad of her and she's mad of him, and they don't want to talk.

(What in the story makes you say that?)

Ahm because she ahm thought that, maybe she was going to eat and don't her, didn't let her eat a lot because he's put so she couldn't be for that time like that. And then she got mad of him, he got mad of her. That's it.

(Could someone else think something different about those characters?)

I don't know.

(Could someone think something else?)
I don't know.

(Does this story make you think of anything or remind you of something?)

Doesn’t remind me of anything.

(Doesn’t remind you of anything?)

No.

(What questions do you have about the story?)

Ahm don’t know.

(Mmh?)

Forgot.

(He forgot?)

I forgot what I was going to say.

(Do you want to think a little bit? No? Okay. Well thank you for your time and you did a great job. And thank you for talking to me today.)

Example 3
Student #010615
Treatment Group B, P.S. 86

Gorky Paining Score:		**Kadohata Text Score:**	
Extended focus	accomplished	Extended focus	developing
Thorough description	accomplished	Thorough description	developing
Hypothesizing	accomplished	Hypothesizing	accomplished
Evidential reasoning	accomplished	Evidential reasoning	developing
Building schema	developing	Building schema	developing
Multiple interpretation	beginning	Multiple interpretation	developing

Verbatim Transcript [The interviewer's questions are in parentheses.]

(I'd like to show you a picture of a painting. Let's say you were talking on the phone with your friend about this painting. Describe this painting to your friend, knowing that your friend can't see it.)

Ok, that was a man that's holding something in his hand, I think they're getting married or something and that the woman has a dress on and they look just confused and stuff, on both of their faces, confused and that they are, oh the man is wearing white and black shoes and the woman is wearing something on her head, around her head and the man has black hair and the woman has brown hair and the man is wearing like a beige coat, and the woman is wearing a white dress and in the background you see something brown and you see the walls inside of them and you see that looks like a camera ------, the gray

(The object that the man is holding?)

Yeah and that the man and the woman, the man look like he has gloves on, and the woman, it look like she has something on her hand but you can't hardly see it cause it's white like the dress and the man is wearing, it looks like a reddish orange pants and that the man looks a little bit scary to me and in the back, it looks like there's a window, that's a window and that's part of the sky or something at the corner of the window and like I noticed something that looks like a man's leg is white and that the man's wearing, that's a face and I see yellow on the lady's sleeve, and the man, that's the only thing I know

(What do you know or can you guess about these two people in this painting?)

I think they're getting married and he just staring at people I think, staring at people.

(What in the painting makes you say that?)

Because they're standing right next to each other and it looks like an outfit because of something that he's holding and some people get married, and there's something in their hand, and that's a bride I think and that's it

(Could someone else think something different about these people?)

Maybe.

(What are some other possibilities?)

I don't know.

(No?)

I don't know.

(Does this painting make you think of anything or remind you of something?)

It reminds me that when I saw a picture of my aunt and uncle, that they got married, I saw a picture of them.

(Tell me about that.)

Because I saw a picture of them, they was just like surprised and excited, that's how they look

(You've told me a lot about this painting. What questions do you have about this painting?)

I wonder what's the object in his hands and I wonder what is that white stuff on his feet and why are the faces like that.

(Those are really good questions. Let's switch to a new activity. Now, I'd like to talk about a story. Here's a copy of the story so you can read along as I read it aloud. I will read it twice for you. [Reads story twice.] Let's say you wanted to tell your friend about this story but you didn't have a copy to show them. Can you describe what happened in this story in your own words?)

The story was about, it was three children, that they were left, their parents were at work and they were left at home and then, I forgot her name, that she ate a lot of roast chicken, and then her brother, yeah, her brother, he wanted to follow her and he did and Katie said oh, that's not ladylike and that and then Katie wanted to help her but she didn't want to pay attention or something and then her brother he put food in his mouth and did just like his sister.

(What do you know or can you guess about the characters in this story?)

I think the brother and the sister, I think they like to eat a lot and the sister likes to help a lot, and she wants, I think she's the older sister out of all of them and I think she's a really good sister.

(What in the story makes you say that?)

Because she helps at home, she wants to help her sister and brother

(Could someone else think something different about these characters?)

Yes.

(What are some other possibilities?)

That maybe the person, maybe she's not helping or something like that.

(Does this story make you think of anything or remind you of something?)

When my cousin and my cousin and my cousin and my other cousin, because they like to eat a lot and the older sister [cannot decipher audio file].

(Tell me about that.)

I was at their house and I saw them how they cooked, oh my God, they were outside with my cousin.

(You've told me a lot about this story. What questions do you have about this story?)

I wonder what happened next and I wonder if the sister that ate, I think the question, I think why does she eat a lot?

(Great. You did a really great job today. Thank you for talking with me.)

Example 4
Student #030201
Treatment Group A, P.S. 148

Response to Student Artwork Score:
Thorough description - developing

Verbatim Transcript [The interviewer's questions are in parentheses.]

(This is your artwork right? It looks great. Can you describe it to me?)

Ahm it's about baseball and I, I made it about baseball because my that's my favorite sport and, and I make that team's Yankees and ahm Cardinals, but I didn't know what to, what, what was a uniform. So I just put any uniform and it looked kind of crazy, so I just put a new team, and that's called Card-din Card din nals, so couldn't ---- and the title was Yankees and Cardinals so, and ahh. I made the batter right here, the first base, the second base, the third base, then the outfielders and that's it.

(Now I'd like you to think back to when you were making this, can you tell me how you made it?)

I made it with craypos, and pencil and with ahm markers. They, and then I wanted to use the color on, on the shirts.

(That's great. So what are some of the things that you thought about when you were making this?)

Ahhh I thought about how, how would I like looks the Cardinals, how would I made the bases. And I was about to put ahm like the grass but I didn't have time. And that's it.

Example 5
Student #010615
Treatment Group B, P.S. 86

Response to Student Artwork Score:
Thorough description - beginning

Verbatim Transcript [The interviewer's questions are in parentheses.]
(This is your artwork, right? This looks great. Can you describe it to me?)

It's showing that one place to the other --------- to the lunch room and to the outside.

(Ok, which area?)

And then I'm showing where I'm going, this is supposed to be the hallway.

(The green part?)

No, the green part is the backyard of the school so that's ---------- the girl and the boy, that means that, that's a key to show what that means.

(So the key, this area is the key, what you're pointing to, the top right hand corner?)

It’s showing how you go, you going to the lunchroom to the outside to go to like on the stairs.

(Ok, so the blue are you’re pointing to is the stairs, ok)

Yeah and this means that, you know where some schools have those, the stuff on the wall, that shows like a newspaper.

(Ok.)

Yeah and this means

(The red square at the top of the page?)

The door that they go inside or something, and that could be the bathroom or something like that and this door is to like, when you go out of the school. And this table

(The blue square on the top of the right page?)

The table is for it’s for, like the girl, like it kind of --------- for the lunchroom side, ----- for the lunch room so that’s all.

(Now think back to when you were making this, can you talk about how you made it?)

I made it, I thought of my picture first, I question what to do with it and that I got an idea and that’s when my friends helped me, and the teacher helped me too, and [the teaching artist]. And I was, first I’m obsessing a little bit, but I got better and that’s it.

(What are some of the things you thought about as you were making it?)

I thought oh ok, it’s fun, and it was exciting how show how fun we were having with [the teaching artist] and that I was excited because how everybody helped me in making this picture.

Appendix S
Statistical Analyses

Chi-Square

Student Questionnaire Data		
Q1 School-related attitude scales Q2/Q4 Art process Q3/Q6 Art attitude scales Q4/Q5 Perceptions of artists Q5/Q7 Museum attitude scales	X	School Treatment or Control Group Treatment Group A or B Demographics: gender, age, prior visits to the Guggenheim, speak English at home
All demographic questions (Q6-10 / Q8-Q12)	X	School Treatment or Control Group Treatment Group A or B
Q2 *LTA* attitude scales (Treatment Group Only) Q3 Favorite *LTA* aspect(Treatment Group Only)	X	School Teaching artist Demographics: gender, age, prior visits to the Guggenheim, speak English at home
Student Interview Data		
Each Kadohata text rubric characteristic Each Gorky painting rubric characteristic	X	School Treatment or Control Group Treatment Group A or B Demographics: gender, age, prior visits to the Guggenheim, speak English at home Teaching artist (Treatment Group Only) ELA performance level
Student art description (Treatment Group Only)	X	School Demographics: gender, age, prior visits to the Guggenheim, speak English at home
Student ELA Test		
Student performance level	X	Treatment or Control Group Treatment Group A or B School Demographics: gender, age, prior visits to the Guggenheim, speak English at home Total Gorky painting score Total Kadohata text score

ANOVA, UNIANOVA, and/or Multiple Regression

Student Questionnaire		
Total score school-related scales Total score art attitude scales Total score artistic process-related scales Total score art museum attitude scales Total score *LTA* attitude scales (Treatment Group Only)	X	Treatment or Control Group Treatment Group A or B School
Student Interview Data		
Gorky painting word count Kadohata text word count Total word count Grade level	X	Treatment or Control Group Treatment Group A or B School Data collector Demographics: gender, age, prior visits to the Guggenheim, speak English at home
Total Gorky painting score Total Kadohata text score	X	Treatment or Control Group Treatment Group A or B School Teacher Gorky painting or Kadohata text word count Total score school-related scales Total score art attitude scales Total score artistic process-related scales Total score art museum attitude scales Demographics: gender, age, prior visits to the Guggenheim, speak English at home Teaching artist (Treatment Group Only)
Classroom Teacher Questionnaire		
Class size Number of years teaching Number of hours spent on literacy Level of training in visual arts scales Use of visual arts in the classroom scales Attitudes towards art scales	X	Treatment or Control Group
Teaching Artist Observations		
Total score student individual behaviors Total score whole class behaviors Total score teaching artists' behaviors Total score teaching artists' use of inquiry Total score use of cumulative strategies Total score for classroom teacher participation	X	Teaching artist