

Comprehensive Opera-Based Arts Learning and Teaching (COBALT)

Project Narrative

submitted by

The Metropolitan Opera Guild

in Application for U.S. Department of Education

Arts Education Model Development and Dissemination (AEMDD) Grant

March 16, 2010

This is the original project narrative. Over the course of the project, we changed our research partner to Metis & Associates. To learn more about our project, visit our website at www.metguild.org/COBALT

Table of Contents

I. Need for Project	3
II. Significance	7
III. Quality of the Project Design	9
IV. Quality of the Project Personnel	21
V. Quality of the Management Plan	23
VI. Quality of the Project Evaluation	29

1. Need for Project

The Comprehensive Opera-Based Arts Learning and Teaching (COBALT) project proposed by the Metropolitan Opera Guild (the Guild), in partnership with New York City Public School District 15 (encompassing a spectrum of neighborhoods across Brooklyn), offers a model of integrated, opera-based learning designed to improve student achievement across multiple content areas, including language arts and math. Through COBALT, teachers develop the capacity (the confidence, expertise and resources) to design and deliver integrated arts instruction, in collaboration with arts specialists and teaching artists, that leverages student learning across cognitive domains.

(a) Addressing the Needs of Students at Risk for Educational Failure

At first glance, opera may not seem the most likely way to deliver arts education to at-risk students. It is associated with elitism and privilege, viewed by many as an antiquated art form laden with performance (and attendance) stereotypes and myths. However, opera provides a surprisingly effective basis for comprehensive arts learning. Opera is inherently--and deeply--multi-disciplinary, involving music, language, theater, movement/dance, and visual arts. Taken together, these provide multiple points of contiguity, connection and interaction with classroom curriculum. An original musical drama, created by students with guidance from their classroom teacher, arts specialists and/or teaching artists, can take as its source a story, poem, or historical incident drawn from classroom curriculum. Writing libretto or lyrics not only promotes writing skills; it also speaks to character study, poetic expression, connections between text and self, and connections between text and the wider world. Composing music to accompany those words correlates with language skills, but also presents ideal opportunities for building and applying music literacy skills. And when an emphasis is placed on collaborative creation, the process

offers authentic opportunities for teamwork, problem-solving, self and peer reflection, and perseverance. Thus opera, as the simultaneous integration of multiple art forms, provides an effective platform for the transfer of learning across cognitive, socio-personal, and meta-cognitive domains.

In short, opera is an ideal medium for arts integrated teaching and learning. The Guild's opera-based programs have helped PS 10, a K-5 Magnet School of Math, Science and Design Technology in Brooklyn, achieve genuine transformation over the past six years. PS 10 is a Title I school with a population of 650 students, 100% of whom have access to free or reduced-priced lunch; 7% are English Language Learners; 22% are identified as having special needs (performing at or below the 50th percentile on standardized tests); an additional 15% receive At-Risk Services (including academic intervention); and 10% of the students are physically challenged. A barrier-free school, PS 10 includes all of their special-needs students in the general classroom. The student population is 45% Latino, 33% White, 16% Black and 6% Asian.

The Guild's relationship with PS 10 began in 2003 with opera-based work in fourth and fifth grade classes; by 2007-08, these programs permeated the entire school. Students as young as kindergarten now create their own operas – choosing the subject (drawn from classroom curriculum), writing lyrics, composing music, staging scenes, setting movement and dance sequences, and sometimes even designing and constructing sets or props. While kindergartners often choose stories as their source material, second-graders choose work based on social-studies curriculum (the history of New York City), and fifth graders use historical fiction.

Backing this work is the school's strong commitment to professional development. Teachers from PS 10 have participated in the Music-in-Education National Consortium's *Learning Laboratory School Network* and the Guild's *Research and Professional Development*

Opera Institute since 2005. Over the years, these teachers have built their capacity to guide students in the creation of musical dramas, to tie that work to curriculum, and to document the process. As a result, the role of the teaching artist has shifted away from “primary provider” of arts education to a true instructional partner, providing artistic expertise to support and complement the teacher’s own ability to design and deliver ongoing arts instruction. In response to this growing need for a different kind of teaching artist, the Guild is presently conducting an eight-week seminar (funded by the National Endowment for the Arts) to build teaching artists’ capacity to facilitate teacher learning, to collaborate in curriculum design, and to incorporate action research/research-based practices into their teaching. By summer 2010, the Guild expects to employ fifteen Artist Resource Consultants (ARCs) – artists with the capacity to support this deeper work in schools.

In 2006, the first year that the New York City Department of Education began testing students in all grades, 43% percent of students at PS 10 were not meeting state standards of achievement in English/Language Arts. By 2009, that number had dropped to 21%. As a “school of choice” magnet school, PS 10 recognizes a rise in student enrollment (an additional 100 students since beginning their relationship with the Guild) as another indicator of success. PS 10 has experienced a revitalized school culture that has translated to higher student achievement and increased enrollment, and the school leadership credits the arts-integration program as playing a significant role in this transformation.

Building on the success of the Guild’s work at PS 10, COBALT will export a model of comprehensive, opera-based teaching and learning to three public elementary schools, randomly selected from a pool of high poverty, low performing schools within District 15. There are 23 elementary schools in District 15, seventeen of which are designated Title I, and where more

than half the students are categorized as minorities. District-wide, 16% of students are English Language Learners, predominately from Latino or Asian immigrant families.

Working in collaboration with the Music-in-Education Research and Development Center (MIERDC) – a subsidiary of the Center for Music-in-Education who will design and guide the research element of the project – the Guild and District 15 will solicit proposals for COBALT participation from Title I elementary schools. Schools interested in serving as dissemination sites will be required to demonstrate need, a commitment to arts-integration practices as a means for developing literacy skills across multiple content areas, and a willingness to set and meet professional development benchmarks. Amongst schools meeting this criteria, three will be randomly selected as dissemination sites within the grant period; three others will initially serve as matched comparison control schools, and will then become dissemination sites in the years following federal funding.

(b) Addressing Gaps or Weaknesses in Services, Infrastructure, or Opportunities

New York State law mandates that all elementary school students receive instruction in four art disciplines (music, dance, theater, and visual arts), and specifies that 20% of primary and 10% of upper elementary instructional time be spent on arts learning. In 2008-09, only 12% of New York City elementary schools complied with this law. Spending on arts instruction is decreasing as well; last year, schools budgeted \$2.5 million (73 percent) less for arts supplies, materials, instruments, etc. than in 2006-07, and budgets for services provided by arts and cultural organizations declined \$3.7 million (33 percent).

These figures represent a real deficit in arts learning in New York City schools. With heightened emphasis on improving test scores, many principals are de-prioritizing arts-education.

New York City elementary school students, especially those in under-served communities, are simply not receiving the arts instruction they are entitled to.

COBALT can address these gaps through (1) opera-based instruction that incorporates all four art forms, making it cost-effective as well as holistic; (2) building the capacity of classroom teachers to guide students in arts learning, thereby freeing school resources as well as embedding the arts as a key component of classroom instruction; (3) an emphasis on literacy development, curriculum integration, and professional development, which has already shown a positive impact on test scores at PS 10 – arts education need not be sacrificed to the demands of testing; and (4) the dissemination of tools and practices to other Title I schools in Brooklyn, and beyond.

2. Significance

Understanding and teaching for the transfer of learning across cognitive domains, as COBALT envisions, will require articulation of the concepts, skills and processes engaged in the creation of opera. This includes the musical and linguistic domains central to the work; the movement/kinesthetic, visual/spatial, and logical/mathematical domains involved in the work; socio-personal/socio-emotional development, including collaborative learning, dealing with frustration, empathy with others, taking risks, etc.; and meta-cognition (higher order thinking, reflective understanding, self assessment, etc.).

In order to sequence, support and disseminate the COBALT model, Grade-Level Benchmarks for comprehensive opera-based learning will be developed, K-5. These benchmarks will build on national standards in music and language arts; incorporate national standards in theater, dance, visual arts and math; recognize stages of socio-personal/socio-emotional development; recognize levels of cognitive development; and incorporate meta-cognitive processes.

To support application of these opera-based learning benchmarks in other settings, Curriculum Unit Exemplars (that include embedded assessments) will be collaboratively developed, piloted and refined by classroom teachers, artists and arts specialists participating in the project. As well, Grade-Level Assessment Instruments/Protocols for evaluating opera-based learning over time (including portfolio conferencing protocols, for example) will be developed.

COBALT will produce a Process Model for Building Teacher Capacity in research-based arts education, to include: arts content and skills (music, theater, dance, visual arts within the context of opera); integrated curriculum design; teaching for transfer strategies; action research methodology (inquiry, action planning, evaluation, reflection); documentation of student work (including digital portfolio processes); and assessment of student learning in the arts.

Finally, participants in the work will establish standards, criteria and rubrics (Quality Indicators) for assessing (1) integrated, opera-based curriculum design; (2) instructional practice; (3) documentation practices; (4) assessment practices (including student outcomes analyses); and (5) teacher professional development design and delivery.

All products and information developed within COBALT will be written and designed in user-friendly formats and will focus on practical applications for classroom use in order to ensure high levels of utility and effectiveness in other sites.

A research-and-assessment team from the MIERDC will also work with the Guild to expand the current repertoire of field-tested assessment tools that identify high-quality music-integrated teaching, as well as student achievement. These will include a new tool to measure the growth of teachers'/teaching artists' knowledge of fundamental concepts and processes shared between arts and language literacy skill development; an expansion of the "Music Literacy Skills Test" (MLST¹) to accommodate a wider range of language literacy intervention outcomes; and

additional assessments tools (such as checklists and surveys developed and field-tested in the planning/piloting phase of the project) to measure the success of the COBALT program.

In addition, the Guild and MIERDC will: publish the framework and guidelines for the COBALT model; prepare documentation of best practices and teaching strategies; and maintain a directory of all project products for ongoing reference by participants, external partners, and other educators. These items will assist other schools and districts in understanding the COBALT model and applying it to their sites in the future. These products, information, and other materials will be disseminated through a project website linked to those of the Metropolitan Opera Guild and the Center for Music-in-Education. Dissemination will also include publications in recognized journals such as the *Journal for Music-in-Education*ⁱⁱ or the *Teaching Artists Journal*, and presentations at local, regional, state, and national conferences (such as the American Education Research Association) that focus on expanding knowledge in the field of arts integration as a meaningful strategy for school improvement in language literacy.

3. Quality of the Project Design

The goal of COBALT is to refine and disseminate a model whereby teachers develop the capacity (confidence, expertise, and resources) to design and deliver integrated, opera-based instruction (in collaboration with arts specialists and teaching artists) that leverages student learning across cognitive domains.

The model will be refined at PS 10, a Title I elementary school located in Brooklyn, which lies within New York City Public School District 15, and which has served as a laboratory school for developing the Guild's approach to opera-based learning since 2003. Best practices in professional development, integrated curriculum design, instruction, documentation and student assessment established at PS 10 will be disseminated in three of sixteen other Title I schools

within District 15; three more District 15 Title I schools will initially serve as matched comparison control schools, and then become dissemination sites following this grant period.

Year 1 of the grant will largely focus on refining the model for Comprehensive Opera-Based Arts Learning and Teaching at PS 10. This work will build on the Guild's hypothesis: *If opera exists as the simultaneous integration of multiple art forms, then composing, presenting, viewing and responding (to and through) opera may provide an effective platform for the transfer of learning across domains.* Products to support dissemination of the model (see pages 7-8) will be developed and piloted in this initial year. The PS 10 Research and Sustainability Team (R&S Team), established in 2010 and comprised of at least one teacher per grade level, will continue to spearhead action research methodology at the school, participate in development of the dissemination tools, and serve as mentors to teachers both within PS 10 and at future dissemination sites. Finally, selection of the three treatment and three control schools, as well as initial professional development for teachers at the dissemination sites, will take place in Year 1.

In Year 2, a R&S Team (modeled after that at PS 10) will be established at the three dissemination sites. While all classroom teachers and arts specialists at these schools will receive ongoing professional development throughout the grant period (including cross-site networking opportunities and mentorship from teachers and administrators at PS 10), members of the R&S Team, kindergarten, and third grade teachers will receive more intensive instructional support in grant Year 2. Formal data collection will take place across all treatment and control sites, drawing large sample/high intensity data from kindergarten and third grade classes. (Other classes will contribute small sample/low intensity student data.)

Year 3 will bring increasingly differentiated professional development for teachers, as grades one and four join grades K and three in receiving intensive support, and then also

contribute large sample/high intensity student data to the research study. While Year 4 eases back on in-class support for kindergarten and third grade teachers, it will bring increased professional development for grade two and five teachers, who then contribute large sample/high intensity student data as well. Overall, teachers will receive two years of intensive professional development, followed by one year of less intensive support designed to reinforce and stabilize teaching practice. In contrast, all members of the R&S Team will receive intensive professional development throughout the entire grant period. The goal is to empower and enable a cadre of teachers at each site to serve as grade-level experts to support the work of their colleagues. In Year 5 (following federal funding), grade two and five teachers at the treatment schools will continue with a second year of intensive professional development. Other teachers from the treatment schools will begin serving as mentors to teachers in the grant's control schools, who then begin implementation of the COBALT model.

(a) Extent to which the design reflects up-to-date knowledge from research & effective practices

COBALT is built upon practices developed by the Metropolitan Opera Guild, both at PS 10 and at other schools; the collaborative efforts of the MIENC and the Music Center: Performing Arts Center of Los Angeles County (presided over by Larry Scripp and Denise Grande, two of COBALT's principalsⁱⁱⁱ) at Julia B. Morrison Elementary School in Norwalk, California; and researchers examining the arts as a platform for the transfer of learning across domains.

The *Champions of Change Report* (Fiske, 1999), provides evidence that (a) academic achievement is linked with participation in music programs (controlled statistically for family income—Catterall, *ibid.*); (b) multiple disciplinary arts programs, such as authentic opera-based education, demonstrate a strong link between music-based arts activities and higher order thinking skills (Wolf, *ibid.*, which uses the Guild's Creating Original Opera program--a

forerunner to COBALT--as its research model); and (c) multivariate longitudinal studies of schools that incorporate the arts across the curriculum find strong, positive, and ubiquitous evidence for transformations in school teaching practices, professional development of teachers, and academic performance (Burton, Horowitz, Abeles, *ibid.*).

The *Critical Links Research Compendium* (Deasy, 2002) summarizes research that shows music, drama, and multiple arts programs can be linked with cognitive and social outcomes that demonstrate learning transfer across disciplines (Catterall, *ibid.*). In *Third Space: When Learning Matters* (2005), Deasy provides a specific framework for investigating the essential role of arts and arts-integrated learning in public schools. According to Deasy and his colleagues, it is the complexity and demands of developing arts learning skills that transform students' learning capacities in other domains.

While Nick Rabkin (2004) reports in *Putting the Arts in the Picture: Reframing Education in the 21st Century* that learning transfer occurs in arts integration, a conceptual framework for learning transfer will also be pursued in this project. Teaching for Transfer (Perkins & Solomon 1988, Fogarty, Perkins, Barell 1992) will frame the differentiation between arts-integration practices based on similar contexts (e.g., reading from left to right, counting) and problem-solving tasks that demand reflective abstraction of "fundamental concepts" shared between music literacy and language literacy (e.g., order, pattern, phoneme awareness, segmentation, auditory discrimination, inference). Teaching for Transfer strategies (modeling, bridging, generalizing concepts, using analogies, parallel problem solving, etc.) will be designed into all of COBALT's curricular and assessment practices.

Several studies suggest that explicit attention to teaching for transfer produces stronger results than do studies conducted without this concern. COBALT dissemination schools will

contribute practitioner research to specify how links can be best and most consistently achieved through professional development for elementary-school classroom teachers and arts specialists.

Adaptive Expertise (Swartz, Bransford and Sears 2005) will also be used as a lens into how the arts enhance or inform math and language literacy achievement. In the COBALT approach, musical literacy develops through immersion in creative application and critical reflection. As creativity is fostered in balance with building expertise in music literacy skills (text setting, music reading, musical analysis, performance critiques), a condition of “adaptive expertise” provides a wider range of learning transfer and application to language.

Finally, findings reported in *Third Space* will serve as guidelines for analyzing changes in school culture at the dissemination schools. Survey results will be analyzed for increases in teacher satisfaction and parent involvement, and professional development outcomes that indicate what Deasy calls a “renewed sense of students belonging with school and among community.” In the student performance data, arts-enhanced literacy processes will have to work for all students’ benefit, especially those who have difficulty engaging in the conventional teaching of language literacy skill development.

(b) Extent to which the proposed project is part of a comprehensive effort to improve teaching and learning and support rigorous academic standards for students

Recent studies indicate that teachers who integrate the arts into their teaching practices undergo positive changes in their attitudes towards their work, including increased enthusiasm for and commitment to teaching (Stevenson & Deasy, 2005^{iv}). Multidisciplinary arts instruction provides an ideal environment for teachers to collaborate with colleagues from other disciplines, artists, and other arts providers in ways that improve school climate and performance (Burton, Horowitz, & Abeles, 1999^v).

COBALT is a whole-school, collaborative, professional development model that translates research in arts learning into practices that enhance students' literacy across content areas. It is also an ongoing, multi-year approach that involves all classroom teachers, arts specialists and administrators at every site. Whole-school implementation is rolled out in phases, and teacher professional development (facilitated by Guild Artist Resource Consultants, see page 5), is fostered through a reiterative cycle of co-planning instruction, watching it modeled with students, co-teaching, and observation/ feedback on practice. This is carried out through a sequence of week-long summer instruction, followed by three-to-four full-day sessions scheduled throughout the school year, and complimented by consistent in-class support from teaching artists and/or arts specialists. The content addressed in these sessions is scaffolded over time; differentiated to address the spectrum of teacher comfort, prior knowledge, and experience in arts instruction; and grounded in arts content and skills (to include grade-level benchmarks for opera-based learning developed in Year 1 of this project), integrated curriculum design, teaching for transfer strategies, action research methodology, documentation of student work, and assessment of student learning in the arts. Conceived as a collaborative leadership model based in action research, COBALT encourages all teachers and administrators to be continually engaged in improving curriculum, teaching practice, assessment systems, and student learning through a dual (cross-sectional) longitudinal cohort cycle (Year 2: grades K and 3; Year 3: grades 1 and 4; Year 4: grades 2 and 5).

(c) Extent to which the project builds capacity & yields results beyond the period of assistance

The following five-year timeline indicates how capacity will be built over time, and identifies anticipated results throughout and beyond the grant period:

YEAR 1 (2010-2011)

Project Objective 1: Refine Opera-Based Learning Model at Demonstration (Laboratory) School

Program Design Action Points	Capacity Building Strategies/Results
Full-day, grade-specific professional learning in action research methods, supported by ongoing curriculum & assessment planning	Build capacity of teachers at PS10 to mentor/model action research processes in a data rich, opera-based learning context
Monthly meetings of the R&S Team (comprised of 1 teacher per grade level, 2 instructional coaches, 2 arts specialists, a special education teacher, the technology specialists, arts coordinator and principal)	Build expertise within a cadre of teachers to spearhead action research methodology that will 1) improve student learning in and through the arts, and 2) produce data and/or evidence that will inform and guide future opera-based teaching and learning
Opera-based learning for all students (K-5), supported by Artist Resource Consultants	Formulate/ pilot grade-level benchmarks for opera-based learning, based on national standards
Opera-based learning curriculum units	Develop Curriculum Unit Exemplars, that incorporate MIENC frameworks, adapted performance tasks, and rubrics into all units
MIENC workshops/ conference calls to support teachers/ teaching artists in developing, piloting and validating opera-based learning assessment instruments	Develop and pilot assessment instruments, drawing on music & language arts standards, and domains both inside and outside the context of opera learning processes
Student work samples and digital portfolios to document arts learning	Establish protocols & criteria for creating student work digital portfolios in the context of opera-based learning
Quality indicators (standards, criteria and assessment rubrics) for curriculum design, teacher practice, documentation, assessment	Codify all instruments and translate into SMART objective format to create sequential program benchmarks for program quality;

practices, student outcomes analyses, and professional development	Create new capacities to measures elements of opera-based learning outcomes
Assessment instruments/ assessment plan for review by an Internal Review Board (IRB)	Create standardized test and performance assessment instruments batteries in arts and arts integrated learning; Student, teacher and parent surveys to capture the scope and sequence of opera-based learning and its relationship to other school achievement indicators

Project Objective 2: Identify Treatment (Dissemination) and Control (Comparison) Schools

Program Design Action Points	Capacity Building Strategies/Results
Create and distribute COBALT RFP for high poverty, low performance schools	Establish criteria for Dissemination and Control school participation in the experimental study
Select Dissemination and Control Group schools from a larger pool of schools that pass RFP criteria from within (and outside of) District 15, as needed	Of those that qualify for school selection, three are randomly selected for immediate program treatment; three schools that match demographic and achievement profiles of the treatment schools are chosen randomly as control group comparison schools
Project orientation for treatment schools	Provide context for project and begin to build partnership with & among participating schools
R&S Teams at treatment schools	Identify at least one teacher per grade level from each treatment school to participate on a R&S Team to lead action research methodology that will 1) improve student learning in and through the arts, and 2) produce data and/or evidence that will inform and guide future opera-based teaching and learning at the school

YEAR 2 (2011-2012)

Project Objective 1: Begin Program Implementation at Treatment Schools

Program Design Action Points	Capacity Building Strategies/Results
Summer professional development for R&S Teams from treatment schools (including leadership support)	Treatment schools develop point of departure curriculum examples with embedded assessment tasks
Intensive professional development for R&S Teams, grade K & 3 teachers, and arts specialists from treatment schools	Teachers meet benchmarks for preparing and implementing full opera-based learning program to two student grade level cohorts
Draw on expertise of administrators/ teachers at laboratory school as mentors for administrators/ teachers at treatment schools, particularly those in the grade K & 3 cohort	Build capacity of leadership teams in treatment schools through professional development exchange sessions focused on action research based documentation, assessments and teaching for transfer practices
Initiate professional development for all other teachers at treatment schools	Teachers prepare to sustain opera-based learning for students in these initial K&3 cohorts in following years

Project Objective 2: Begin Formal Data Collection at Demonstration and Treatment Schools

Program Design Action Points	Capacity Building Strategies/Results
Demonstration School – data samples from students in all grades, with a large sample emphasis in grades K & 3	Collect survey and observation data (school culture, teacher/ student attitudes) and student performance and standardized test data (math, language arts and music); Identify best practice exhibits of curriculum design, student work, and COBALT Digital Portfolios; Pilot digital portfolio conference practices

Treatment Schools – data samples from students in all grades, with large sample student work/ test data for grades K & 3 and small sample student data from other grades	Establish baseline data collection, including teacher and student attitude surveys, observation data, student performance in opera-based learning and standardized test score data in math, language arts and music
Control Group Schools – survey data and standardized student performance data	Establish baseline data collection, including teacher and student attitude surveys, observation data, standardized test score data in math, language arts and music

YEAR 3 (2012-2013)

Project Objective 1: Continue and Deepen Program Implementation at Treatment Schools

Program Design Action Points	Capacity Building Strategies/Results
Draw on expertise of administrators/ teachers at laboratory school as mentors for teachers at treatment schools, particularly those in the grade 1 & 4 longitudinal student cohort	Build capacity of teachers in treatment schools through continued professional development exchange sessions focused on action research based documentation, assessments and teaching for transfer practices
Differentiated professional development for all teachers in treatment schools, with intensive support for R&S Team, grades K&3 and the grade 1&4 longitudinal student cohort	Continue mentorship and training for all teachers in order to meet criteria for successful opera-based teaching practices and action research-based documentation and assessment

Project Objective 2: Complete Data Collection at Demonstration, Treatment, Control Schools

Program Design Action Points	Capacity Building Strategies/Results
Demonstration School – continue collection of student data samples (all grades), with large sample emphasis in grade 1&4 longitudinal student cohort	Compare data with respect to baseline grade level benchmarks; Collect survey and observation data (school culture, teacher/ student attitudes), and student performance and

	<p>standardized test data (math, language arts, music);</p> <p>Identify best practice exhibits of curriculum design, student work, COBALT Digital Portfolios, and digital portfolio conference practices</p>
<p>Treatment Schools – continue collection of survey data and small sample student data from all grades, with large sample student work and test data for grade 1&4 longitudinal student cohort</p>	<p>Compare data with respect to baseline grade level teacher/ student attitude surveys, observation data, student performance baseline for opera-based learning and standardized test score data in math, language arts and music</p>
<p>Control Schools – continue collection of survey data and standardized student performance data</p>	<p>Compare data with respect to baseline grade level teacher/ student attitude surveys, observation data, and test score data in math, language arts and music</p>

YEAR 4 (2013-2014):

Project Objective 1: Complete Program Implementation at Treatment Schools

Program Design Action Points	Capacity Building Strategies/Results
<p>Draw on expertise of administrators /teachers at laboratory school as mentors for teachers at treatment schools, particularly those in the grade 2 & 5 longitudinal student cohort</p>	<p>Continue to build capacity of teachers/ leadership teams in treatment schools through professional development exchange sessions focused on quality of COBALT units, assessments and teaching for transfer practices</p>
<p>Differentiated professional development for all teachers in treatment schools, with intensive support for R&S Team, grades 1&4 and the grade 2&5 longitudinal student cohort</p>	<p>Continue mentorship and training for all teachers in order to meet criteria for successful opera-based teaching practices and action research-based documentation and assessment;</p> <p>Summarize and publish complete K-5 program</p>

	exemplars in a School Digital Portfolio, School Report and Program Evaluation Report
<p>Prepare COBALT Control Schools for program implementation as part of a new phase of Dissemination Schools, extending beyond the scope of AEMDD funding;</p> <ul style="list-style-type: none"> • Orientation for new dissemination schools; • R&S Teams at new dissemination schools 	<p>Provide context for project and begin to build partnership with & among new dissemination schools;</p> <p>Identify teachers to participate on a R&S Team to lead action research methodology that will 1) improve student learning in and through the arts, and 2) produce data and/or evidence that will inform and guide future opera-based teaching and learning at the school</p>

Project Objective 2: Complete/ Summarize Data Collection at Demonstration, Treatment Control Sites

Program Design Action Points	Capacity Building Strategies/Results
Demonstration School collects and summarizes student data samples in all grades, with a large sample emphasis in grade 2&5 longitudinal student cohort	<p>Summarize and compare data with respect to baseline and mid-project grade level benchmarks;</p> <p>Collect survey and observation data (school culture, teacher/ student attitudes) and student performance and standardized test data (in math, language arts & music);</p> <p>Compile best practice exhibits of curriculum design, student work, COBALT Digital Portfolios and digital portfolio conference practices</p>
Treatment Schools collect and summarize survey data and small sample student data from all grades, with large sample student work and test data for grade 2&5 longitudinal student cohort	<p>Summarize and compare data with respect to baseline and mid-project grade level teacher/ student attitude surveys, observation data, student performance baseline for opera-based learning and standardized test score data in math, language arts and music</p>

Control Schools collect and summarize survey data and standardized student performance data	Compare data with respect to baseline grade level teacher/ student attitude surveys, observation data, and test score data in math, language arts and music
---	---

4. Quality of Project Personnel

Denise Grande (Project Director) is the Director of Programs and Strategic Partnerships for the Metropolitan Opera Guild, overseeing K-12 school programming as well as the Guild’s participation in the Music-in-Education National Consortium’s *Learning Laboratory School Network*. With twenty years experience in the field, Ms. Grande has worked with schools, cadres of schools, and school districts to envision and implement quality, comprehensive arts education. Prior to joining the Guild in 2009, Ms. Grande was a long-time staff member at the Music Center: Performing Arts Center of Los Angeles County, where she played a principal role in program leadership, research and development, and design and implementation of new models for arts education. She has designed and directed key projects funded by the National Endowment for the Arts, the California Arts Council, and the US Department of Education.

Larry Scripp, Ed.D. (Principal Investigator), director of the Music-in-Education Research and Development Center, is a music and arts education researcher and innovator whose mission is to ensure that all of our nation’s K-5 students have access to high-quality, comprehensive “music plus music integration” programs. His strategy for achieving this goal is to build regional networks of Music-in-Education Learning Laboratory School programs as teacher training, demonstration and research sites that will support and sustain dissemination of research-based practices. A former composer, conductor, and performer Dr. Scripp has been a researcher for Project Zero at Harvard University’s Graduate School of Education; founding Research Director of the Leonard Bernstein Center for Education Through the Arts and Founder

& Co-Director of a Massachusetts State Charter Laboratory School for early learning through music. Dr. Scripp has lectured and published internationally on the essential role of music in education. His most influential writings include his essay on music and learning in the *Critical Links Compendium* (see aep-arts.org), innovation in research-based music education practices (*International Handbook on Innovation*, Elsevier Science Services, Pergamon) and his contributions as Executive Editor of the *Journal for Music-in-Education*. Dr. Scripp has extensive experience as Evaluator and Principal Investigator for numerous federal grants (4 FIPSE, 3 NEA, 4 AEMDD grants).

David Reider (Evaluator) is Principal of Education Design, an educational consulting firm in Boston specializing in program evaluation for K-12 and post-secondary projects in arts, science, and technology education. Former positions include: Visiting Associate Professor at University of Massachusetts, Boston, where he directed technology learning programs and initiatives; Research Scientist at Boston College Lynch School of Education; Research Scientist at BBN Systems and Technologies.

Margeret Koozer (Project Manager) is the Guild's School Programs Manager, in which capacity she oversees the Guild's opera-based programs at PS 10 and its professional-development programs. She holds a Master's in Music Education from the University of Connecticut, Storrs, and a BA in Music Performance (Voice) and Education from the University of Nebraska, Hastings.

Patrick Keppel (Qualitative Data Specialist) is director of the New England Conservatory Writing Center and editor of the *Journal of Music-in-Education*. As a Guided Practice Consultant and member of the MIENC's Executive Committee, Keppel is responsible

for assisting Learning Laboratory School Network sites in developing proposals for local research, and in writing school reports that describe the results of these research projects.

Randy Wong (Technology/ Digital Portfolio Specialist) is the Information Architect and Director of Documentation Services for the MIENC and has designed, developed, and consulted on digital portfolio practices for several schools and arts organizations.

Fred Sienkiewicz (Statistical Analyst) is a research associate at the Center for Music-in-Education, where he has provided statistical analysis for many of the Center’s projects. He holds a Trumpet Performance major and Computer Science minor from the University of Massachusetts, Amherst, and a Master’s in Trumpet Performance with a Music-in-Education concentration from the New England Conservatory.

In addition to the above, the Guild will hire a Grant and Documentation Coordinator. As an equal-opportunity and diversity-friendly employer located in New York City, the Guild will make sure that any hiring for the project includes outreach to underrepresented groups.

5. Quality of the Management Plan

(a) adequacy of management plan to achieve objectives of the project on time and within budget, including clearly defined responsibilities, timelines & milestones for accomplishing project tasks

COBALT Management Plan Flow Chart

Major Tasks	Years				Benchmarks for Accomplishing Tasks	Leadership Responsibilities
	1	2	3	4		
Program Component 1. Development of Tools and Resources						
Prepare and support mentorship team from demonstration site to	X	X	X	X	Evidence of high quality opera-based teaching practices, incorporating action research-	Project Director, Program Manager, ARCs, Consultants,

support work in dissemination sites					based documentation and assessments	PS 10 R&S Team
Grade-level benchmarks for opera-based learning	X	X			Opera-based learning benchmarks reflect national/state standards in the arts and language arts; pilot benchmarks in classrooms	Project Director, Consultants, ARCs, R&S Team
Curriculum Unit Exemplars	X	X			Evidence of high-quality integrated curriculum units, with criteria for performance tasks and rubrics	Project Director, Project Manager, Consultants, ARCs, R&S Team
Assessment Instruments	X				Multiple measures assessing domains inside/outside of opera learning processes are created	Principle Investigator, MIERDC Staff, Project Director
Music Language Skills Test (MLST)	X				Twelve artists trained and practiced in administering and scoring music assessment	Principle Investigator, Project Manager
Digital Portfolios	X	X			Establish protocols and criteria for creating student digital portfolios in the context of opera learning processes	Principle Investigator, Digital Portfolio Spclst, Documentation Coord
Quality Indicators	X	X			Codify all instruments and create sequential benchmarks for program quality	Principle Investigator, MIENC staff
Assessment Plan	X				Tools are developed and	Principle Investigator

					presented for review by an Internal Review Board (IRB)	
Major Tasks	Years				Benchmarks for Accomplishing Tasks	Leadership Responsibilities
	1	2	3	4		
Program Component 2. Professional Development						
Develop leadership and expertise within R&S Teams at Treatment Schools		X	X	X	Evidence of growing capacity to deliver high-quality opera-based instruction	Project Director, Program Manager, ARCs, Consultants, R&S Teams, Documentation Coord
Summer Session Professional Development		X	X	X	Effective professional development in opera-based instruction, teaching for transfer, action research, and student work documentation	Program Manager, ARCs, Consultants, Project Director
Grade-level professional development for teachers at dissemination sites		X	X	X	Effective peer-professional development in opera-based instruction; teacher for transfer, action research, and student work documentation	Program Manager, ARCs, R&S Teams, Project Director, Documentation Coord
Differentiated prof dev for all dissemination teachers, intensive support K&3		X	X		Evidence of high-quality integrated curriculum units and instructional practice	ARCs, Teachers, Program Manager, Grant Coordinator
Differentiated prof dev for			X	X	Evidence of high-quality	ARCs, Teachers,

all dissemination teachers, intensive support 1&4					integrated curriculum units and instructional practice	Program Manager, Grant Coordinator
Differentiated prof dev for all dissemination teachers, intensive support 2&5				X	Evidence of high-quality integrated curriculum units and instructional practice	ARCs, Teachers, Program Manager, Grant Coordinator
Major Tasks	Years				Benchmarks for	Leadership
	1	2	3	4	Accomplishing Tasks	Responsibilities
Program Component 3. Data Collection						
Longitudinal data collection focused on grades K and 3		X			K, 3: large sample/high intensity Other grades: small sample/ low intensity large sample=9 students/class small sample=6 students/class	Teachers, ARCs, Documentation Coord, Principals
Longitudinal data collection focused on grades 1 and 4			X		1, 4: large sample/high intensity Other grades: small sample/ low intensity	Teachers, ARCs, Documentation Coord, Principals
Longitudinal data collection focused on grades 2 and 5				X	2, 4: large sample/high intensity Other grades: small sample/ low intensity	Teachers, ARCs, Documentation Coord, Principals
Music Language Skills Test		X	X	X	MLST administered to students designated in large sample grps	ARCs, Grant Coordinator
Collect teacher/ student survey & student data from control schools		X	X	X		MIERDC staff

Major Tasks	Years				Benchmarks for Accomplishing Tasks	Leadership Responsibilities
	1	2	3	4		
Program Component 4. Action Research Documentation & Assessment Process Outcomes						
Develop and monitor collaborative action-research based studies K & 3 teachers		X	X	X	Dissemination teachers maintain records and analyses of benchmarked goals and their successes for team review	R&S Team, K and 3 teachers, ARCs, Documentation Coord
1 & 4 teachers			X	X	Same as above	Same as above
2 & 5 teachers				X	Same as above	Same as above
Cross-school exhibition of student/teacher/artist work		X	X	X	Exhibition reflects quality of opera-based arts teaching & learning across schools	R&S Team, Teachers, ARCs, Students
External evaluator presents findings to project schools	X	X	X	X	Timely program modifications are made based on findings	External Evaluator
Publications (print and online) documenting the impact of the project				X	Teacher, student, and artist products reviewed and disseminated	Teachers, Students, Documentation Coord, ARCs, MIERDC staff

(b) Extent to which time commitments of the project director, principal investigator and other key project personnel are appropriate and adequate to meet the objective of the project

The Guild, in collaboration with PS 10 and the dissemination schools, will build a collaborative team to manage the project at the ground operations level. The Guild, with guidance from the MIERDC, will facilitate professional development, lead action research documentation processes, oversee literacy learning residencies, and administer assessments. The Guild will have

primary responsibility for providing management support to ensure rigorous implementation and well-coordinated work of the evaluation team.

- Project Director: Denise Grande, Metropolitan Opera Guild (20% time); overall project management
- Project Manager: Margeret Koozer, Metropolitan Opera Guild (25%); professional development design and delivery
- Grant and Documentation Coordinator (to be hired) (100%); administration, logistical support, documentation and data collection
- MIERDC Consultants: Dr Larry Scripp, Principal Investigator, oversight of research design, assessment instrument building, data collection/data analysis (minimum 2 full days/month all year); Randy Wong, Digital Portfolio Specialist, professional development/ project support in all aspects of digital documentation (minimum 2 fulls days/month during the school yr); Patrick Keppel, Qualitative Data Specialist, interview data collection, qualitative analysis and field reports (minimum 2 fulls days/month during the school year); Fred Sienkiewicz, Statistical Analyst, assessment instruments, data analysis and displays, statistical reports .(minimum 2 fulls days/month during school yr)
- Outside Evaluation Team: David Reider (Education Design, LLC): External program evaluation data collection and reports

(c) adequacy of procedures ensuring feedback & continuous improvement in project operation

One of the COBALT management team's primary responsibilities will be to monitor and guide program effectiveness. As COBALT is grounded in collaborative, action-research processes, ongoing data and reflection will continually inform program outcomes. Feedback will be gathered informally through frequent school visits by program staff, monthly meetings with teachers and

artists, and ongoing online data collection (blogs, website development and e-mail discussions). In addition, digital portfolio technology will be used to organize program development outcomes and make products accessible to all project stakeholders. Data collection and analysis from the research and evaluation team will guide program improvement through formal reports to include analysis and summaries of surveys, interviews, professional development meetings and workshops. These reports will be created in time to provide formative assessment and inform ongoing improvement of the model development and dissemination.

6. Quality of Project Evaluation

a. The extent to which the methods of evaluation include the use of objective performance measures that are clearly related to the intended outcomes of the project and will produce quantitative and qualitative data to the extent possible.

The proposed Project is by design committed to investigating the improvement of student and school performance through the systemic collection and rating of teacher surveys and interviews, teacher work samples in their professional development portfolios, sample student work, and test data from its demonstration, dissemination, and randomly selected control group schools.

A major product of this project is the creation of a digital portfolio integrated database system that will allow for the tracking of demonstration and dissemination school performance in seven dimensions: (1) curriculum design; (2) curriculum implementation benchmarks; (3) systemic documentation of student work; (4) rigorous and multiple forms of assessment for student learning outcomes; (5) ratings of teacher training and (6) professional development outcomes; and (7) evaluation of program development data and student learning outcomes in relation to school improvement plans.

By design, the general importance and magnitude of the results from COBALT will be gauged by the extent to which demonstration and dissemination sites (a) use arts-integrated teaching and learning aligned with national standards as a strategy for enhancing all students' understanding of literacy in music, math, and language; (b) function as research data collection centers that provide teacher survey data, program development, and dissemination models; (c) provide common assessment instruments designed for tracking literacy skill development in music, math, and language arts in grades K-2 and grades 3-5; and, (d) produce meaningful effects on student achievement and teacher performance.

Outcomes Linked with Phases of the Project

The structure and timetable of this project are linked explicitly to its evaluation plan as summarized in the paragraphs below:

Year One: Model Development Phase. The measurable outcomes across the project will document in Year One are: (a) changes in teacher attitudes and practices based on pre-post teacher survey data and a report of teacher professional development outcomes based on sample teacher portfolios; (b) changes in student performance measured through pre-post tasks evaluated through scoring rubrics developed as part of project units; (c) changes in student music learning based on pre-post assessment of student performance on standardized tests of music literacy skill development (starting with the adaptation of the MLST); and (d) end-of- year performance on standardized language literacy and math skill development test inventories, established for a 3 grade level (K-2) demonstration-school cohort. In addition, new assessment instruments will be developed by the project professional development and research team to reflect student performance on interdisciplinary tasks (such as text setting problems, or musical analysis) that

inherently involve more than one domain-specific set of literacy skills for problem solving tasks. The project professional development team will also function as an agent for conducting formative assessment of the demonstration school teacher attitudes and practices.

Years Two-Three: Model Refinement, Performance Benchmark and Dissemination (Treatment School) Phase. Evaluation of this phase of the project will be summarized in a revised set of teaching and assessment materials and practices based on longitudinal analyses of surveys, interviews, and student work samples focused on the dissemination of the program to Title I schools. Analyses of student cohort data will be based on assessment instruments and standardized test scores from multiple grade level music, math, and language literacy assessment inventories as initiated in Year One. Grade Level Benchmarks for domain-specific literacy scores and analyses of their interaction across domains (correlation and regression analyses) averaged among the dissemination schools will be reported annually. The project professional-development team will continue to function as an agent for conducting formative and summative assessments of the demonstration site teacher attitudes and practices.

Year Four: Final Cycle of Project Model and Dissemination (Treatment School) Process and the Experimental–Control Group Comparison Study. The final year of the project study will result in a summative assessment of dissemination school practices, teacher attitude surveys, and a report of an experimental study that will compare results based on common outcome measures of the program between the dissemination sites and the control schools. Final statistical reports will look primarily at comparisons between the dissemination schools' data based on results from standardized tests of early and late elementary student music, math, and language literacy skill development.

Informing the Project Assessment Processes: Data Samples from a Pilot Case Study by the Music-in-Education Research and Development Center

Data displays presented below from a recent case study of a public elementary school in Vista, California conducted by the NEC Research Center (precursor of the Music-in-Education Research and Development Center) will serve as a preliminary study for the Project. The Music Ventures program now being disseminated in the MIENC provides a ‘point of departure program’ for the project because of its focus on both standards-based music literacy instruction and its intended integration and reinforcement of language literacy development.

Data Sample 1: This first sample demonstrates how the Project will display Common Pre-Post Measures of Music Literacy Skill Development as evidence of music literacy learning in all demonstration, dissemination, and control group schools. The Project will test all schools for evidence of statistically significant growth in music literacy skill learning for all students, based on an emphasis on music-integrated instruction by highly qualified music teachers and on a professional development program which will provide critical areas of support for classroom teachers providing the program.

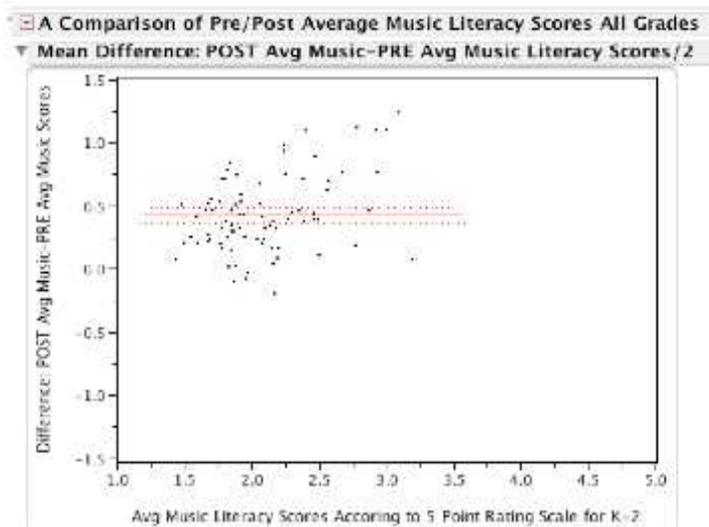


Figure 1: Example Data Display Template for all Schools in the Project: Differences in pre-post Averaged Music Literacy Skill Ratings (within a 5 point scale). These data represent significant student music learning gains in music and music-integrated literacy learning outcomes within a single academic year [n = 87; mean gain is .43 out of a 5 point scale; t-ratio + 13.49 p < .0001].

The scatterplot example above, based on pre-post data collected at a case study elementary school by the NEC Research Center, indicates performance differences in music literacy skill development scores in grades K-2 (based on data collected from Music Literacy Skill Test) and will be used as a common measure across the project. The average score gain [the horizontal line on the chart] suggests that student music literacy skills are progressing at a statistically significant rate within the academic year. Collecting common measures of music literacy skills, currently unavailable to school districts but required of all schools in the Project, will provide evidence of high quality standards-based instruction, and this data can be analyzed at a later date in relation to literacy skill development in math and English language arts.

Data Example 2: Qualitative and quantitative data collected across the Project schools will determine to what extent classroom teachers may have different profiles of comfort and success with music-integrated teaching and learning in their classrooms. The chart below displays highly differentiated pre-post gains in teacher survey ratings, indicating individual differences in response to an arts-integration professional development program in terms of understanding and comfort in implementing the program. Analysis of these results collected in the demonstration and dissemination schools in the project can be used to determine to what extent the curriculum and professional development program is an effective intervention for changing the capacity of elementary grade teachers to ‘teach for transfer’ while reinforcing

literacy skills through music skill development. These assessments will be used as formative assessments for teacher participation in the project and for analyzing the relationship between teacher attitudes and skill assessment in conjunction with music literacy skill learning and in conjunction with learning in other subject areas.

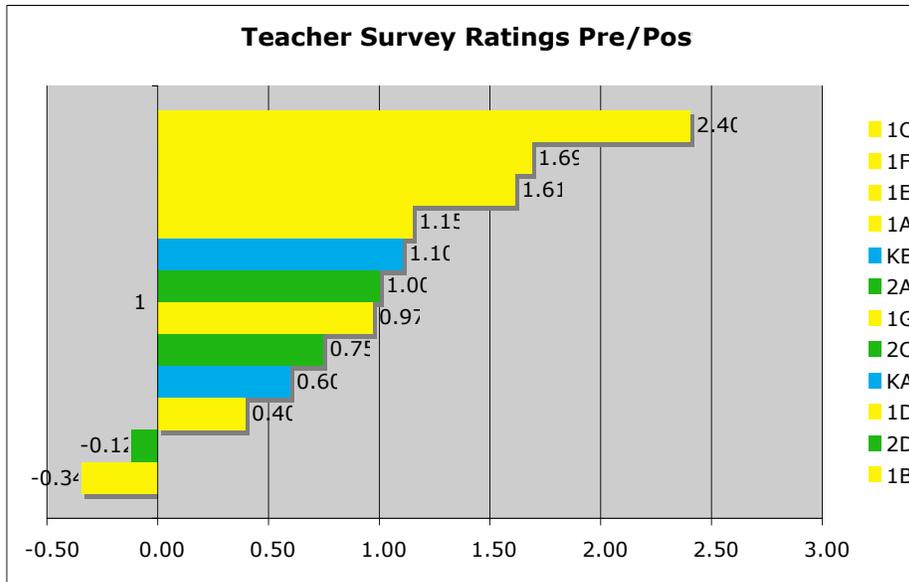


Figure 2: Average teacher survey ratings (four-point scale rubric) displayed here are based on both self-assessment of comfort and familiarity with music and music-integrated learning processes, skills, and teaching strategies, as well as on ratings provided by the professional development leader [Music Ventures Report 2006].

Data Sample 3: In the project, patterns of music and music-integrated literacy skill learning will be compared with a broad battery of indicators of math and language literacy skill learning. The scatterplot below represents a detailed look at the intrinsic and perhaps inextricable link between music and language literacy skills for most K-2 students. These data were gathered in the context of a professional development program that featured teaching for transfer of

fundamental concepts shared between music and language literacy skills. Thus, the statistically significant link in performance data shown here suggests that in grades K-2 a strong relationship exists between music and language literacy skills that may increase over time as a result of further professional development that will be a core feature of the project. More detailed analysis of subskill correlations and stepwise regression tests for the primary factors of association between music and language literacy (e.g., rhythm notation, phoneme segmentation fluency, auditory discrimination, and oral reading skills) will be analyzed as the project proceeds.

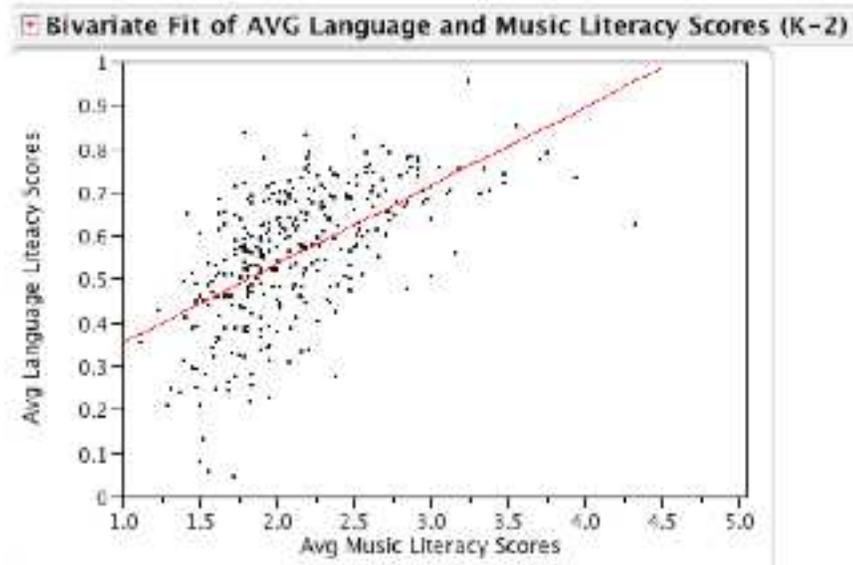


Figure 3: Relationship between Language Literacy Skill Performance (percentile accuracy/fluency rate) based on DIBELS/Bader Test Inventories and Music Literacy Skill Ratings (averaged within a 5 point scale) based on the Music literacy Skills Test developed at the NEC Research Center for all students at the Beaumont Elementary School. These data illustrate a strong initial link between music and language literacy skills in [n=344; $r^2=.35$; ANOVA F-ratio = 184.20 p <.0001].

(b) The extent to which the methods of evaluation will provide performance feedback and permit periodic assessment of progress toward achieving intended outcomes. COBALT is designed as a data-driven project. It begins with research-based curriculum development in a “learning laboratory” demonstration school where formative assessments from teacher survey data and student performance data provide continuous opportunities for feedback on progress toward achieving intended results as well as revisions of practices or products that are not working.

The data collection process planned in the project provides a rich and comprehensive set of mixed methodologies necessary for curriculum development and data analysis. Built into the evaluation design are changes in measuring outcomes that coincide with the evolving phases of the project. The demonstration school model development phase involves careful evaluation of the formation of project curriculum practices informed by the development and piloting of new curriculum and assessment practices and changes in teacher capacities and attitudes toward literacy focused arts instruction and learning integrated with math and language arts. The dissemination (treatment) school phase provides case studies of a partnership approach to replicability of program design informed by ongoing results from overlapping student cohorts. Once the model is fully developed and tested for replicability, an experimental-randomized control group study is implemented in the fourth year of the project to test for differences in literacy skill development in schools matched demographically with the dissemination (treatment) school.

Thus, as indicated previously, the evaluation plan includes, for example, both formative and summative assessments that take place in the context of (a) qualitative assessment of teaching practices through observations and interviews; (b) survey data to capture changes of

teacher and student attitudes toward the program; (c) longitudinal analysis and repeated measures testing of randomized sample student cohorts over four years of data collection (K-3, 1-4, 2-5) in the dissemination schools; (d) measurable outcomes from collaborative professional development and teacher portfolio samples; (e) developmental analysis of standardized music testing held constant across grade level groups (K-2; 3-5), including repeated measures of multiple subskills involved in music literacy (note reading, writing, inference, perception, etc.); (f) parallel developmental analysis of literacy testing held constant across two grade level groups (k-2; 3-5), including repeated and multiple measures of math and language literacy subskills shared with music literacy (decoding, encoding, inference, auditory discrimination, computation, number awareness, pattern recognition, etc.); and (g) the development of new instruments designed to capture performance on problem-solving tasks that involve multiple symbol systems (e.g., setting text to music, analyzing patterns in music, etc.).

The overall research plan will be formulated and implemented by the MIERDC, directed by Dr. Larry Scripp acting as principal investigator. Reports to the DOE on the overall success and challenges of the project will be done by Dr. Scripp; Denise Grande, project director; and David Reider, external program evaluator.

External Program Evaluation

Working closely with the principal investigator, David Reider, principal partner, Education Design, LLC, will lead the external program evaluation efforts. The program evaluation plan will respond to the research efforts presented above providing an ongoing and independent perspective. The evaluation, formative in design with annual summative reporting will consist of three components: 1) program efficacy and design, 2) alignment with research design, 3)

program sustainability. The effort will place all observations and findings within the contexts of *engagement* (school, teacher, student interest), *capacity* (to what extent are the classrooms, schools, able to respond to the project treatment), and *continuity* (what is the probability and what are the indicators of sustainability). Continual feedback (formative design) to the design team is critical to efficiently guide the project, especially during its startup phases, and regular feedback will occur through meetings, conference calls, and site-visits; an integral part of the project in scope and function, the evaluation will be external primarily in the sense of perspective. Reider and Scripp have a shared history collaborating on similar projects for nearly a decade.

Program Efficacy and Design: We will follow program development and implementation and provide feedback on the following: 1) Adherence to plan (timeline, recruitment, classroom activity development and implementation, etc.); 2) Implementation challenges (professional development, teacher participation, school context issues, school response, cultural barriers); and 3) How the research effort informs program development and modifications. Questions include: To what extent is the program performing according to plan?; What are the barriers in each of the design categories?; How are teachers participating as developers?; Is the design and management plan realistic and effective toward achieving program goals? What are the challenges of arts instruction and arts integration instruction using opera as the prime medium; what are the attitudinal shifts necessary to accept and access opera?

Alignment with Research Design: With a significant portion of COBALT devoted to research on practice, content, and conceptual shift ideas about the arts, the program evaluation will help monitor the alignment between the research activities and research plan to insure evolving outcomes are captured, analyzed and necessary research design modifications are made

to best meet the project goals. As a partner working closely with the research team we will provide a) independent and unbiased perspectives on findings, data collection, analysis, interpretation, and instrument development through regular feedback, and b) conduct complementary data collection efforts not contained in the research design.

We anticipate using data collected from surveys, digital portfolios, student work inventory samples, interviews and focus groups, and site observations to analyze and produce annual findings. Questions include: To what extent are the research questions being answered?; To what extent are the tools specifically developed and used in this project reliable, usable, predictive, and scalable? What is the value of these questions (and the treatment) to teachers, students, and schools?; What additional data is not being collected and why?

Program Sustainability: In Years 3 & 4, we will collect data on implementation independence, the ability of classrooms to engage in project activities (opera development and research efforts on arts learning related to opera) with diminished external support from the team. We will be looking for indicators of teacher-driven content modification (adoption), school climate (teacher, administration, and student) interest, arts learning across multiple art forms relevant to opera, and informal professional development (non-project teachers taking interest). Questions include: How do the patterns of COBALT adherence (name or brand recognition as an intervention for arts learning, identity factors at treatment schools, etc.) use change from year to year as support diminishes?; What are the professional development and adoption findings?; What are the outcome gains for students?; What is the school level probability of spreading to other teachers?

We will engage a mixed-method, participatory research design. All interviews will be digitally recorded, transcribed, and analyzed along an emergent dimensional coded schema. Data

will be kept confidential in accordance with the norms of human subject protection. Education Design adheres to IRB protocols of each partner institution and client. All recorded data will be destroyed upon submission of the final report. Summative data will include a comprehensive analysis and result in an annual report. Survey and quantifiable interview data (coded dimensional analysis) will be analyzed using appropriate tests (e.g. t-tests, ANOVA for correlated items, using 5% level of significance).

i Scripp, L. (2000; 2008 version7) *Music Literacy Skills Test*. Research Center for Learning Through Music. Boston, MA: New England Conservatory. Used extensively in several studies including: Scripp, L. and Reider, D. (2007). New ventures in integrated teaching and learning: working toward a model of general symbolic literacy based on the growing understanding of fundamental literacy skills shared between music and language in grades K-2. In Scripp, L., Keppel, P. & Wong, R. (Eds.), *Journal for Music-in-Education*. Boston, MA: New England Conservatory [music-in-education.org].

ii Scripp, L., Keppel, P. & Wong, R. (Eds.), *Journal for Music-in-Education*. Boston, MA: New England Conservatory [music-in-education.org]

iii Scripp, Grande, et al. (2009). *Julia B. Morrison Elementary School Research & Evaluation Report*. [unpublished]

iv Stevenson, L. & Deasy, (2005). "When teaching matters." In *Third Space: When Learning Matters*. Arts Education Partners [aep-arts.org].

v Burton, J., Horowitz, R. & Abeles, H. (1999). "Learning in and through the arts: the question of transfer." In E. Fiske (Ed.), *Champions of Change: The Impact of the Arts on Learning*, 228-257. Washington, D.C.: The Arts Education Partnership and the President's Committee on the Arts and the Humanities.