

The Mirror and the Canyon: Reflected Images, Echoed Voices: Chapter Two Final Report

Lori Gerstein Ramsey, Esti Hellmann, and Susanne Harnett
Metis Associates

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Abstract

For over a decade, Global Writes (*GW*), a nonprofit organization, has partnered with a wide array of arts organizations across the country to implement its arts-based educational model that integrates literacy, performance, and technology. *GW* was developed as an offshoot of *Bronx Writes*, a program that was first implemented in 1998 through a collaboration between the *GW* co-presidents and the DreamYard Project, a Bronx-based arts education organization. In the current *GW* model, local poets work with students and English Language Arts (ELA) teachers on poetry writing and performances. Each implementation culminates in a Poetry Slam competition across schools and classrooms where students compete with one another on their writing and performance of original poetry. Research suggests, and the *GW* program is based on the premise, that student participation in the arts impacts a variety of student skills, such as academic achievement and social skills. It is clear, however, that more data are needed to explore the relationships between the types of skills that *GW* supports and the essential 21st Century skills that students need.

Metis Associates, an independent research and evaluation firm, was contracted by *GW* to conduct a quasi-experimental study to determine the impact of the arts-integrated model on students' 21st Century skills. Two research questions were explored as part of this study: 1) Do students who participate in the *GW* model show significantly greater improvement in 21st Century Skills as compared to similarly situated students who do not participate in the model? and 2) Which 21st Century Skills are most strongly impacted and which are least strongly impacted by the program? In addition, the study explored the extent to which students who participate in the program demonstrated improved writing and performance skills.

To measure change in 21st Century Skills among students in the treatment and comparison groups, teachers completed pre and post 21st Century Skills Rubrics for each student in their participating ELA class(es) in the 2016-2017 school year. Analyses of covariance were conducted to examine whether there were significant differences in the outcome performance between participants in the treatment group and those in the comparison group. Results show that students in the treatment group demonstrated significantly greater differences from their pre-rubric scores to post-rubric than those in the comparison group on the overall 21st Century Skills rubric and that students in the treatment group performed significantly better than those in the comparison group in each of the 21st Century Skills areas, including critical thinking, collaboration, creativity, and communication. In addition, the treatment group demonstrated a statistically significant increase on the overall writing and performance rubric and in each of the three subscale areas, including poem, interpretation, and performance.



This study, which represents the second NEA-funded investigation of the *GW* model, allowed for further exploration of the impact of the model on participating students. While the first study focused on the impact of the program on student social skills, this study focused on its impact on 21st Century Skills, writing, and performance. Overall, findings from this study are compelling and suggest that the program impacts 21st Century Skills in each of the four key areas and fosters students' growth in oral and written expression. These findings, when combined with previous research on the program, offer key evidence of its value to arts programming in schools and suggests that it may be a valuable addition to ELA coursework. However, there are several limitations to the study that suggest a need for further research, including a small sample size with only four schools.



Executive Summary

For over a decade, Global Writes (*GW*), a nonprofit organization, has partnered with a wide array of arts organizations across the country to implement its arts-based educational model that integrates literacy, performance, and technology. *GW* was developed as an offshoot of *Bronx Writes*, a program that was first implemented in 1998 through a collaboration between the *GW* co-presidents and the DreamYard Project, a Bronx-based arts education organization. The *Bronx Writes* model was designed to promote standards-based literacy, communication, and the use of technology, providing youth with opportunities to become engaged in writing and performing to authentic audiences. In the current *GW* model, local poets work with students and English Language Arts (ELA) teachers on poetry writing and performances. Each implementation culminates in a Poetry Slam competition across schools and classrooms where students compete with one another on their writing and performance of original poetry.

The *GW* model is designed to allow students to create and share original poetry through performances for authentic audiences in classrooms and schools across the country. The model includes a variety of technology-supported activities, such as integrating writing and performance into core ELA coursework, collaboration among and between students and teachers, and authentic assessment of competitive performances. As part of implementation, each classroom participates in a residency with a teaching artist (TA) who co-teaches with the ELA classroom teacher during the school day for 90 minutes per week over the course of 30 weeks. A essential piece of the *GW* model, TAs work with ELA teachers to help facilitate the teaching of poetry and performance, while *GW* staff work with teachers to help assist in collaboration and facilitate student-to-student, classroom-to-classroom, and community-to-community sharing and growth via digital technology, such as blogs, wikis, social networks, and video conferencing. This collaborative process allows participants to share content and perform for authentic audiences across the country.

Research suggests, and the *GW* program is based on the premise, that student participation in the arts impacts a variety of student skills, such as academic achievement and social skills. It is clear, however, that more data are needed to explore the relationships between the types of skills that *GW* supports and the essential 21st Century skills that students need. Metis Associates, an independent research and evaluation firm, was contracted by *GW* to conduct a quasi-experimental study to determine the impact of the arts-integrated model on students' 21st Century skills. Two research questions were explored as part of this study: 1) Do students who participate in the *GW* model show significantly greater improvement in 21st Century Skills as compared to similarly situated students who do not participate in the model? and 2) Which 21st Century Skills are most strongly impacted and which are least strongly impacted by the program? In addition, the study



explored the extent to which students who participate in the program demonstrated improved writing and performance skills.

Two Bronx schools in Community School Districts 9 and 10 were selected as treatment schools. Comparable District 9 and 10 schools located in the Bronx were selected based on school-wide characteristics, including grades served, geographic location, percent of students eligible for free/reduced price lunch (FRL), percent of English language learners (ELL), and percent of special education students. To measure change in 21st Century Skills among students in the treatment and comparison groups, teachers completed pre and post 21st Century Skills Rubrics for each student in their participating ELA class(es) in the 2016-2017 school year. Baseline equivalence was established between the treatment and comparison groups on the 21st Century Skills rubric pretest group means using an independent samples *t*-test to ensure that groups were equivalent at baseline.

Analyses of covariance were conducted to examine whether there were significant differences in the outcome performance between participants in the treatment group and those in the comparison group. Results show that students in the treatment group demonstrated significantly greater differences from their pre-rubric to post-rubric scores than those in the comparison group on the overall 21st Century Skills rubric and that students in the treatment group performed significantly better than those in the comparison group in each of the 21st Century Skills areas, including critical thinking, collaboration, creativity, and communication. In addition, the treatment group demonstrated a statistically significant increase on the overall writing and performance rubric and in each of the three subscale areas.

This study, which represents the second NEA-funded investigation of the *GW* model, allowed for further exploration of the impact of the model on participating students. While the first study focused on the impact of the program on student social skills, this study focused on its impact on 21st Century Skills, writing, and performance. Overall, findings from this study are compelling and suggest that the program impacts 21st Century Skills in each of the four key areas and fosters students' growth in oral and written expression. These findings, when combined with previous research on the program, offer key evidence of its value to arts programming in schools and suggests that it may be a valuable addition to ELA coursework. However, there are several limitations to the study that suggest a need for further research, including a small sample size with only four schools.



I. Research Motivation

For over a decade, Global Writes (*GW*), a nonprofit organization, has partnered with a wide array of arts organizations across the country to implement its arts-based educational model that integrates literacy, performance, and technology. *GW* was developed as an offshoot of *Bronx Writes*, a program that was first implemented in 1998 through a collaboration between the *GW* co-presidents and the DreamYard Project, a Bronx-based arts education organization. The *Bronx Writes* model was designed to promote standards-based literacy, communication, and the use of technology, providing youth with opportunities to become engaged in writing and performing to authentic audiences. In the current *GW* model, local poets work with students and English Language Arts (ELA) teachers on poetry writing and performances. Each implementation culminates in a Poetry Slam competition across schools and classrooms where students compete with one another on their writing and performance of original poetry.

The *GW* program has been implemented in schools across the country, including in the Bronx (NY), Chicago (IL), San Francisco (CA), and Lewiston (ME). Funding for the implementation of and research on the program has been provided through various sources, including three US Department of Education (DOE) Arts in Education Model Development and Dissemination (AEMDD) grants and two National Endowment for the Arts (NEA) grants. Metis Associates, an independent research and evaluation firm, has collaborated with *GW* staff to conduct evaluations of the implementation and outcomes for each of the funded projects, including outcomes focused on academic achievement, motivation, engagement, performance, and social skills. The most recent study of the program was supported by an NEA-funded Research Works grant in 2014, which explored the impacts of the program on student social skills (Metis, 2014).

This current study, conducted during the 2016-2017 school year, *The Mirror and the Canyon: Reflected Images, Echoed Voices: Chapter Two*, further examines the impacts of the *GW* program student 21st Century Skills as well as original poetry performance. The 21st Century Skills, which are sometimes referred to as the “4Cs,” are defined by *P21: The Partnership for 21st Century Learning*, as including collaboration, communication, critical thinking, and creativity. These skills are believed by the educational community to be essential elements of preparing students for college and careers (P21 Partnership for 21st Century Learning), 2010). This study addresses the overall NEA goal of “enhancing knowledge and understanding through expanding and promoting evidence of the value and impact of the arts” by studying the extent to which the *GW* program helps students develop stronger 21st Century Skills and poetry writing and performance skills over time. While there is research to show that participation in the arts encourages and fosters a variety of skills (Catterall, 1998), it is clear that more research is needed to examine possible links between the arts and the development of these essential 21st Century Skills. In an effort to help address NEA’s goal of



“increasing the evidence base of arts in education expansion and promotion,” this study was designed to explore the extent to which the *GW* program impacts student 21st Century Skills. Ultimately, the goal is to contribute to the overarching base of knowledge and research focused on the linkages between arts and the development of a variety of key skills, including essential 21st Century Skills.

II. Existing Literature

As described in the previous NEA Research Works final report (Metis, 2014), which explored the impacts of the *GW* program on students’ social skills, there has been a plethora of evidence suggesting a need to explore the extent to which the arts impact students’ development in key areas outside of academic achievement and arts performance. For example, it has become clear that there are a variety of skills students need to in order to be successful in college and in their careers. Indeed, Common Core Standards were developed in response to an Achieve Inc. (2004) report that found that high school students were graduating without the essential skills they needed to be successful in their future education and careers. These skills included a range of different areas of student growth, such as critical thinking and problem solving, as well as key 21st Century Skills, such as collaboration. In illustration, consider the skills needed to meet the following Common Core Standards in Writing and Speaking and Listening for 6th grade:

- **Writing: Production and Distribution of Writing:** With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed.
- **Speaking and Listening: (1) Comprehension and Collaboration:** (a) Participate in collaborative conversations with diverse partners and texts with peers and adults in small and larger groups; (b) Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 6 topics, texts, and issues, building on others’ ideas and expressing their own clearly. **(2) Presentation of Knowledge and Ideas:** Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.

It is clear that the skills a student would need to successfully meet these standards incorporate all of the 4C’s, including collaboration, communication, critical thinking, and creativity. In addition, the movement away from traditional standardized assessments to performance-based assessments that better gauge student growth is an area that speaks to the need for research on the impacts of the arts on student outcomes using a variety of measures and authentic assessments.



Arts educators have long believed, and *GW* staff agree, that Common Core Standards and performance-based assessment practices are aligned with the very types of skills that the arts, and the *GW* model, promote. According to an NEA Report, *The Arts and Achievement in At-Risk Youth: Findings from Four Longitudinal Studies* (2012), at-risk students who have access to the arts may have increased academic outcomes, workforce opportunities, and social outcomes such as civic engagement. Indeed, participation in arts-based activities is thought to lead to the development of a variety of inter-personal skills and pro-social behaviors such as offering assistance to peers, sharing, and showing empathy and compassion towards others (Rabinowitch & Burnard, 2012). An Arts Education Partnership (AEP) report, *Preparing Students for the Next America: The Benefits of Arts Education* (2013), also indicated that arts programs may lead to increased pro-social behaviors, such as being accepting of diverse cultures and backgrounds and demonstrating value for developing cross-cultural understanding. Notably, research shows that improved attitudes and school engagement are also associated with arts participation. For example, one longitudinal study (which includes data from 25,000 secondary school students) found that students in strong arts programs scored more favorably on attitude measures, such as academic persistence, than students in other arts programs (Catterall, 1998). In 2011, the Missouri Department of Education and the Missouri Alliance for Arts Education released *Arts Education Makes a Difference in Missouri Schools*, which reported that arts education impacts both the academic and social success of students and that those with more arts programming “were more likely to come to class, avoid being removed, and graduate” (Scheuler, 2010).

Previous studies of the *GW* model include the aforementioned AEMDD grants, which included either quasi-experimental or experimental designs, allowing for comparisons between outcomes for students who participated in the programs with those for similarly situated students who did not. As described in previous reports, data from the evaluations of the AEMDD grants revealed that the model had significant impacts on key pieces of student motivation in academic areas. Notably, the AEMDD evaluations found that students who participated in *GW* were more likely to: 1) enjoy going to school, 2) follow school rules, 3) enjoy learning new things, 4) get homework done on time, and 5) try to do well in school (Metis, 2006; Metis, 2010) than those who did not participate in the *GW* model. Furthermore, findings from a previous NEA-funded Research Works grant, which explored the impacts of the *GW* program on student social skills, revealed that participating students made significantly greater gains than those in the comparison group overall and specifically in the areas of assertion, empathy, and responsibility (Metis, 2014). However, data from the evaluations also revealed that impacts of the *GW* model on academic achievement were not consistent across studies. For example, treatment students made significantly greater gains than control students in ELA achievement after controlling for baseline scores in one study, while in another study control students from one cohort outperformed treatment students in ELA achievement (Metis, 2006; Metis, 2010).

It is clear that the findings from the aforementioned studies of the *GW* model are aligned with those in the larger research community which explore the impacts of the arts on student outcomes, including academic achievement and social skills (Catterall, 1998; Critical



Links, 2011). However, literature from the field, as well as the outcomes revealed from previous *GW* studies, suggest a need to explore the impacts of the arts in other areas needed for student success, such as key 21st Century Skills. This research study is focused on measuring the impacts of the *GW* arts-integrated model on these skills as well as on overall arts performance for participating students.

III. Theory

The *GW* model is designed to allow students to create and share original poetry through performances for authentic audiences in classrooms and schools across the country. The model includes a variety of technology-supported activities, such as integrating writing and performance into core ELA coursework, collaboration among and between students and teachers, and authentic assessment of competitive performances.

As part of implementation, each classroom participates in a residency with a teaching artist (TA) who co-teaches with the ELA classroom teacher during the school day for 90 minutes per week over the course of 30 weeks. A essential piece of the *GW* model, TAs work with ELA teachers to help facilitate the teaching of poetry writing and performance, while *GW* staff work with teachers to help assist in collaboration and facilitate student-to-student, classroom-to-classroom, and community-to-community sharing and growth via digital technology, such as blogs, wikis, social networks, and video conferencing. This collaborative process allows participants to share content and perform for authentic audiences across the country.

GW program activities are designed to provide opportunities for students to develop their written and spoken voices, as well as to develop their oral literacy, use movement and gesture in their text-based performances, and build skills in improvisation. In addition, the program helps to support students throughout the writing process they are learning in their ELA classes, which is focused on drafting, revising, and publishing original works. Each student is coached by TAs, teachers, and student peers throughout the program where they learn to perform original poems for authentic audiences.

GW uses competitive events known as *poetry slams* as a key piece of the implementation of the program. These events are used as the main venue for students to perform their original poetry for authentic audiences. The first set of slams take place in individual classrooms to determine which students will represent each school in a tournament slam. The tournament slam takes place across locations through the use of video conferencing, linking students from classrooms across the country with a panel of judges (including a mix of adults and students from non-competing schools) at a separate site. Scoring for the competitions is based on a set of writing and performing rubrics.



This study was designed to look at outcomes of the *GW* model (described above) in areas that have not yet been explored in previous research studies, including a focus on 21st Century Skills. Given the fact that a randomized control trial (RCT) design would not be feasible for this study, in accordance with the What Works Clearinghouse (WWC) guidelines (2008), Metis employed a quasi-experimental design to determine impacts of *GW* program participation on participating students when compared to students who did not participate in the model. To conduct the study, the *GW* model was implemented in two District 9 and 10 Bronx schools that have a history of at least five years of program participation.¹ The program was implemented in two classes per school. Comparable District 9 and 10 schools located in the Bronx were selected based on school-wide characteristics, including grades served, geographic location, percent of students eligible for free/reduced price lunch (FRL), percent of English language learners (ELL), and percent of special education students. As shown in Table 1, the treatment and comparison schools had very similar demographics: almost all students in each school were either Black or Hispanic, the majority of the students were eligible for free or reduced price lunch, and about one quarter were designated as special needs. One treatment and one comparison school had fewer than a quarter ELL students (15.7% and 16.8%), whereas one treatment school had just under half ELLs (43.5%) and the remaining comparison school had just under a third ELL students (31.1%). Demographics of matched treatment and comparison students are presented in the Appendix.

Table 1: Treatment and Comparison School Demographics²

School Type	Grades Served	Percent of Students			
		Black or Hispanic	ELL	Free Lunch Eligible	Special Education
Treatment 1	6-8	98.3%	43.5%	74.2%	27.4%
Treatment 2	K-8	97.5%	15.7%	96.1%	19.6%
Comparison 1	6-8	97.6%	31.1%	90.6%	31.7%
Comparison 2	6-8	94.0%	16.8%	97.0%	21.2%

The study was designed to test the hypothesis that students who participate in the *GW* model would show significant improvement in 21st Century Skills, compared to students who did not participate in the model. In order to do so, two **research questions** were explored as part of this study:

¹ Schools with prior experience were selected to ensure teacher comfort with the program and a high level of fidelity of implementation.

² School-level demographic data from the 2015-16 school year, gathered from: Demographic Snapshot 2012-13 to 2016-17 (<http://schools.nyc.gov/Accountability/data/default.htm>).

1. Do students who participate in the *GW* model show significantly greater improvement in 21st Century Skills as compared to similarly situated students who do not participate in the model?
2. Which 21st Century Skills are most strongly impacted and which are least strongly impacted by the program?

In addition, this study explored the extent to which students who participate in the program demonstrated improved writing and performance skills.

IV. Description of Data

To measure change in 21st Century Skills among students in the treatment and comparison groups, teachers completed pre and post **21st Century Skills Rubrics** for each student in their participating ELA class(es) in the 2016-2017 school year. The 21st Century Skills rubric was developed collaboratively by *GW*, DreamYard, and Metis and was adapted from multiple measures, including the Department of Defense Education Activity (DoDEA) “21st Century Teaching, Learning, and Leading” rubric. The rubric was developed to assess the “4Cs” (communication, collaboration, critical thinking, and creativity), which are skills that directly align with program activities. The rubrics were completed by treatment and comparison students’ teachers at the beginning and end of the thirty week residency in each classroom.

In addition, in order to examine the program’s impact on a combination of 21st Century *and* performance skills, a **writing and performance rubric** developed. Teachers of treatment students scored students on their original poetry performances using the locally-developed rubric, which assesses students’ skills in articulating their thoughts orally and in writing, engaging in critical thinking, and serving as a good audience member. The rubric also was developed collaboratively by *GW*, DreamYard, and Metis and was completed on a pre/post basis by teachers in the treatment schools at the beginning and end of the school year.

Rubric Completion. Prior to administration, parent consent forms and student assent forms were distributed to students and their families. Only students who returned completed signed parent consents forms and student assent forms were included in analyses. Tables 2a and 2b provides descriptions of the 21st Century Skills and writing/performance rubrics for *Exemplary* (Level 4) ratings on each instrument. The full rubrics are provided in the Appendix.



Table 2a: 21st Century Skill Rubric Descriptions

21st Century Skill Rubric (Treatment and Comparison)	
Area	Description of Exemplary (Level 4) Rating
Critical Thinking & Problem Solving	<ul style="list-style-type: none"> Expresses own opinions independently and provides evidence or reasons behind them Seeks to understand others' viewpoints Devises a logical or imaginative solution or set of alternatives Uses multiple methods to communicate alternatives and solutions Persists to find a satisfactory solution
Collaboration	<ul style="list-style-type: none"> Respectfully listens, interacts, discusses and poses questions to all members of the team during discussions and helps direct the group in reaching consensus Always has a positive attitude about the task(s) and the work of others Performs all duties of assigned team role and contributes knowledge, opinions, and skills to share with the team
Creativity & Innovation	<ul style="list-style-type: none"> Usually has several ideas rather than only one Can shift thinking and take another point of view or consider from different cultures and perspectives Enjoys new ideas and can easily construct ideas Goes beyond the assigned tasks by expanding ideas and adding details Continually explores materials that are provided and seeks other materials Readily moves from concrete to abstract thinking and from general to specific concepts. Does not show fear of making mistakes or concern about disapproval of others
Communication	<ul style="list-style-type: none"> Frequently voices own opinions and viewpoints to teachers and peers Expresses self fluently and confidently Enables listeners to understand thoughts and also encourages their input Shows equal ease in responding to works of art of diverse media Uses vocabulary appropriately and consistently to express ideas and support claims Listens to, respects, and builds on peers' viewpoints

Table 2b: Writing and Performance Rubric Descriptions

Writing and Performance Rubric (Treatment Only)	
Area	Description of Exemplary (Level 4) Rating
Poem	
Use of language	The poem uses well-developed vocabulary; the use of figurative language is compelling and enhances the content and meaning of the poem.
Communication of idea and point of view	Writing excels in communicating a main idea or subject and demonstrates substantial and detailed knowledge on the subject; there is a unique and compelling authorial voice and/or point of view; the author clearly cares about the topic and the writing displays a strong sense of purpose to the poem.
Expression of human emotion and experience	The writing and use of vocabulary clearly conveys a strong emotional connection and personal knowledge or acquired experience with the subject matter.
Interpretation	
Use of body movement, facial expressions, and gestures	The performance contains animated gestures, facial expressions, or body movements that are aligned with the mood of the poem throughout the performance.
Expression of energy and emotion	The student displays high levels of energy in the performance and the emotion expressed is believable and enhances the language in the poem throughout the performance.
Performance	
Voice projection and diction	Student projects voice; all words are clear and there is strong vocal variety throughout the performance.
Memorization and improvisation	Student has fully memorized script and uses improvisation comfortably and effectively at appropriate points throughout.
Audience awareness	Student displays keen sense of and connection to the audience by maintaining eye contact and holding audience interest throughout the performance.

Scoring. As described earlier, students were scored on the rubrics by their teachers at the beginning (pre) and end (post) of the thirty weeks of the program in each site. The rubrics (provided in the Appendix) were scored using a scale of 1-4, corresponding to the following values: *Beginning (Level 1)*, *Developing (Level 2)*, *Accomplished (Level 3)*, and *Exemplary (Level 4)*. Overall response rates for students with parental consent and student assent, as well as matched pre and post rubric scores, are presented in Table 3. Response rates by school were generally high, ranging from 92% to 73% with the notable exception of comparison school 2, which had a much lower response rate of 18% due to a low number of parents completing the consent form for students in this school.

Table 3. 21st Century Skill Rubric Response Rates

School	Total Students Treatment/ Comparison Classrooms	N (%) with Pre Scores	N (%) with Post Scores	N (%) with Matched Scores
Treatment School 1	49	37 (76%)	36 (73%)	36 (73%)
Treatment School 2	57	51 (89%)	51 (89%)	51 (89%)
Treatment Total	106	88 (83%)	87 (82%)	87 (82%)
Comparison School 1	96	89 (93%)	89 (93%)	88 (92%)
Comparison School 2	248	44 (18%)	44 (18%)	44 (18%)
Comparison Total	344	133 (39%)	133 (39%)	132 (39%)

Overall, 21st Century Skills rubric scores were calculated for each student by totaling their scores in the four skill areas: collaboration, communication, critical thinking, and creativity (there was one item for each skill area). Only students who had both pre- and post-21st Century Skills rubric scores were included in analyses between the groups. In preparation for these analyses, baseline equivalence was established between the treatment and comparison groups on the 21st Century Skills rubric pretest group means using an independent samples *t*-test. As a result, some students with matched pre- and post-scores were removed from the analyses to ensure that groups were equivalent at baseline. Information on the baseline equivalence of the treatment and comparison groups is presented in Table 4.³ There were no significant mean differences between groups, and equal variances were assumed. Using the equivalent groups, an analysis of covariance (ANCOVA) test was then employed to examine whether there were significant differences in the outcome performance between participants in the treatment group and those in the comparison group.

³ Tests of baseline equivalence of the treatment and comparison groups in the analysis samples were conducted to ensure that the evaluation eliminates overt selection bias and meets the WWC evidence standards, albeit with reservations given that unobserved variables may not be equivalent between groups.

Table 4. Baseline Equivalence Data: 21st Century Rubric Skills

Group	N with Matched Scores	Pretest Mean ⁴	SD	Skew	Kurtosis	Levene's Test		t-Test	
						F-value	p-value	t-value	p-value
Treatment	73	6.85	2.53	0.39	-0.39	0.872	0.352	0.809	0.42
Comparison	74	7.18	2.36	0.56	-0.44				

Skew and Kurtosis values between -1 and 1 indicate a normal distribution.

Equal variances between groups are assumed when Levene's Test p -value > 0.05.

Group means are considered equivalent when the t -test p -value < 0.05.

The writing and performance skills rubric scores were calculated on the overall scale and three subscale areas (poem, interpretation, and performance) for students in the treatment group. Only students who had both pre- and post-scores were included in analyses to assess differences in writing and performance skills from pre- to post-administration. A repeated measures ANOVA was used to examine whether there were significant differences in students' scores from pre- to post-administration. Table 5 provides pre-test means for treatment students on the performance rubric overall and in each of the subscale areas.

Table 5. Treatment Baseline Scores: Writing and Performance Skills

Scale/Subscale	N with Matched Scores	Pretest Mean	SD	Minimum Score	Maximum Score
Overall Writing/Performance Rubric Composite⁵	70	12.61	4.55	8	29
Poem Subscale ⁶	70	5.30	2.16	3	11
Interpretation Subscale ⁷	70	2.71	1.07	2	7
Performance Subscale ⁸	70	4.60	1.76	3	11

⁴ There were four items on the 21st Century Skills rubric, each with a score of 1-4, yielding a minimum possible score of 4 and a maximum possible score of 16.

⁵ There were eight items on the overall subscale, yielding a minimum possible score of 8 and a maximum possible score of 32.

⁶ There were three items on the Poem subscale, yielding a minimum possible score of 3 and a maximum possible score of 12.

⁷ There were two items on the Interpretation subscale, yielding a minimum possible score of 2 and a maximum possible score of 8.

⁸ There were three items in the Performance subscale, yielding a minimum possible score of 3 and a maximum possible score of 12.

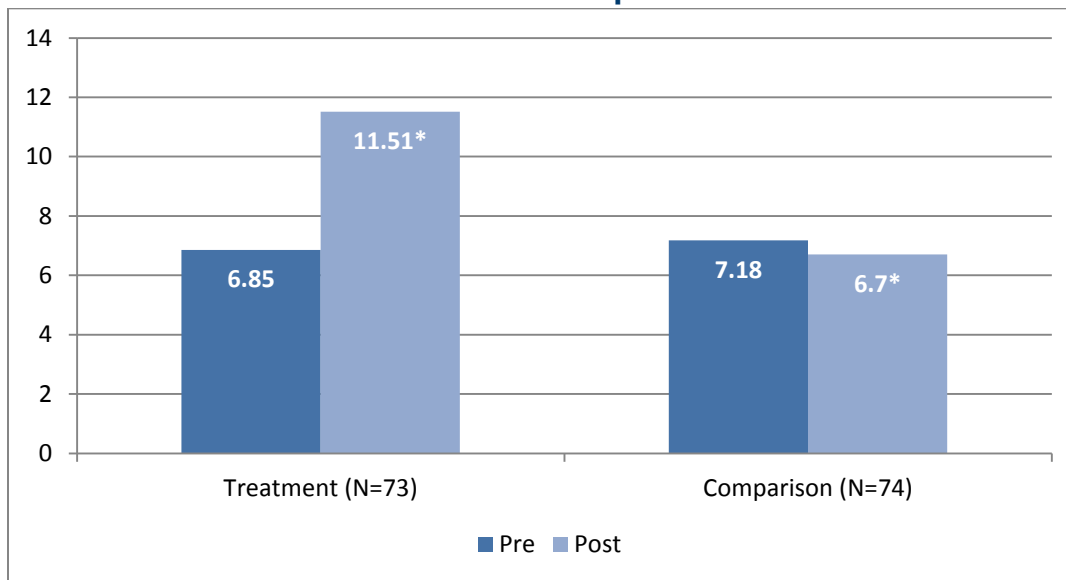
V. Analyses

To determine whether there was within group student growth (treatment and comparison) in 21st Century skills from pre- to post-administration, univariate pairwise comparisons were used (paired sample *t*-test). In order to gauge whether treatment students outperformed their comparison peers in the 21st Century Skills, analyses of covariance (ANCOVAs) were conducted. These analyses examined whether there were significant differences between the post-21st Century rubric scores of the treatment and comparison groups, while holding their pre-scores constant. Effect sizes were calculated in order to provide a measure of the magnitude of the differences between the two groups. A repeated measures ANOVA was also conducted on treatment student writing/performance skills rubric scores to examine whether students' experienced significant growth from pre- to post-administration. Effect sizes were calculated in order to measure the magnitude of student growth.

21st Century Skills Results

As shown in Figure 1, treatment students' mean score on the overall 21st Century rubric *increased* by 4.66 points, while the comparison group mean scores *decreased* by 0.48 points. Univariate pairwise comparisons showed that each of the groups demonstrated significant differences from their pre-rubric scores to post-rubric scores. However, while the treatment group showed a considerable *increase* in scores ($p=0.000$), the comparison group showed a significant *decrease* in scores ($p=0.010$). Notably, the effect size for the treatment group was considerably larger ($d=1.98$) as compared to that for the comparison group ($d=0.20$). In addition, results of the ANCOVA showed that the difference in the treatment and comparison group scores at post-test (when controlling for pre-test score) was statistically significant ($p=0.000$; partial $\eta^2 = 0.573$).

Figure 1: Differences in Pre- and Post-21st Century Skills Rubric Scores: Treatment and Comparison Students

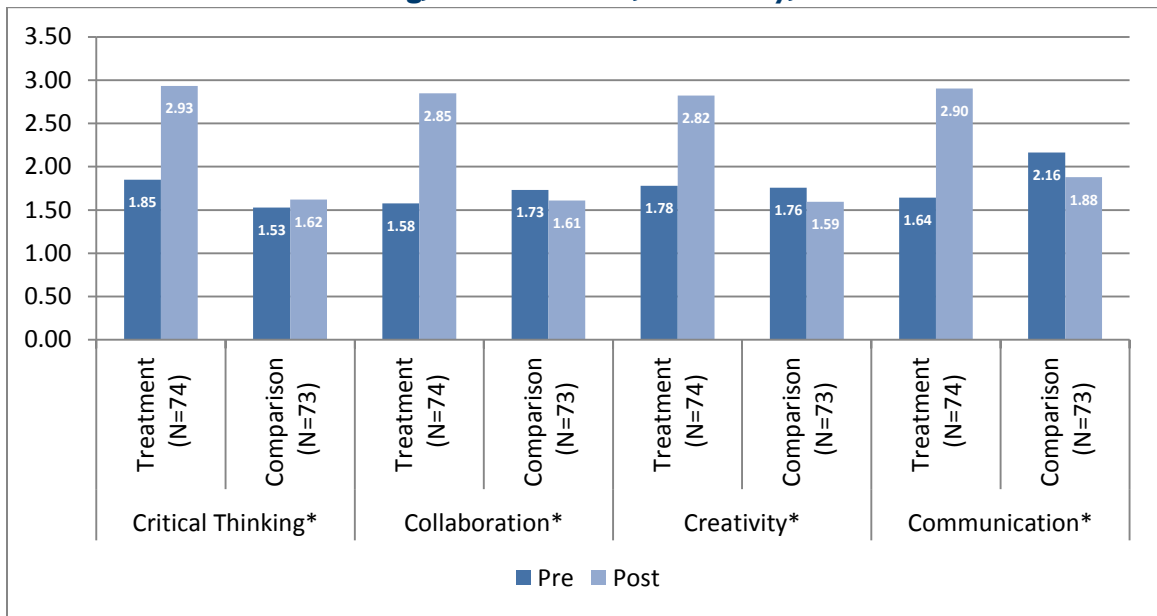


*Denotes a statistically significant differences at the $p < 0.05$ level in the treatment and comparison groups' pre/post scores.

Results of statistical comparisons of the post-test of 21st Century Skills indicate that students in the treatment group performed significantly better than those in the comparison group in each of the 21st Century Skills areas, including critical thinking, collaboration, creativity, and communication (Figure 2).

- In the area of *critical thinking*, treatment group mean scores increased by 1.08 from pre- to post-test, while the comparison group mean scores increased by 0.09 during this period. The difference in outcome performance between the two groups was found to be statistically significant ($p=0.000$; partial $\eta^2 = 0.470$).
- In the area of *collaboration*, treatment group mean scores increased by 1.27 from pre- to post-test, while the comparison group mean scores *decreased* by 0.12 during this period. The difference in outcome performance between the two groups was found to be statistically significant ($p=0.000$; partial $\eta^2 = 0.468$).
- In the area of *creativity* treatment group mean scores increased by 1.04 from pre- to post-test, while the comparison group mean scores *decreased* by 0.16 during this period. The difference in outcome performance between the two groups was found to be statistically significant ($p=0.000$; partial $\eta^2 = 0.545$).
- In the area of *communication* treatment group mean scores increased by 1.26 from pre- to post-test, while the comparison group mean scores *decreased* by 0.28 during this period. The difference in outcome performance between the two groups was found to be statistically significant ($p=0.000$; partial $\eta^2 = 0.451$).

Figure 2: Differences in Pre- and Post-Rubric 21st Century Skills Scores: Critical Thinking, Collaboration, Creativity, and Communication

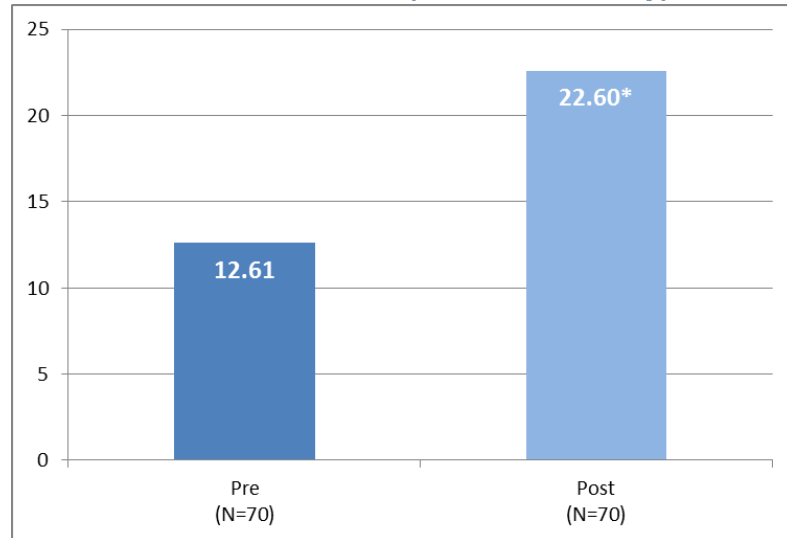


*Denotes a statistically significant difference at the $p < 0.05$ level between treatment and comparison group scores.

Writing and Performance Skills Results

Next, the treatment participants’ writing and performance skills rubric scores were examined. As shown in Figure 3, the treatment group demonstrated an increase in the overall rubric mean (9.99 point increase). In addition, using a repeated measures ANOVA, the difference between pre-test rubric scores and post-test rubric scores were found to be statistically significant ($p = 0.000$; partial $\eta^2 = 0.720$).

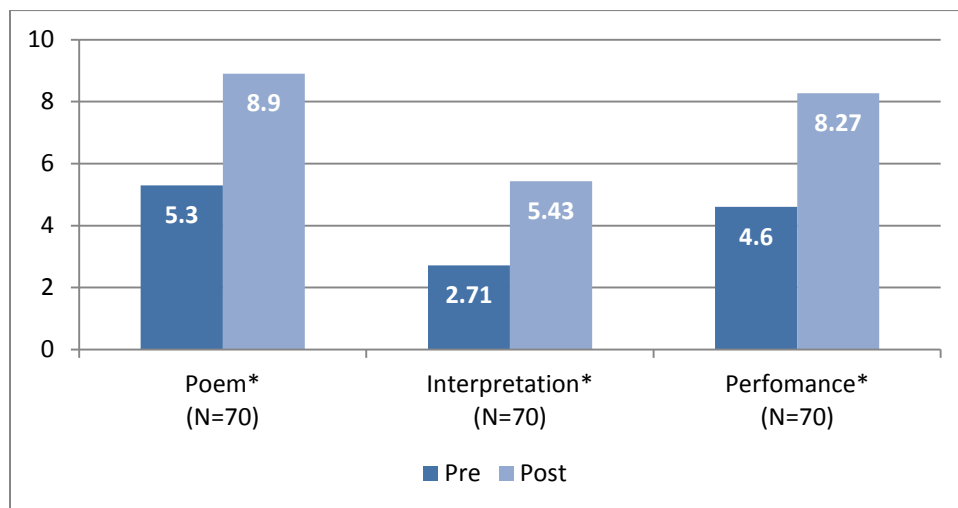
Figure 3: Writing and Performance Skills Rubric Mean Scores, Pre- to Post-Test (Treatment Only)



*Denotes a statistically significant differences at the $p < 0.05$ level in the treatment pre/post scores.

Moreover, Figure 4 shows that from pre- to post-test, mean scores increased for each of the rubric subscales. A repeated measures ANOVA showed that there was a statistically significant difference for each of the subscales (*Poem* $p=0.000$, partial $\eta^2 = 0.674$; *Interpretation* $p=0.000$, partial $\eta^2 = 0.741$; *Performance* $p=0.000$, partial $\eta^2 = 0.691$).

Figure 4: Writing and Performance Rubric Mean Scores, Pre- to Post-Test by Subscale: Poem, Interpretation, and Performance



*Denotes a statistically significant difference at the $p < 0.05$ level in the treatment pre/post scores.

VI. Conclusions

This study provides further evidence on the impact of the *GW* model on student 21st Century Skills, writing, and performance skills and helps to address the need for research linking arts instruction to the development of 21st Century Skills. Study findings indicate that students who participated in the program made greater gains than those in the comparison group on their overall 21st Century Skills, as well as in each of the areas that were examined, including collaboration, communication, critical thinking, and creativity. In addition, results show that treatment students made gains over the course of the year in their overall writing and performance skills and in each of the sub-areas that were examined, including those related to the writing of the original poem as well as how well the poem was performed during the poetry slam. These findings are notable for several reasons:

- The *GW* program encourages students to work collaboratively with one another and to think critically about their own writing and performance, as well as that of their peers. Students are encouraged and taught to provide constructive feedback to one another. The statistically significant gains on the collaboration, communication, and critical thinking areas of the 21st Century rubric suggest that the *GW* model is having the intended impact on students' skills in these areas.
- The *GW* program model encourages students to think creatively and develop poems and performances that are both technically strong and creative in their expression. Statistically significant gains on the creativity area of the 21st Century rubric provide evidence of the model's impact on students' levels of creativity.
- As may be expected, given the focus of the *GW* program on writing and the work involved in preparing for the poetry slam, treatment students demonstrated statistically significant gains in their writing and performance skills overall and in each of the sub-components of performance that were examined.

This study, which represents the second NEA-funded investigation of the *GW* model, allowed for further exploration of the impact of the model on participating students. While the first study focused on the impact of the program on student social skills, this study focused on its impact on 21st Century Skills, writing, and performance. Overall, findings from this study are compelling and suggest that the program impacts 21st Century Skills in each of the four key areas and fosters students' growth in oral and written expression. These findings, when combined with previous research on the program, offer key evidence of its value to arts programming in schools and suggests that it may be a valuable addition to ELA coursework.



Study Limitations

There were several limitations to this study that should be noted and suggest the need for further research.

- Specifically, given the strong findings that have emerged from this and previous studies of *GW*, an experimental design study should be implemented to more robustly examine such key student impact areas as: 21st Century, social, performance, and academic skills.
- Moreover, this study had a relatively small sample size, with only four total schools. It is therefore recommended that the study be replicated in additional schools with more varied demographics in order to determine the generalizability of the findings with other groups of students and in other areas of the country.



Appendix

Table A1. Demographics of Treatment and Comparison Students on the 21st Century Skills Rubric⁹

School	N	N with Data Available	% Female	% Hispanic	% Black	% Other	% Poverty
Treatment School 1	27	27	59%	67%	30%	4%	78%
Treatment School 2	46	45	38%	84%	11%	4%	96%
Comparison School 1	31	7	43%	100%	--	--	86%
Comparison School 2	43	42	41%	81%	10%	9%	98%

Table A2. ELL and IEP Status of Treatment and Comparison Students on the 21st Century Skills Rubric¹⁰

School	N	N with Data Available	% ELL	% SWD
Treatment School 1	27	24	29%	8%
Treatment School 2	46	44	14%	10%
Comparison School 1	31	4	75%	25%
Comparison School 2	43	31	87%	7%

⁹ From the 2016-17 school year.

¹⁰ From the 2015-16 school year.

Table A3: 21st Century Skills Rubric ANCOVA Results

Area	Group	N Tested (Matched)	Mean Score (SD)		Mean Difference	ANCOVA	
			Pre	Post		p-value ¹¹	Effect Size ¹²
Critical Thinking & Problem Solving	Treatment	73	1.85 (0.76)	2.93 (0.59)	1.08	0.000	0.470
	Comparison	74	1.53 (0.67)	1.62 (0.74)	0.09		
Collaboration	Treatment	73	1.58 (0.67)	2.85 (0.76)	1.27	0.000	0.468
	Comparison	74	1.73 (0.76)	1.61 (0.70)	0.12		
Creativity & Innovation	Treatment	73	1.78 (0.84)	2.82 (0.59)	1.07	0.000	0.545
	Comparison	74	1.76 (0.70)	1.59 (0.68)	0.17		
Communication	Treatment	73	1.64 (0.70)	2.90 (0.73)	1.26	0.000	0.451
	Comparison	74	2.16 (0.66)	1.88 (0.66)	0.28		
Total	Treatment	73	6.85 (2.53)	11.51 (2.17)	4.65	0.000	0.573
	Comparison	74	7.18 (2.36)	6.70 (2.34)	0.48		

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

Table A4: Writing and Performance Rubric Results

Scale	N Tested (Matched)	Mean Score (SD)		Mean Difference	Repeated Measures ANOVA	
		Pre	Post		p-value ¹³	Effect Size ¹⁴
Poem	70	5.30 (2.16)	8.90 (1.70)	3.60	0.000	0.674
Interpretation	70	2.71 (1.07)	5.43 (1.19)	2.72	0.000	0.741
Performance	70	4.60 (1.76)	8.27 (1.91)	3.67	0.000	0.691
Total Rubric Score	70	12.61 (4.55)	22.60 (4.35)	9.99	0.000	0.720

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

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

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

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



21st Century Skills Rubric

	Level 4 - Exemplary	Level 3 - Accomplished	Level 2 - Developing	Level 1 – Beginning
Critical Thinking & Problem Solving	<ul style="list-style-type: none"> Expresses own opinions independently and provides evidence or reasons behind them Seeks to understand others' viewpoints Devises a logical or imaginative solution or set of alternatives Uses multiple methods to communicate alternatives and solutions Persists to find a satisfactory solution 	<ul style="list-style-type: none"> Expresses own opinion and provides evidence or reasons when asked. Reasons are logical and related to the issue at hand Will consider another's point of view Identifies and seeks to understand problems at least at a general level Can usually attend to the major significant aspects of a problem. Evaluates logical consequences of alternatives at least in the short term Persists to find a solution. 	<ul style="list-style-type: none"> Expresses own opinion hesitantly or overly forcefully, or at inopportune times Provides reasons or evidence, but these may not be directly related or superficial Makes judgments and decisions hastily, based on few or simple criteria Is sometimes confused by counter evidence Exhibits superficial understanding of problem Can be brought to see a problem with help May be confused between significant and trivial aspects of the problem Often jumps to quick solutions Persists until difficulties arise 	<ul style="list-style-type: none"> Expresses or asserts own opinion and unable or unwilling to provide evidence Does not try to understand how others may have similar or different opinions Does not see a problem or opportunity without direct instruction Jumps quickly to solution Demonstrates little understanding of the elements of the problem or solution. When directed to solve a problem, works haphazardly Avoids seeing new problems if possible Gives up quickly
Collaboration	<ul style="list-style-type: none"> Respectfully listens, interacts, discusses and poses questions to all members of the team during discussions and helps direct the group in reaching consensus Always has a positive attitude about the task(s) and the work of others Performs all duties of assigned team role and contributes knowledge, opinions, and skills to share with the team 	<ul style="list-style-type: none"> Respectfully listens, interacts, discusses and poses questions to others during discussions Usually has a positive attitude about the task(s) and the work of others. Performs nearly all duties of assigned team role and contributes knowledge, opinions, and skills to share with the team 	<ul style="list-style-type: none"> Has some difficulty respectfully listening and discussing, and tends to dominate or withdraw from discussions Occasionally is publicly critical of the task(s) or the work of other members of the group Performs a few duties of assigned team role and contributes a small amount of knowledge, opinions, and skills to share with the team 	<ul style="list-style-type: none"> Has great difficulty listening, argues with teammates, is unwilling to consider other opinions, or separates from group Impedes group from reaching consensus; is often negative and publicly critical of the task or the other members of the group Does not perform any duties of team role and does not contribute knowledge, opinions or skills to share with the team
Creativity & Innovation	<ul style="list-style-type: none"> Usually has several ideas rather than only one Can shift thinking and take another point of view or consider from different cultures and perspectives Enjoys new ideas and can easily construct ideas Goes beyond the assigned tasks by expanding ideas and adding details Continually explores materials that are provided and seeks other materials Readily moves from concrete to abstract thinking and from general to specific concepts. Does not show fear of making mistakes or concern about disapproval of others 	<ul style="list-style-type: none"> Usually has at least one innovative idea about a task Can shift thinking to another point of view with encouragement to do so Enjoys new ideas and can create, make up, and construct ideas when encouraged Usually completes the assigned tasks as instructed and does not expand ideas or details, but can do so with reminders Shows capacity to move from concrete to abstract thinking and from general to specific thinking Needs reminder about mistakes being ok 	<ul style="list-style-type: none"> Will express opinion with encouragement, though rarely unique Uses templates or examples provided for task or takes lead from a classmate Has difficulty shifting to another point of view Needs a great deal of encouragement to expand ideas or details Struggles to move from concrete to abstract thinking Shows some fear of making mistakes and concern about what teacher and peers think 	<ul style="list-style-type: none"> Shows no evidence of shifting thinking to others' points of view Does not expand ideas or details Remains only in concrete and specific thinking Behavior may show overwhelming fear of mistakes or disapproval of others
Communication	<ul style="list-style-type: none"> Frequently voices own opinions and viewpoints to teachers and peers Expresses self fluently and confidently Enables listeners to understand thoughts and also encourages their input Shows equal ease in responding to works of art of diverse media Uses vocabulary appropriately and consistently to express ideas and support claims Listens to, respects, and builds on peers' viewpoints 	<ul style="list-style-type: none"> Can express self fluently but not consistently confident in doing so Can express self so others understand; may not encourage others' input May have greater confidence in responding to particular types of media Uses relevant vocabulary sporadically Listens to and respects others; does not build on their viewpoints without encouragement. 	<ul style="list-style-type: none"> Has difficulty expressing self fluently and lacks confidence in doing so, but will attempt to do so with encouragement May be shy in expressing self but listens to and respects others without building on their viewpoints Shows interest in relevant vocabulary but does not use it appropriately 	<ul style="list-style-type: none"> Does not contribute to full class or group discussions Does not express self to others even with encouragement Does not show interest in learning new vocabulary Does not express interest in listening to others. May act disrespectfully while others express selves

Writing and Performance Skills Rubric

Items/Description	Level 1 Beginning	Level 2 Developing	Level 3 Accomplished	Level 4 Exemplary
<p>Poem: Standards for Writing Grades 6, 7, 8 Text Types and Purposes: CCSS ELA-Literacy W6.1- W6.3, W7.1-7.3, W8.1-8.3 Research to Build/Present Knowledge: CCSS ELA-Literacy W6.8-W6.10, W7.8-7.10, W 8.8-10</p>				
Use of language	The poem uses simple and/or inappropriate vocabulary, no figurative language.	The poem uses appropriate vocabulary, but the use of figurative language is awkward and/or detracts from the content and meaning of the poem.	The poem uses appropriate vocabulary and displays a natural and imaginative use of figurative language in support of the content and meaning of the poem.	The poem uses well-developed vocabulary; the use of figurative language is compelling and enhances the content and meaning of the poem.
Communication of idea and point of view	The writing does not communicate a main idea or subject; there is no evidence of the author's interest in the subject and there is no distinct voice and/or point of view or clear purpose to the poem.	The writing communicates a main idea or subject; the authorial viewpoint is indistinct, and the writing presents little evidence of the author's interest in the subject; the purpose to the poem is unclear.	Writing clearly communicates a main idea; there is a distinct authorial voice and/or point of view; the interest that the author has in the subject is expressed through language; and there is a clear purpose to the poem.	Writing excels in communicating a main idea or subject and demonstrates substantial and detailed knowledge on the subject; there is a unique and compelling authorial voice and/or point of view; the author clearly cares about the topic and the writing displays a strong sense of purpose to the poem.
Expression of human emotion and experience	The writing and use of vocabulary is emotionally flat and displays no connection to personal knowledge or experience with the subject matter.	The writing and vocabulary convey little emotion, and the connection to personal knowledge or acquired experience with the subject matter is lacking.	The writing and vocabulary conveys some emotional connection, personal knowledge or acquired experience with the subject matter.	The writing and use of vocabulary clearly conveys a strong emotional connection and personal knowledge or acquired experience with the subject matter.



Items/Description	Level 1 Beginning	Level 2 Developing	Level 3 Accomplished	Level 4 Exemplary
Interpretation: Standards for Speaking /Listening Grades 6, 7, 8 Comprehension and Collaboration: CCSS ELA-Literacy SL 6.1-6.3, 7.1-7.3,8.1-8.3 Language Standards Grades 6: Conventions of Standard English CCSS ELA-Literacy L6.1, 7.1,8.1 Knowledge of Language: CCSS ELA-Literacy L6.3,7.3, 8.3				
Use of body movement, facial expressions, and gestures	The performance contains little or no facial expression, gesture, or movement.	The performance contains facial expressions, gestures or body movements, but they are not aligned with the language of the poem.	The performance contains some facial expressions, gestures, or body movements that are aligned with the mood of the poem at intermittent points during the performance.	The performance contains animated gestures, facial expressions, or body movements that are aligned with the mood of the poem throughout the performance.
Expression of energy and emotion	The student does not display energy; there is no emotion conveyed in the poem's performance.	The student attempts to display energy and emotion in the performance, but the emotion does not match the poem.	The student displays consistent energy in the performance, the emotion is believable and matches the poem.	The student displays high levels of energy in the performance and the emotion expressed is believable and enhances the language in the poem throughout the performance.

Items/Description	Level 1 Beginning	Level 2 Developing	Level 3 Accomplished	Level 4 Exemplary
Performance: Speaking and Listening Gr 6, 7, 8 Presentation of Knowledge and Ideas: CCSS ELA-Literacy SL 6.4, 6.6 SL 7.4, 7.6, 8.4, 8.6				
Voice projection and diction	Student does not perform or performance is inaudible, and/or is monotone throughout.	Student attempts to project voice; however, words are difficult to understand and the poem lacks vocal variety.	Student projects voice, words are clear, and student attempts some vocal variety.	Student projects voice; all words are clear and there is strong vocal variety throughout the performance.
Memorization and improvisation	Student reads from a script, does not look up or use improvisation at any point.	Student has partially memorized the poem, does not attempt improvisation.	Student has fully memorized script, and is comfortable to improvise as needed.	Student has fully memorized script and uses improvisation comfortably and effectively at appropriate points throughout.
Audience awareness	Student displays no awareness or connection to the audience.	Student displays some awareness of the audience but connections are inconsistent.	Student is aware of and connects to the audience through eye contact and holding audience interest through most of the performance.	Student displays keen sense of and connection to the audience by maintaining eye contact and holding audience interest throughout the performance.



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