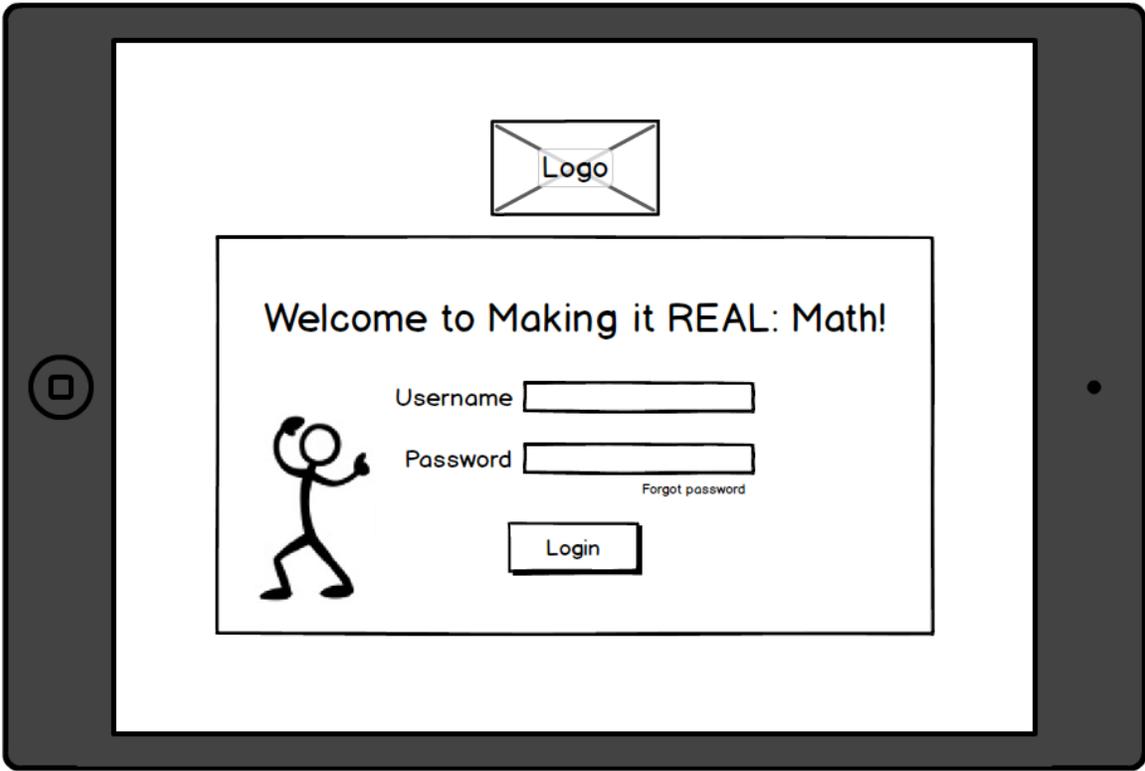


Storyboard Sample #1
User-login



Title Page

DRAMATIC RESULTS
84.351D 2014 Application

Arts in Education Model Development and Dissemination Grant Program
84.351D - 2014 Application

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for Project Narrative

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1. Need for Project: (a) *The extent to which the proposed project will provide services or otherwise address the needs of students at risk of educational failure.*

Making it REAL (Researching, Exploring, Analyzing, Learning): Math is based on evidence of promise from Dramatic Results' (DR) three successful AEMDD projects (2003, 2006 and 2010) that demonstrated statistically significant gains in Title I students' arts knowledge and math achievement¹ and statistically significant gains in teacher self-efficacy for and use of arts-integration in their classrooms.² In addition, Dramatic Results has been successful in sustaining and disseminating our AEMDD programs, including \$520,000 in non-federal and district funds raised (to date) for the ongoing (2011-2014) implementation of *Math in a Basket* (MIAB; AEMDD 2003, 2006) into a variety of settings and populations (e.g., Native American Youth in Alaska, mild/moderate special education elementary students in Long Beach, and professional development component for a museum exhibition on Basketry of Yosemite at the Autry National Center in Los Angeles and MIAB workshops for K-12 Alliance and Long Beach City College). All of these demonstrated pre-post gains in students' arts knowledge and math achievement.³

The need for ***Making it REAL: Math (REAL)*** is based on: (1) the need for evidence-based curricula integrating the arts and technology with scope and sequencing into core curricula to achieve Common Core Standards (CCSS); (2) the need for high-quality professional development integrating the arts and technology for in-service teachers to prepare their students to meet the demands of the 21st century workplace; and (3) requests from Long Beach Unified School District (LBUSD) to Dramatic Results to continue a 22-year partnership to help them achieve their educational goals for students in their lowest performing Title I elementary schools.

Making it REAL: Math (REAL) is multi-disciplinary program, blending elements of traditional art, math, language, social studies, and iPad technology to help students achieve grade-level, academic CCSS. This arts-integrated project is designed specifically to blend

traditional art forms (basketry, visual arts) with a digital tool (an iPad-based program) to connect the old with the new. Ultimately, students will use technology based-methods to research, explore, analyze and learn— **REAL** —from traditional ways and practices. The proposed project has three goals: (1) increase the integration of standards-based arts education with 4th grade core curricula, primarily math; (2) strengthen standards-based arts instruction; and (3) improve students’ achievement in math and language arts, and skills in creating and responding to the arts, by integrating the arts and newly-developed digital tools. These goals reflect both the Absolute Priority, and the Competitive Priority 2: Technology of the AEMDD program.

DR’s 2003 and 2006 AEMDD *MIAB* programs aligned with National and California (CA) Visual and Performing Arts (VAPA) Standards and met NEA best practice recommendations for responding to new standards and expectations. Across the past decade, *MIAB* has been implemented with more than 4,000 elementary/middle school students and 115 classroom teachers, in twelve Title I elementary schools in CA and Alaska, with promising results. While our 2003 and 2006 AEMDD projects integrated art with math, DR’s 2010 AEMDD *Write On Arts (WOA)* project integrated visual and performing arts curriculum with language arts while developing a structured professional development model that enabled all participating classroom teachers to increase their knowledge of, self-efficacy for, and enthusiasm to provide arts-integrated instruction.⁴ **REAL** will build on our greatest successes from these previous AEMDD projects (curricula from *MIAB* and PD model from *WOA*) and integrate iPad-based technology to ensure students at risk of educational failure demonstrate significant engagement, self-efficacy and success in both exploring and creating art via traditional hands-on “making” and technology-based research and design. **REAL** will also provide generalist classroom teachers with a proven effective professional development program that will enable them to implement **REAL**, including its requisite art and technology elements, with confidence and efficacy. Based on our

demonstrated track record over the past decade and continuing inquiries from interested schools across the nation, we are convinced that the integration of technology will provide the necessary “launching pad” to disseminate this traditional arts program nationally.

Specifically, **REAL** will address the needs of *students* at risk of educational failure due to three well-documented high-risk factors: (1) demographic, individual and family characteristics; (2) current lack of academic achievement; and (3) varied learning styles. **REAL** will also address the needs of *teachers* to improve their facility with arts-integration and technology.

Demographics. Research has shown that students from disadvantaged families enter school with fewer academic skills than their more advantaged peers, and that these substantial gaps in cognitive and academic competencies persist in later school years.⁵ The adverse effects of a well-documented set of socio-economic, physical, and relational risk factors related to poverty on young children’s lower school readiness skills is robust and have proven difficult to overcome.⁶ The developmental disadvantage of growing up in poverty has been confirmed using large, nationally representative databases (e.g., Early Childhood Longitudinal Study, Kindergarten Cohort; Early Childhood Longitudinal Study – Birth Cohort).⁷ Empirical research has found that early gaps in language, literacy, mathematics and learning skills are persistent. Studies focusing on early achievement have consistently found that if children enter kindergarten lacking requisite school readiness skills, they frequently develop limited academic skills by the end of first grade, and are likely to have lower achievement scores through the end of elementary school.⁸ Specific to the current project, researchers have found that 7th grade math performance is a predictor of math outcomes in high school, and that students who enter middle school on grade level in math tend to stay there.⁹ Preparing students for success in middle school is elemental in preventing four years of frustration and stagnation in high school.

The proposed project will be implemented in 4th grade classrooms in LBUSD. LBUSD is the

3rd largest urban school district in CA and is located in the nation's most ethnically diverse city.¹⁰ Forty-five percent of Long Beach (LB) residents speak a language other than English in the home. LB ranks 26th nationally not only in overall percentage of residents in poverty (25.5%), but 6th nationally on the concentration of the poor into neighborhoods of extreme poverty (8.1%). LB also ranks 3rd nationally in its percentage of children in poverty (33.0%).¹¹ Thirty-two of the 61 elementary schools in LBUSD are Title I sites with more than 35 percent of students from low-income families based on poverty criteria set out in AFDC/CalWorks, and are clustered in the densely populated, inner city area of LB.¹²

Based on 2013-14 LBUSD demographics for these 32 Title I elementary schools, we will randomly select 4 participating and 2 control elementary campuses for this *REAL* project. Beginning with the 2010-11 academic year, budget cuts led to an increase in average 4th grade class size from 30 to 35 students, per classroom. Using these averages and the data on 4th grade LBUSD populations from 2013-14 (140 students per 4th grade level), approximately 560 students will be served with this program each year (a total of 1,680 students over 3 years). Of these 1,680 students, it is anticipated that 64 percent will be from low SES backgrounds and 60 percent will be English Language Learners.

Lack of academic achievement. Research shows that without systematic intervention, children from financially, linguistically, and academically impoverished homes begin school behind their peers, seldom close the achievement gap, and are twice as likely to drop out of school.¹³ The impact of these risk factors is reflected in CA students' scores on the NAEP 4th grade assessment of mathematics. As a whole, CA's students have consistently scored below the national average, with only 25 to 33 percent achieving 'Proficient' or above for the past decade.¹⁴ For those who are 'economically disadvantaged', the percent decreases to 19% in 2013, and by English Language Learner, the percent decreases into single digits (8% in 2013).¹⁵

Looking specifically across LBUSD’s 61 elementary campuses, the annual STAR state achievement test results revealed that 73 percent of students were proficient in mathematics for both 2012 and 2013.¹⁶ However, mean scores among students eligible for free/reduced-price school lunch, a proxy for poverty (and the target population for **REAL**), were 45 points lower than that of students not eligible for free/reduced price lunch. In both 2012 and 2013, the achievement gap between students of high or low socio-economic status (SES) was dramatic—twenty percent fewer students from low SES backgrounds achieved math proficiency. This early achievement gap was not only persistent, it also increased, such that by the end of 8th grade, less than half of the students considered to be from low SES backgrounds were achieving math proficiency (44%) compared 70 percent of their non-low SES peers.

In 2008, LBUSD adopted the *Academic & Career Success Initiative* that aims to provide all students with as many postsecondary options as possible. Based on this initiative, LBUSD had set a goal of having 70 percent of 5th grade students proficient in Mathematics by 2012-13.¹⁷ In 2013, only 51 percent of 5th grade students in Title I schools met this goal.¹⁸ While an overall average of 70 percent is achievable, students in LBUSD’s Title I schools have far to go.

Varied learning styles. Empirical research has documented that children with lower language levels, like those to be served by this proposed **REAL** project, have greater difficulty staying on-task and controlling their behavior during teacher-directed activities than their language proficient peers.¹⁹ Students who learn better by doing rather than listening often have trouble concentrating in class, resulting in disruptive behavior and are quickly labeled “behavior problems”—a downward spiral of self-doubt and low expectations begins. A self-reinforcing negative feedback loop is set in motion with the frustrated child deciding school is a place of failure, reinforcing already powerful feelings of inadequacy.

Teacher training. Whether ‘the arts’ are conceptualized as languages, forms of intelligence,

or learning modalities, most educators agree that the arts engage diverse learners and provide them with opportunities to share what they know.²⁰ Gardner emphasized that art can attract students who have been pushed away from other opportunities for success in school.²¹ Irwin found that art offers students physical, emotional, intellectual and spiritual engagement. When learning through art, students had a greater likelihood of achieving understanding.²² To reach as many students as possible, teachers must incorporate varying teaching techniques and strategies into the classroom.²³ In *REAL*, teaching artists model the various learning modalities inherent in arts integration (see *Bibliographical, et al, p. 69, 7 Critical Elements*), so classroom teachers see that previously disengaged students can focus on a project attentively and appropriately, can learn, and can succeed when art with technology support is integrated into other academic areas.

(b) The extent to which specific gaps or weaknesses in services, infrastructure, or opportunities have been identified and will be addressed by the proposed project, including the nature and magnitude of those gaps or weaknesses.

Four identified weaknesses within LBUSD will be addressed by three goals of the *REAL* project: (1) academic achievement gap; (2) arts-poor environment; (3) limited access to technology at home and at school; and (4) lack of qualified art-specialists and arts-trained classroom teachers.

Academic achievement gap. While the existing effects of poverty on the achievement of LBUSD's students previously presented can seem overwhelming, research indicates these risk factors can be overcome: students who receive systematic instruction from a skilled teacher can increase their core academic skills by 1.5 grade levels in the course of just one academic year.²⁴ In fact, results from earlier *MIAB* projects have shown that treatment students more than doubled the math improvement of control students.²⁵ In art, gains for treatment students were more than 10-times those of control students. The proposed project has a high-probability for replicating—or surpassing—this success because it will be implemented using iPad-based technology to

enable students to research, explore, analyze and learn in new ways. LBUSD administrators have become increasingly more willing to include more innovative curricula and Dramatic Results' has established a trust and enthusiasm from site and district staff by delivering quality arts-integrated programming for more than two decades (*See Resumes and Letters of Support, pp. 2-6, LBUSD*).

Specially Designed Academic Instruction In English (SDAIE) techniques, such as integrating math concepts (measurement, perimeter, volume, surface area) while weaving their own traditional reed basket, helps students decode language as they learn content and demonstrate deeper comprehension. These SDAIE techniques will be enhanced in **REAL** by integrating iPad-based technology so that students can research, explore, analyze and share their learning with their peers with a variety of visual icons and animation to facilitate their imagination and language development. Fourth grade teachers know that the math concepts introduced in this grade (geometry and algebraic formulas) can be abstract and hard to learn. **REAL** permits students to move from the concrete to the abstract: from touching and doing to thinking and connecting. Students learn academic content in a new way. Students analyze visual arts and their baskets according to standards-based math content including geometry, measurement, fractions and decimals to find volume, perimeter and surface area of each project they design. Working collaboratively, students develop skills needed to make finished 2D and 3D products, the ability to appreciate baskets as an art form, knowledge to respond to 3D art and the capacity to discuss this art making—and thinking—with others.

Converting *MIAB* to a digital format will provide on-demand support and feedback, as well as expanded opportunities for exploration, **REAL** is expected to demonstrate even greater gains in students' achievement than documented with prior iterations. Although one overall goal is that **REAL** students will demonstrate a greater increase in the percentage achieving "Proficient" or

above on the CA STAR math tests compared to a control group, an auxiliary goal is that the students who are the most ‘at risk’—lower SES background and ELL—will also demonstrate a greater increase in proficiency. DR’s arts-integrated literacy curriculum *WOA* (AEMDD 2010) has had a statistically significant impact on the achievement of this high-risk group.²⁶

It is important to note here that a set of social emotional skills are common mediating factors in the academic achievement, or lack thereof, of children from poverty, including self-regulation, persistence, resilience, and self-efficacy.²⁷ These skills are currently receiving renewed investigation under the category of ‘grit’.²⁸ Research has consistently indicated that arts integration is valuable for all categories of students (special education, English Language Learners, gifted students, etc.) and can enhance academic performance, particularly among at-risk, inner-city students,²⁹ some propose that art impacts students' emotional and social lives leading to academic gains.³⁰ While seldom explicitly addressed in the school curriculum, researchers have connected art experiences with the key skill "learning to engage and persist"—when doing art, students are more apt to self-reflect and learn from their mistakes.³¹ Art engages students in a "constellation" of learning, from learning how to create and perform art to learning the elements of visual art and principles of design, that interacts in multiple ways with students overall development resulting in improved in attendance, behavior, motivation, and ability to focus that ultimately will increase student academic performance. Previous *MIAB* teachers have observed just this type of social-emotional development: *Students gained significant self-esteem through pushing past the tough parts of the lessons, learning patience when they make mistakes and how rewarding it is to slow down, do careful work, including re-doing some of their work to experience pride in their artwork.*

An arts-poor environment. LBUSD supports the integration of arts into the core curricula, has developed performance standards for the VAPA K-12 based on state and national

frameworks, invested more than \$2 million in arts education materials, and hired a half-time K-12 VAPA Curriculum Leader. LBUSD has partnerships with several community-based agencies who provide arts-based “enrichment” programs to their students, but most are after-school, not aligned to VAPA Standards, nor provide professional development support for classroom teachers. In spite of these efforts, art materials sit in elementary classrooms unopened and unused. Teachers do not integrate arts into curricula nor call the Curriculum Leader for help. The most promising practices effectively integrating art into core curricula are planned collaboratively by those participating in and facilitating that integration.³² DR has a 22-year history of modeling these “promising practices” with classroom teachers in LBUSD.

Whatever the merits of testing as a means of improving basic verbal, writing, reading, and math skills, there can be little doubt that this has led to school environments where "what gets tested gets taught." Arts are seen as "nice extras," but not essential to raising test scores.³³ In 2008, a survey of school superintendents found that 73 percent of the districts had no arts curriculum, 72 percent had no funding for art and fewer than 2 percent of the teachers were highly qualified in the arts.³⁴ The reality of these statistics is particularly visible in LBUSD’s inner-city schools where the economic recession has resulted in the elimination of arts support to elementary schools. While the [Local Control Funding Formula](#) approved by the CA state Legislature in 2013 provides greater flexibility as to how certain state funds are used by local schools—including for arts education—the economic crash of 2008 and its aftermath gutted LBUSD schools so they are putting their resources first to hiring back counselors, nurses, a librarian and technology, not arts education.³⁵ **REAL** enables Teaching Artists, Classroom Teachers, curriculum developers and a team of technology developers to collaboratively integrate art with the core curriculum, thereby bringing art education *back* into the classroom. **REAL** provides multiple years of hands-on training, emotional support and professional

coaching to enable non-art specialists to become comfortable and creative in integrating arts into their classrooms (*see pp. 24-33, Project Design*).

Limited exposure to technology at home and at school. Research has found that students from lower SES background also frequently have less experience with technology, both in their homes and at school.³⁶ **REAL** students will be provided the unique opportunity to utilize iPad-based technology that will allow them to explore academic concepts in math, art, social studies and language arts. Research has shown that when technology is integrated into the content with thoughtfulness,³⁷ students are more engaged and more likely to master the content.³⁸

The goals of **REAL** parallel those of LBUSD’s strategic plan for technology: to provide differentiated, technology-based learning options, supported with a teaching and learning goal to provide technology-enhanced curriculum.³⁹ LBUSD’s Technology Curriculum Leader strives to reduce the widespread use of technology as an expensive piece of paper—worksheets via iPad—and focus on building instructional integration that expands and enhances overall learning. This is exactly what **REAL** intends to do! Also, LBUSD has established a precedent for utilizing iPad-based apps to teach math (ST Math). LBUSD’s strategic plan envisions success as: “Engaging every student, every day, in a linked learning experience.” **REAL** integrates math and art through a digital medium and also requires hands-on art-making skills to create a basket. **REAL**’s *math concepts* translate directly and immediately into something that is tangible, personally meaningful and promotes divergent thinking.⁴⁰

In addition to mastering core academic and art concepts, students in **REAL** will develop proficiency in the technology-based standards commonly termed ‘21st-century skills’⁴¹ and included in the CCSS.⁴² The CCSS prescribe a substantial role for technology in classroom activities paralleling the way that 21st-century workers use technology. Workers routinely utilize technology as they research, collaborate, problem-solve and communicate in their jobs. Thus one

requirement of the CCSS is that all students across grade levels gradually improve their ability to use technology across disciplines. **REAL** intends to integrate and enable students to utilize technology as envisioned in the CCSS, in a format that bridges traditional with new methodology, thereby providing a foundation for technological proficiency to better meet future workplace demands.

Lack of arts-trained teachers. CA has not had art specialists in elementary schools since the passing of Proposition 13 in 1978. Los Angeles County, home of the proposed project district (LBUSD), represents 27 percent of all public school students in the state and presents a dim picture of arts instruction overall: (a) the current ratio of credentialed art teachers to students is 1:1,200; (b) nearly 80 percent of the schools report a lack of instructional time in students' schedules as a barrier to teaching art; and (c) 78 percent of the 82 school districts, including LBUSD, allocate less than 2 percent of their budget to arts education.⁴³ CCSS legislation requires that art be taught as a core curriculum, but the current cadre of teachers lack training in art techniques and the teaching of such. Pre-service teacher training has diminished art to a barely perfunctory position and most teachers are not equipped to develop an arts-rich classroom even *if* the materials were supplied to do so.⁴⁴ Even when administrators 'require' the arts be included in the classroom curricula, teachers resist and seldom do.⁴⁵ The advent and implementation of CCSS has made this situation even worse.

Adding teachers' general lack of arts education knowledge and background to the fact that underprepared teachers are five times more likely to teach in state's lowest achieving schools,⁴⁶ makes it clear that effective professional development will be integral to the success of this project. As one element in the change process, professional development is most effective when ongoing, integrated into the school operations, and built on a theoretical understanding of content and pedagogical knowledge.⁴⁷ **REAL** will replicate the gradual release of responsibility that was

successfully utilized in the *WOA* 2010 AEMDD project, whereby classroom teachers were provided with opportunities outside of the classroom to experience and experiment with the arts, combined with hands-on training in the arts and arts assessments, supervised classroom training, and instructional coaching to improve arts integration across multiple years so that non-art specialists can become comfortable with integrating arts into their classrooms (*see pp. 24-33, Project Design*). A previous *MIAB* participant said, "*I believe it is important to teach educators not to be afraid to weave art throughout the curriculum. I think that if teachers are given the opportunity and time to see how they can use art to teach and make lesson plans that are meaningful the students will be happier and more confident in their abilities. I also believe that this will decrease classroom management issues because students take ownership in their expression and most importantly, their learning.*"⁴⁸

An important tool for creating quality professional development is teacher networking and collaboration—*teachers teaching teachers*.⁴⁹ Utilizing a multi-year gradual release of responsibility, ***REAL*** will encourage and support on-going collaboration on arts integration among 4th grade teachers throughout their own 4 and in different schools (in person and via online videos), resulting in sustained, intensive training and cross-training each year. This will build and expand upon *WOA*'s successful professional development model.

This type of on-demand collaboration will be even more vital given that teachers will need to master *two* new educational media—the arts and technology. A recent review of the research on technology implementation has suggested that it is an inherently complex, social, and developmental process, with K–12 teachers constructing new and unique perceptions about the role of technology in the classroom.⁵⁰ To align with the *LBUSD* professional development plan, ***REAL*** will produce mini-lesson videos for teachers to access as needed—*on demand*—that will present the art-making process, the technology process, and the integration of both into the core

math content that is integral to each lesson.⁵¹ Once developed and refined, these PD materials can also be utilized to support replication of *REAL* beyond southern California.

(2) Significance: *The likely utility of the products (such as information, materials, processes, or techniques) that will result from the proposed project, including the potential for their being used effectively in a variety of other settings.*

DR has a 22-year history of providing students with arts integration experiences that have resulted in statistically significant outcomes in both their academic achievement and self-efficacy, as well as performance in the arts. DR is the only in-class arts integrated program that is allowed to work with Title I elementary schools – a great testament to the value LBUUSD places in our programs and their impact on students. Three previous AEMDD projects have allowed us to build and refine the critical elements essential to each lesson, the lesson plan format, the curriculum materials presentation, and the teacher-training component. With each of these projects, the curriculum and resulting student and teacher outcomes have improved based on lessons learned. *REAL* will reflect the best of *MIAB* and *WOA* and will integrate technology in the form of iPad-based technology that will allow student-directed active inquiry in ways previously unimagined given the constraints of exploration within a typical elementary classroom (*see pp. 24-33, Project Design*).

REAL project will develop seven products with the potential of being used effectively in a variety of other settings: (1) 24 re-designed *REAL* lessons with measurable outcomes in student performance; (2) iPad-based programming to support 16 of the 24 re-designed lessons; (3) instructional strategies to effectively use integrated arts to increase student performance; (4) mini-lesson teacher professional development videos that parallel the 24 lessons; (5) data from a randomized control trial to contribute to future arts education research; (6) information on building and sustaining a successful school-community partnership to support arts integration to close the achievement gap; and (7) dissemination of lessons learned for replication of *REAL*.

REAL lessons. The quality of DR’s arts integration curricula (both *MIAB* and *WOA*) is already recognized via inclusion in Arts For All: Los Angeles County Arts Education PROGRAM DIRECTORY (lacounty.org, 2010). We will continue to update this directory annually with our latest lessons and assessments.

Throughout the past decade, education standards have transitioned and now mandate a greater degree of multi-disciplinary skill development. Our previous projects, *MIAB* and *WOA*, both aligned with the district’s priorities and integrated the subject matter scope and sequence structure into the curricula themselves. As a result, students experienced overlapping ‘waves’ of exposure to similar concepts and vocabulary, a strategy known to increase breadth and depth of student knowledge.⁵² Similarly, ***REAL*** is aligned with district and national math, social studies, and technology standards.⁵³ The resulting 24 ***REAL*** lessons will be applicable to 4th grade classrooms across the country. In addition, for the *WOA* project, DR’s curriculum developers have revised their lesson plan format to include text boxes that highlight the standards addressed and representative icons to reinforce the *7 Critical Elements of Arts Integration*. These techniques enabled classroom teachers to easily link the arts-integrated activities with core academic content and master effective instructional strategies as evidenced by independent evaluators’ documentation of statistically significant differences when comparing control and treatment teachers in each of DR’s previous projects.⁵⁴ This reinforcement technique will be replicated in the ***REAL*** lesson plans.

iPad-based technology. ***REAL*** is designed, and will be optimized, to convey the essence of DR’s existing paper-pencil *MIAB* curriculum (concepts, materials, processes, and techniques) without the heavy resource requirement of multiple specially trained teachers present in a classroom. By carefully distilling and converting the essence of the *MIAB* lessons into a form optimized for delivery on an iPad, the students will have access to the essential components of

the lessons, as well as to an array of differentiated resources for support or extension. In so doing, the students will determine the course of their inquiry, eventually enabling all students to increase their independence, and be successful (*see Bibliographical et al, pp. 82-83, Sample Story Board #2, Volume*).⁵⁵ This degree of differentiated instruction is the backbone of the LBUSD Technology Plan, which calls for providing differentiated, technology-based learning options, supported with a teaching and learning goal to “provide technology-enhanced curriculum”.⁵⁶

By converting some of the lessons into a digital format, when the ‘app’ is made available to math learners either via the iTunes App Store or a direct link, students everywhere will have access to the lessons. To ensure that **REAL** will continue in the district even after federal funding ends, the software program is purposefully being developed for the iPad to align with technology currently in place or in the pipeline for all elementary schools in LBUSD.

Instructional strategies. Working with more than 300 generalist elementary teachers in low performing Title I schools over the past decade, DR has developed and refined our instructional strategies, resulting in significant improvements in both the quality and quantity of instruction in art integration and student performance as measured by standardized test scores. Our seven core instructional strategies, *7 Critical Elements of Arts Integration* (*see Bibliographical, et al, p. 69, 7 Critical Elements*) will be made available via OER sources. Please note that DR’s outstanding teacher training in arts integration has garnered recognition across the country, including being featured in the 2008 national arts education professional development compendium, *Designing the Arts Learning Community: A Handbook for K-12 Professional Development Planners*, an **on-line publication** commissioned by L.A. County Arts Commission and Cultural Initiatives of Silicon Valley. DR is one of only 50 agencies selected from across the U.S. and 1 of 7 in CA for this publication, a testament to the value educators and the arts community place on the quality

of our instructional paradigm.

Teacher professional development videos. **REAL** will replicate the gradual transfer of responsibility training model utilized successfully in DR’s previous project, *WOA*. This model incorporates consecutive years of hands-on training and instructional coaching to enable non-art specialists to become comfortable and creative in integrating arts into their classrooms (*see Bibliographical, et al, p. 67, Professional Development Plan for Classroom Teachers for details*). The transfer happens slowly via the same process classroom teachers use with their students: classroom teachers *watch* as teaching artists *do*, then they both *do* together, then the teaching artists *watch* as the classroom teachers *do*, and ultimately the classrooms teachers *do* independently. During each project year, *WOA* includes more than 44 hours of explicit training and in-class coaching that focuses on the theory and practices integral to standards-based instruction, and is rich in active learning opportunities—essential elements of effective professional development.⁵⁷

As with the 24 **REAL** lessons, the components of the professional development program that must be experienced in-person and with hands-on will be preserved. Specifically, classroom teachers will experience “making” the arts the same way that their students will—they will weave a traditional reed basket (classroom teachers will make three baskets). In a professional development setting, this type of active learning challenges and engages teacher-participants in problem-solving and self-reflection that enables them to develop and apply new knowledge and instructional skills.⁵⁸

New to the overall model, **REAL** will produce mini-lesson videos for teachers to access as needed—*on demand*—that will present the art-making process, the technology process, and the integration of both into the core math content that is integral to each lesson. These videos will be produced in alongside the development and implementation of **REAL**. Critical components of

the lessons will be captured either during a professional development session or during one of the in-class delivery sessions. The mini-lesson videos are not intended to be movie theater quality, but rather real teachers with real students in real classrooms. This format has been found to be the most effective in activating and supporting change in teacher instructional practice.⁵⁹ The videos themselves will review instructional elements previously presented during the summer training sessions as well as when the Teaching Artists implement the lessons with the classroom teacher's help. LBUSD currently has an online teacher-resource of training videos to support their overall professional development plan; however, none of these videos is related to arts integration. The video segments produced through the proposed project will only be accessible by the implementation teacher groups until the project has ended to avoid contamination of control classrooms. Ultimately, these mini-lessons are intended to build local capacity and have a lasting impact on instructional practice, as they are integrated with school priorities, sufficient in duration and intensity, and subject-specific and practical—elements key to any professional development program.⁶⁰

Data on impact of arts education. Although most schools have talked about integrating arts into the curricula, few schools have done so successfully and consistently.⁶¹ An arts intervention that leads to positive outcomes may be exciting, but is only of limited value without knowing why it succeeded.⁶² The proposed project includes a randomized control trial comparing the impact of two forms of **REAL** with a control 'business as usual' group (*Bibliographical, et al., p. 72, Evaluation Timeline*). The results of this study will meet gaps identified in *Critical Links* for future arts education research.⁶³

The evaluation to be included in the proposed project will: (1) compare achievement from three participant groups: control, **REAL A** (8 iPad-based lessons), **REAL B** (16 iPad-based lessons), comparing 1,680 students and 24 teachers in 4th grade classrooms located in 6 Title I

schools to examine the effects of teaching and learning in the arts; (2) clarify the social emotional skills stimulated by learning in the arts; (3) pursue the indications that learning in the arts has significant benefits for special populations of students, including students in disadvantaged economic circumstances; and (4) determine the optimum contexts and conditions for learning in the arts and the enabling of school policies, practices and resources to support and sustain school-wide arts-integration practices.

Table 1. Making it REAL: Math Program Development and Delivery Plan

		Pilot	Treatment A	Treatment B
16 Classrooms/Teachers; 1,680 Students:		2 (70)	8 (280)	8 (280)
2014-15	Lessons integrating arts (out of 24 total)	24		
	Lessons integrating technology (out of 24 total)	4		
2015-16	Lessons integrating arts (out of 24 total)		24	24
	Lessons integrating technology (out of 24 total)		8	8
2016-17	Lessons integrating arts (out of 24 total)		24	24
	Lessons integrating technology (out of 24 total)		8	12
2017-18	Lessons integrating arts (out of 24 total)		24	24
	Lessons integrating technology (out of 24 total)		8	16

The independent evaluation team synthesizes all assessment data each year. The formative report delineating progress towards annual goals and objectives, including current successes and challenges, as well as samples of project-generated videos, teacher and student artwork, documentation forms and surveys will be posted online annually. This information will also be disseminated via DR’s website, a dedicated page to **REAL**, presentations at local community events, professional conferences at the regional and national level and through print and electronic media (e.g., Open Educational Resourced - OER) sources.

Building and sustaining a school-community partnership. Research proves that partnerships among schools, arts organizations and community members can help deepen teacher expertise, create focal points for community activities and enhance knowledge of cultures and heritages.⁶⁴ Good art instruction allows students to make something of value. Although the end product is not the goal (learning is the ultimate goal), the products are the tangible result of good art instruction⁶⁵ and annual exhibitions of these products permit schools, families and community to see student (and teacher) artwork (*see Bibliographical, et al, pp. 78-81, Photos*). This gives students a sense of accomplishment, and allows schools, community and parents the opportunity to talk about art and disseminate awareness of the value of art throughout the community.⁶⁶ Based on our success with *MIAB* and *WOA* over the past decade, we anticipate that ***REAL*** will be embraced by PTAs, and community volunteers trained in this program, resulting in family workshops led by teaching artists, trained volunteers and classroom teachers to introduce parents to this curriculum and how it enhances their children’s math and art skills (*see Bibliographical, et al, pp. 78-81, Photos*).



Proud family! Student’s basket on display in student and teacher basket exhibition at LB Art Museum

REAL provides one family workshop on-campus each year to foster and sustain parent interest and involvement in their student’s academic life and in arts education. These family workshops are key to sustaining ***REAL*** and vital to raising awareness of the benefits of the arts to children. Parents in our on-going *MIAB* and *WOA* AEMDD programs are volunteering in classes with prompting from their children. When asked how they like *MIAB*, parents say, “*I like it because I don’t have to know math. I just help my kid with art. It’s fun.*” During *Back to School* and *Open House* nights, student artwork decorates the classrooms—creating an arts-centered

environment and shifting the focus away from strictly grades and test scores to the overall achievement of each child during the year. DR has a core of 12 students who participated in the *MIAB* program (AEMDD, 2003), are now high school juniors and seniors, who volunteer weekly afterschool to help prepare *MIAB* program materials and participate in *MIAB* outreach activities with families (in English and Spanish), further building and sustaining a school-community partnership based on the arts. DR's Volunteer Coordinator will continue to recruit, train and support community volunteers to work alongside the TAs and CRTs to deliver **REAL**. In addition, DR's Executive Director will leverage the proposed federal support to garner additional private funding in Year Five (at no cost to this federal grant), so that volunteers will be organized and prepared to support the 16 *Intervention* teachers to continue using **REAL**.

Dissemination and replication of Making it REAL: Math model. Multiple means of public education/advocacy, including print and online publications and blogs, professional and community-based workshops, demonstrations, videos, and conferences are needed to effectively disseminate relevant information to educators and develop awareness and support in the community.⁶⁷ Electronic tools, rooted primarily in the Internet and social networking sites, will help the project communicate effectively and rapidly share lessons learned.⁶⁸ Table 2 (*above*) summarizes the sources for dissemination of **REAL**'s results. **REAL** will have a webpage set up exclusively for this project. **REAL** will also be advertised through DR's online social networking, where there will be detailed arts integration activities, lesson plans, case studies, lessons learned, and teacher collaboration. At the end of Year Four, this information will be compiled, complete with instructional materials, resources and samples and posted on-line (OER sites) to help others develop and implement similar projects. **REAL**'s evaluation team, program staff, curriculum leaders and classroom teachers will prepare and submit articles for publication and presentation to conferences. During Years 3 and 4, a Dissemination Specialist will pitch and

write stories to further disseminate program results via print and electronic media with the expressed goal of replicating *REAL* into at least one new district/state by 2018.

Table 2. Dissemination tools and venues

Dissemination Tools	Venues
Print /e-Print/ social media sources: Newsletters, online guide, articles in publications	DR’s semi-monthly e-newsletter; digital storytelling via Facebook and YouTube, media coverage via newspapers, a guide on <i>Making It REAL: Math</i> to be published on-line in Year Five, articles written for submission to professional publications (e.g., Harvard Education Review’s Voices Inside Schools, National Council of Teachers of Language Arts Journal, AERA, NEA and NAEA publications).
Electronic sources: DVD, websites, Facebook, e-mails	Produce videos on <i>Making It REAL: Math</i> & post on YouTube; DR’s website, social networking sites, electronic media coverage, L.A. County Art Commission’s ArtsEd.org website (the largest marketing website for arts education in L.A. Co.) and marketing e-mails of milestones & program events to educators, funders and elected officials, locally and nationally.
Presentations: Conferences, visits by community to program, community displays of artwork	Present at NAEA, AEP, AERA and other professional conferences; present <i>Making It REAL: Math</i> program and evaluation results to board of education members annually; engage community members to visit <i>Making It REAL: Math</i> in classrooms and mount displays of student and teacher work in schools and community settings, e.g., Long Beach Public Library.

As one of 82 school districts serving nearly 1.7 million students in Los Angeles County, LBUSD and DR’s arts-integration programs also have the advantage of being easily accessed and observed “in action” by tens of thousands of educators within a 100 mile radius. As one visiting administrator from Pasadena Unified recently stated, “*It’s unbelievable how engaged*

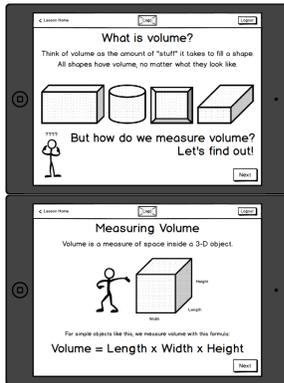
both students and teachers are in this process. I definitely had to see this [MIAB program] first-hand to fully appreciate its impact on kids – and teachers.”

(3) Quality of the project design: *(a) The extent to which the design of the proposed project reflects up-to-date knowledge from research and effective practice.*

When *creating* is an essential activity of the classroom, the activity of students is absolutely fundamental. When students *create* something, it is their choices at work, not someone else’s. Overstating the importance of these dimensions of a classroom is impossible—who is being active in the learning process (choosing, planning, and doing) and who is accountable (self-reflection and revision). A model that unleashes the true power of public school education needs to place the activity and the accountability in both the teacher and the student.⁶⁹ Stevenson and Deasy refer to the set of relationships and context for teaching and learning created with arts education as “Third Space” – that atmosphere in the classroom when the teacher and students create works of art, one in which students are deeply absorbed and able to take the risks demanded in a creative process.⁷⁰ Research by curriculum scholar Madeleine Grumet shows: *arts admits the child’s world into the curriculum, arts content engages children’s sensory and emotional experiences and understanding, and how the structural analogies between art and other subjects are exploited to activate transfer.*⁷¹

The central idea of **REAL** is based on research reviews showing that integrating the arts into the core academic curriculum is a powerful way to drive improvement in instructional practice and make academic learning opportunities accessible for all students.⁷² Second, integrating technology into the research, exploration, analysis and learning—**REAL**—that occurs when creating art is an example of technology enhancing instruction.⁷³ Technology expands the breadth and depth of what students can learn. Here are two examples of how this student-directed active inquiry happens in **REAL**. Please note that the images presented here are in gray scale and

are static for the purposes of this proposal. When presented on the iPad, they will be in color and animated. The LBusD technology plan allows students access their ‘locker’ of cloud-saved work via a user-id and login—and this will be the same system used in *REAL* (see Title Page of this Project Narrative and Sample Story Boards on pp. 82-84 of Bibliography, et al.).

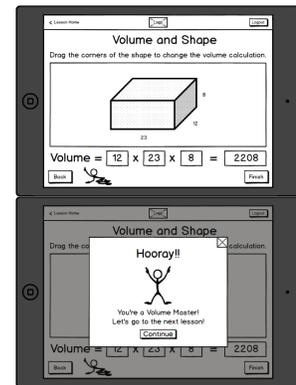


Once logged-in, students will access components of the lessons that are enhanced. *MIAB* lesson 20 includes a seven-minute exploration of volume (see *Bibliographical, et al, pp.82-83, Sample Lesson Plan #21*).

In this time, students use 1” cubes to discover the explore volume. In the classroom, this hands-on activity is invaluable but cumbersome. The limited number of cubes requires that 4-5 students work together (not

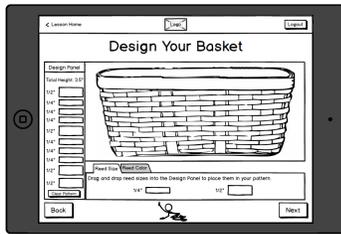
necessarily a negative), and the cubes do not always stack solidly. For *REAL*, this exploration

will be integrated with the iPad-based technology. Classroom teachers will activate students’ prior knowledge of perimeter and introduce ‘volume’, a new term. Then students will have time to actively explore this concept. Through the iPad-based technology, they will be presented with a brief introduction to volume. Then they will be able to generate their own shapes and corresponding volumes, enabling students to



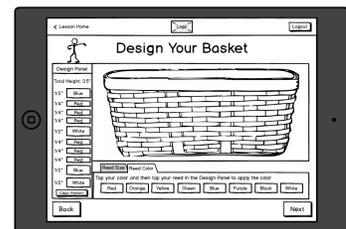
conceptualize even the most extreme forms—long, thin pipe-like shapes or tall vases! Self-directed and group discovery is woven throughout this component of the lesson with a sharing of students’ discoveries and an analysis of the volume of their own baskets. Using this technique, the technology is integrated as a tool for *interacting with* information rather than just for *presenting* information.⁷⁴

Another lesson includes the opportunity for students to research, explore, analyze and learn about colors and patterning as they design their baskets. In the current lesson, students use 3”



colored paper strips to design the pattern of the sides of their baskets – pictured on the next page (See *Bibliographical, et al, p. 84, Sample Lesson Plan #16, Basket Design*). Although students generally are successful using this two-dimensional system, integrating the iPad-

based technology into this activity allows for innumerable explorations of both width (practicing fractions) and patterning in real-time—and represented in 3-D! Once designed, students will then make these three-dimensional baskets through the traditional weaving of reeds, connecting the newest innovations of technology with one of the most traditional art forms.



Research across the country shows an upturn in standardized test scores in high poverty schools when well-designed arts integration programs are implemented, such as those in the Chicago Arts Partnerships in Education network.⁷⁵ Research also shows arts integration serves all categories of students (i.e., special needs, English Language Learners, low-, average-, and high-achievers, including gifted students) with equal success.⁷⁶ Recent increased equity in access to learning may begin to document how effective arts integrated teaching and learning can provide an important strategy in the struggle to achieve *No Child Left Behind*. As described in Significance, *MIAB*, laid the groundwork for the **REAL** program, was highly successful, and continues to be implemented in LBUSD even though AEMDD funding has expired.

(b) The extent to which the proposed project is supported by strong theory.

REAL is supported by strong theory about how to develop lifelong learners and stimulate an enduring change in teachers’ instructional practice.

Lifelong learners. **REAL** allows students to create original works of 2D and 3D art in order to explore Deasy’s “third space”. Facilitating students’ use of sensory and emotional experiences and understanding within the classroom setting allows new and deeper avenues for engaging

with other core curricula, especially in language arts. The arts integrated in to **REAL** promote understanding of other cultures, including changed awareness, acceptance and interest.⁷⁷ As one of the oldest known art forms, basket weaving allows students to explore many cultural perspectives while experiencing the knowledge needed to master the process of creating art—all while linking language arts and history with individual creative expression. Creating and performing art allows students to experience the pride that comes with persisting through obstacles to achieve their goal and the resulting “art” that is so admired by their peers, family and the community (*See Bibliographical, et al, pp. 78-79, Photos of students in classrooms*).

Students from our 2003, 2006, and 2010 AEMDD grants have demonstrated increased intrinsic academic motivation and self-efficacy after working through the tough parts of each art project, reinforcing Gardner’s theory linking heightened self-concept to increased academic achievement across core subjects. **REAL** has greater flexibility for student outcomes as a result of the integration of iPad-based technology. The technology will allow students to work at different levels of investigation, thereby differentiating instruction, and allowing all students to be engaged and successful.⁷⁸



Student in our Special Ed classroom carefully weaving and looking for over-under-pattern

The next step is to investigate whether increased intrinsic motivation and self-efficacy translates to increases in persistence and resilience, and ultimately academic achievement—and whether these skills persist over time. Empirical studies have documented this potential link, but have involved intervention programs specifically aimed at increasing these social emotional skills.⁷⁹ The proposed evaluation will investigate the immediate impact of the **REAL** program by

comparing the growth in mathematics, art, and social-emotional skills at the beginning and end of 4th grade. It will also investigate whether these skills persist through the end of 5th grade, since the goal is that students leave elementary school and enter middle school with the skills to become independent lifelong learners.⁸⁰

Changing classroom instructional practice. Regardless of the current staff's level of expertise, successful implementation of any new curriculum requires professional development. Such training is most effective when ongoing, integrated into the school operations, and built on a theoretical understanding of content and pedagogical knowledge.⁸¹ The ***REAL*** curriculum will involve new methods and perhaps even a paradigm shift for some staff.

To support a parallel change in classroom instructional practice, the ***REAL*** professional development model includes 360 degrees of support (*see Bibliographical, et al, p. 66, Logic Model*), including: a project-specific strategic plan to foster and monitor implementation; face-to-face summer workshops to ongoing afterschool support; classroom-based Teaching Artists implement and mentor each lesson; and the use of videotaping mini-lessons for teachers' independent review of elements of instruction.

Filling a unique role, the Teaching Artists deliver instruction directly to students and act as teacher-trainers. After years of experience with this professional development model, the DR's Teaching Artists have learned to balance the structural elements of the curriculum and its supporting theory to enable the classroom staff to implement the curriculum with fidelity because they understand the purpose for the activities. The multi-year, gradual release of responsibility model utilized in ***REAL*** will demonstrate how effective integration of arts in the classroom environment can be in creating measurable changes in students' academic achievement and in teachers' quality of instruction (*see Bibliographical, et al, p. 67, Program Delivery Plan for Classroom Teachers*).

(c) The extent to which the proposed project is part of a comprehensive effort to improve teaching and learning and support rigorous academic standards for students.

Results from our previous AEMDD projects has informed and led the revisions of our professional development model to maximize results. Our Teaching Artists teach, model, and then coach classroom teachers in the *7 Critical Elements of Instruction* as well as the implementation of the **REAL** lessons over multiple years (See Table 3 above). Within this three-year gradual release of responsibility, classroom teachers are introduced to and experience the **REAL** lessons prior to Year One of implementation (project Year Two). Throughout Year One of implementation, teachers experience **REAL** modeled in their classrooms with the support of a three-person team of teaching artists and the in-class coaching support of our Director of Arts Education (a total of 24-hours of in-class coaching). At the end of each unit, the teacher and his/her team of teaching artists will meet to assess students' art products using art rubrics. As teachers learn the **REAL** curriculum and gain confidence in implementing and assessing the eight *WOA* lessons, their learning is shared with other teachers at their site and via on-line sources, e.g., Facebook, to promote an arts learning community among these teachers.

Prior to Year Two, classroom teachers attend another summer workshop that focuses on the implementation strategies of the lessons, including practicing the art-making techniques and use of the iPad technology. Throughout Year Two, classroom teachers and two Teaching Artists work together to present the 24 lessons, with the classroom teachers taking the lead role for eight lessons. The Teaching Artists and Director of Arts Education continue to supply in-class and monthly after school coaching and support, and volunteers are integrated into the program (*see Bibliographical, et al, p. 67, Program Delivery Plan*). Implementation Year Three (the final Project Year) is similar to Years One and Two with a summer workshop focused on teaching the lessons—art making and technology—as well as sharing other ideas of how arts could be

integrated with the existing curriculum. During Year Three, however, classroom teachers are now the primary instructor for 16 of the 24 lessons, with either 8 or 16 lessons integrating technology (depending on Intervention Group), with the support of one Teaching Artist and 2 volunteers. After school coaching and support continues monthly through this final year as well.

Before receiving DR’s professional development in 2004, 35 percent of teachers in *MIAB* described themselves as “extremely comfortable teaching math”. By spring, this increased to 55 percent. The percentage of teachers comfortable teaching art almost doubled (12% in fall to 23% in spring). Based on this and anecdotal data from our current and past *WOA* teachers, we are confident we will see even greater improvements in the quality of instruction demonstrated by the 2014 AEMDD *REAL* teachers.

Research has shown that even with adequate materials, classroom teachers’ instructional practice lacks the depth and breadth needed to enable at-risk children, especially ELLs, to overcome the achievement gap that stands before them.⁸² In many classrooms, the length and number of instructional interactions is minimal because classroom staff feel overwhelmed by class size and/or behavior management. However, embedding explicit activities within an implicit approach to cognitive development has shown to be an effective model, especially with children with lower language skills.⁸³ For this reason, *REAL* integrates high-quality art making and mathematics activities within an instructional paradigm that supports the development of students’ social emotional skills that are common outcomes of students’ involved in the arts.⁸⁴ As such, DR’s Teaching Artists will use the arts to help classroom teachers create a classroom structure that promotes students’ effortful control (e.g., *self-regulation, persistence, resilience*). The integration of technology in *REAL* will further support students’ engagement and self-efficacy as independent learners—teachers may be surprised at how much their students can accomplish when provided the appropriate tools and requisite support to do so!

There is scientific evidence that student learning and achievement in non-arts domains is heightened in environments featuring high-quality arts education programs and a school climate supportive of active and participatory learning.⁸⁵ In fact, **REAL** is built on the solid academic and arts achievement that resulted from DR's previous AEMDD programs (see Significance).⁸⁶ **REAL**, while providing art as a core component of the curriculum across the year, will simultaneously be developing an arts-rich school environment through teacher professional development, shared learning, displays of student work, community outreach, and involvement and collaboration among artists and teachers.

REAL directly teaches standards-based visual arts content and connects with mathematics, while giving teachers and students a comprehensive sensory and emotional art-making experience (*See Bibliographical, et al, pp. 76-77, National/CA Standards*). **REAL** students and teachers analyze their artwork according to CA and national VAPA standards. Students record their responses in an "all year perspective" journal on their iPad, providing them a longitudinal perspective of their own growth and learning. Arts permit students to move from the concrete to the abstract: from touching and doing to thinking and connecting. Art enables students to learn academic content in a new way, resulting in "very significant overall gains".⁸⁷

(d) The potential and planning for the incorporation of project purposes, activities, or benefits into the ongoing work of the applicant beyond the end of the grant.

As mentioned in *Need*, LBUSD's demonstrated academic improvements across most grades and subjects over the past several years has resulted in significant national recognition (including being awarded the Broad Prize in Education twice) and a growing willingness to include more innovative curricula to serve persistently low performing schools. Our three AEMDD models expanded DR's emphasis beyond just program delivery for students to include focused professional development for teachers. The resulting "buy-in" from teachers, principals, content

specialists and district administrators to arts integration and a multi-year comprehensive design, particularly demonstrates how **REAL** supports LBUSD's comprehensive effort to have 70% of their 5th grade students proficient in math by 2015. (see *Letters of Support and Resumes*, pp. 2-6, *Letter from LBUSD*). In addition to increases in teacher knowledge and improved instructional practice that will remain with the teachers and LBUSD, the instructional mini-lessons and iPad-based technology will remain in the district as part of LBUSD's overall plan to improve the quality of classroom instruction and utilize technology to enhance this instruction.⁸⁸

A Rand study shows that giving individuals repeated rewarding experiences in the arts over time is a necessary first step before other, more public benefits of the arts, can be realized.⁸⁹ These other benefits include exposure to new perspectives, sharpened learning skills among young people, expanded capacity for empathy, and stronger social bonds in communities. **REAL** builds teacher and student capacity to benefit from and participate in the arts by providing them with exactly the process of sustained involvement advocated by Rand's study. Further supporting sustainability, our 'teachers-training-teachers' model allows teachers to become engaged in the revision and implementation of the lessons, developing a cadre of experts and collective self-efficacy. In addition, **REAL** builds the arts capacity of the whole community (children, parents, educators, artists), a model that will yield measurable and observable longitudinal results extending beyond the period of this Federal grant.

The ultimate goal of this proposed AEMDD project is the long-term impact of implementing the **REAL** lessons and experiencing the professional development model on the transfer to curriculum-wide instructional improvement resulting in overall increases in student academic achievement. The three goals of this **REAL** project highlight just that; specifically, goal one is to increase the integration of standards-based arts education with 4th grade core curricula, primarily math and goal two is to strengthen standards-based arts instruction. In previous AEMDD

projects, we have found that our gradual release of responsibility and experiential learning model allows teachers to develop confidence and self-efficacy for their art ability and arts instruction ability, and to understand how the arts can be integrated with other core curricula, above and beyond simply continuing to implement the arts-integrated lessons they have mastered. **REAL** intends to achieve this degree of transfer as well.

Lastly, research has found that teachers in arts-rich schools become re-energized.⁹⁰ Based on the success of both *MIAB* and *WOA* in Long Beach, we hypothesize that when non-participating teachers see their peers become re-energized and excited about integrating arts into the classroom, receive administrative accolades and public recognition for their work, as well as increased academic achievement of their students sustained over multiple years, non-participating teachers will clamor to integrate arts into their classroom curricula.

(4) Quality of project personnel: (a) *The extent to which the applicant encourages applications for employment from persons who are members of groups that have traditionally been underrepresented based on race, color, national origin, gender, age, or disability.*

DR is an Equal Opportunity Employer. The majority of students we serve are ethnic minorities, so DR strongly encourages applications from prospects whom match the demographics of our student and teacher population. We actively solicit interns and Teaching Artists from local public universities and many are hired via recommendations by current staff. Our 2013/14 staff represents four languages (English, Spanish, Khmer and Thai), seven different cultures (American, Moroccan, East Indian, Mexican, Chilean, Cambodian and Thai), and includes gays and straights. Our staff is 10 percent male and 90 percent female, ranging from 21–58 years old. Thirty percent are the first in their families to graduate college. To date, we have not had any staff with significant disabilities (e.g., blind, deaf, wheelchair bound). The four Teaching Artists selected for this **REAL** program include two native-Spanish speakers, both female, one Khmer-speaking female and one Caucasian male.

(b) The qualifications, including relevant training and experience, of key project personnel.

REAL unites the expertise of the DR team with an experienced external technology and evaluation team to develop, implement, and evaluate a superb AEMDD program.

Project Director, Christi Wilkins: Ms. Wilkins has led DR since its inception in 1992. She has successfully written and administered three successful AEMDD grants resulting in national recognition by the AEMDD program officer as a “model among models” both for the rigor of our evaluation design and the strength of the dissemination of our model to other districts. The excellence of her management skills has been featured with a full chapter in *Vital Factors*, a management book (Josey & Sons, 2007). She has received numerous awards for her vision and dedication to arts and education for high need students. Ms. Wilkins has presented at numerous regional and national conferences (*see Letters of Support and Resumes, p. 7*).

Director of Arts Education, Lucinda Rudolph: Ms. Rudolph has worked with DR as Director of Arts Education since 2009. She has her Single Subject Teaching Credential in Art, with an emphasis of study on multicultural classrooms, CLAD, exceptional learners and intercommunity education and awareness. She has an MBA from USC with an emphasis on marketing management (*see Letters of Support and Resumes, pp. 8-9*).

Volunteer Coordinator: Samai Khom, a native Khmer speaker, has been working with DR, both teaching in classrooms and as volunteer coordinator, for more than a decade. Known as our “Math in a Basket” lady as well as a hub for community building, Ms. Khom will be actively involved in training one of our current basket making volunteers to take on the role of Volunteer Coordinator in Year Two of this project so that she can devote her time to teaching and dissemination efforts. She will continue to be very involved in training new volunteers in the *REAL* program (*see Letters of Support and Resumes, pp. 10-11*).

Evaluation Liaison/Dissemination Coordinator, Nuttiporn Masuk: Ms. Masuk has an MBA,

specializing in International Business and her B.A. in Marketing. She has been a core part of DR's management and evaluation team since 2010 and integrally involved in the coordination of evaluation for our 2010 AEMDD grant (*see Letters of Support and Resumes, pp. 12-13*).

Teaching Artists: Samai Khom, Raquel Lira, Laura Duphily and Steven Urubek are the heart of DR's program delivery with both students and classroom teachers. Combined, they have 23 years experience teaching inner-city students with DR. Three of these four Teaching Artists have degrees in art. All have been extensively trained by DR in our methods and have taught in our 2003, 2006 and 2010 AEMDD projects. These Teaching Artists are also bilingual; each being either native speakers in Spanish or Khmer (*see Letters of Support and Resumes, pp. 14-18*).

Evaluation Team, Griffin Center for Inspired Instruction: Principal Investigator, Lynn Waldorf, Ph.D., is a nationally recognized expert in research methodology applied in arts education. Dr. Waldorf has been responsible for the design and implementation of numerous efficacy studies, each of which involved the identification of criteria for measuring progress and/or outcomes of education interventions in Pre-K through Grade 8 schools. One-third of these evaluative studies focused on the academic achievement through arts-integrated instruction. Dr. Waldorf has received awards for evaluation work including UCLA's Leigh Burstein Research Methodology Award. Her research has been published in books and seminal research volumes, including *Champions for Change* and *Critical Links*, and in refereed academic journals and regional newspapers (*see Letters of Support and Resumes, pp. 26-27*).

Evaluation Liaison, Kim Atwill, holds a Ph.D. in Educational Psychology with an emphasis on Learning and Early Childhood Cognitive Development. She has an M.S. degree in the Education of Deaf and Hard-of-Hearing Children with an emphasis on cognitive development among at-risk populations. Dr. Atwill's B.A. is in Psychology with an emphasis in developmental psychology and research methods. Dr. Atwill has 22 years of experience in education (preK-16),

with expertise in classroom-based instructional intervention programs for at-risk students and program evaluation, including quasi-experimental and randomized control designs (*see Letters of Support and Resumes, pp. 28-29*).

Technology Development: Stephen Yeoh, project Technology Supervisor. Mr. Yeoh has a degree in Computer Science, an MBA from Pepperdine University and is a Goldman Sachs 10,000 Small Businesses alumnus. He has spent a significant portion of his career helping firms strategize how to convert their analog world in to a digital one through the use of software (*see Letters of Support and Resumes, pp. 19-20*). He will liaison with DR, LBUSD and the Software Development Team at Goldfishbrain to ensure successful delivery of all aspects of integrating technology into **REAL**. Goldfishbrain is a software development company that is comprised 100 percent of in-house employees under contract (*see Letters of Support and Resumes, pp. 21-25*). No design or development efforts are outsourced. Staff believe that good design is the cornerstone of every good product. Period. No matter how smart the idea behind the product is, if users struggle to figure out how it works, then it is not working. Goldfishbrain staff will research the intended audience for **REAL**, construct a solid strategy to connect with identified user types, and then translate this strategy into a comprehensive design that will provide a positive and effective experience for the student and teacher users.

(5) Quality of the Management Plan: (a) *The adequacy of the management plan to achieve the objectives of the proposed project on time and within budget, including clearly defined responsibilities, timelines and milestones for accomplishing project tasks.*

DR's success as a three-time grantee of the AEMDD program affirms our ability to effectively manage this 2014 **REAL** program on time and within budget, with demonstrated replication and sustainability beyond federal funds.

On time. Each of the partners in **REAL** has a long history of providing effective services to students, teachers and families in Long Beach. Each partner's credibility is built on the ability to

develop a project, implement it on time, within budget and provide measurable results of effectiveness. This management pattern will continue with **REAL** to ensure time to establish relationships, support cross-training of partners, provide direct services to both students and teachers, conduct evaluation and research, prepare exhibits of teacher and student art in school and the community (place-based and on-line) and publicize and disseminate project design and findings into new school districts and educational settings.

Within budget. The total budget for this proposed project is \$2,325,323: 4 years with federal support and Year Five as a no-cost extension. We are seeking \$1,999,598 (86%) of this budget from the U.S. Department of Education. A total of \$325,725 (14%) is being provided by our partners, including: \$168,000 (7%) from LBUSD in computer equipment (iPads, rolling carts, support), maintenance, training and program space; and \$157,725 (7%) from DR as contributions of personnel, administrative space and equipment/materials. Twenty-two percent of the budget is for evaluation and dissemination. No indirect costs are charged to this project.

Clearly defined responsibilities, timelines and milestones. DR will be the fiscal agent for this program. DR's Executive Director Wilkins will manage and coordinate all components of the proposed Project. The following schedules are based on award receipt prior to the beginning of the 2014 school year. (*See Bibliographical, et al, pp. 74-75, Roles and Responsibilities*) explicates the monthly activities for this first year (plans for Years 2-4 follow), our development year, that critical to the success of our achieving the three goals of the proposed project:

Goal 1: Increase integration of standards-based arts education with 4th grade math curriculum

Goal 2: Strengthen standards-based arts instruction

Goal 3: Improve students' achievement in math and language arts, and skills in creating and responding to the arts, by integrating the arts with a newly-developed digital tool.

The proposed project brings together experts in multiple fields—art, arts education, evaluation, technology, and marketing—to develop the best possible product to support student

achievement. Table 3 also reflects the complexity of this wide-ranging collaboration, yet appropriately designates the personnel responsible for the activity.

Table 3. *Making it REAL: Math* monthly project timeline for Year 1: Development & Pilot

Activity	A	S	O	N	D	J	F	M	A	M	J	J
Reflect and revise goals	ALL											
Collect MOUs from pilot school	DR											
Present/attend <i>Make it REAL</i> trng. (all lessons)	ALL											
Schedule in-class <i>Making it REAL</i>	DR & TA											
Convert <i>Make it REAL</i> for digital (iPad) use		TT										
Clarify iPad user-data collection system		E & TT										
Develop classroom observation of iPad tool			E									
Revise standards-based art rubrics			E									
Deliver <i>Making it REAL</i> in classes (+/- tech)			TA & CRT									
Present/attend after-school PD meetings			TA, CRT, & DR									
Complete standards-based art rubrics						TA		TA		TA		
Complete IRB request w/CSULB & LBUSD			E									
Pilot <i>Making it REAL</i> iPad enhanced lessons					TA & CRT							
Observe <i>Making it REAL</i> iPad enhanced lesson					TT & E							
Download & analyze iPad user-interface data						E						
Present iPad enhanced lesson pilot results						E						
Revise & finalize <i>Make it REAL</i> for digital use								TT				
Submit <i>Make it REAL</i> for LBUSD tech review											TT & DR	
Submit Annual Performance Report								DR & E				

With the four iPad-enhanced lessons piloted and revised, the project is prepared to begin our randomized control trial. The technology team will continue to convert additional lessons for iPad use, 4 of which will be added each year (Years 2, 3 and 4; *(see Bibliographical, et al, p. 68, Technology Implementation)*). The Overall Project Timeline enumerates the intermediate milestones and the seven proposed deliverables delineated in the Significance section (*pp. 13-22*) by quarter across the three-years of implementation (*see Bibliographical, et al, p. 72, for detailed Evaluation Timeline*).

(b) The extent to which the time commitments of the project director and principal investigator and other key project personnel are appropriate and adequate to meet the objectives of the proposed project.

Personnel with relevant expertise and experience bring leadership and dependability to this project. Relevant contributions include the expertise of the partners reflecting decades of practitioner-based research and interventions serving at-risk populations, especially in the area of arts-integrated education, as well as 14 percent of the total budget provided by partners with cash and in-kind services, personnel time, space and equipment (*see Bibliographical, et al, pp. 74-75, Roles and Responsibilities*).

Project Director. DR's Executive Director Wilkins is committing **.75 FTE** as Project Director to administer the grant, supervise program operations, raise private and school funding and support for **REAL**, prepare all financial and reporting requirements, and ensure effective dissemination of **REAL** project results locally and nationally. She will supervise staff and program meetings, oversee the development and revision of the **REAL** curriculum with Technology Team and DR's staff, coordinate collection of evaluation data, community/partner involvement (e.g., cultural presenters and consultants), and participate in evaluation activities. One **.50 FTE** Evaluation Liaison/Dissemination Coordinator will support the Project Director by monitoring the accurate and timely administration of assessment tools for the evaluation team,

updating web pages for *REAL*, creating electronic links (OER), producing e-newsletters and materials, and assisting in dissemination and replication efforts.

Curriculum Developer and implementation staff. DR's Director of Arts Education will spend **.75 FTE** to train and supervise art teams, develop and revise the *REAL* integrated arts curriculum with the Technology Development Team and Teaching Artists, oversee training and delivery of services with partners, supervise teaching staff, coordinate campus protocols and scheduling, liaison with PTA groups, parents and volunteers, curate artwork in schools and the community (place-based and on-line), and participate in evaluation and dissemination (e.g., conferences and articles). The Volunteer Coordinator will spend .50 FTE to recruit, ensure compliance with LBUSD's Volunteers in Schools (VIPS) program, support training in *REAL* and support community volunteers to work alongside TA and CRTS to deliver in-class programs and community outreach in Years 2-5. Four Teaching Artists in *REAL* will commit up to **.88 FTE** each week over 32 weeks/year to prepare and provide direct in-class services to teachers and students, participate in all professional development, technology training, assist with classroom teacher PD videos, attend program meetings, participate in evaluation and dissemination efforts, and provide weekly one-on-one coaching support to teachers.

LBUSD is committing its K-5 Visual and Performing Arts (VAPA), Math and Technology Curriculum Coaches to each work up to **50 hours** in Years 1-4 to review and advise on the development and implementation of *REAL*, and support participating teachers, including tech hosting support for videos produced by project. Classroom Teachers in both Intervention A and Intervention B groups will participate in all professional development activities, including producing PD videos, meet with project staff, and integrate *REAL* lessons into their classrooms. Classroom Teachers in the Control group will complete all assessments for evaluation. Principals from all Intervention schools will convene quarterly and informally with project administration

to provide support and ensure optimum reception to **REAL**. LBUSD will translate all written materials into Spanish and Khmer. The LBUSD Director of Research, Planning and Evaluation will ensure strict adherence to the experimental model, help secure the IRB for **REAL**, provide the necessary data to our evaluation team for the random selection of schools, and provide the evaluation team with the requisite district and state assessment data.

Technology Development. The Technology Supervisor (TS) has committed **.30 FTE** to guide the conversion of the **REAL** curriculum to the digital medium by charting the strategic direction for the software application development and directing the Technology Development Team (TT). The TT will design, develop, and digitize curriculum elements. The TS will visit the intervention classrooms to observe and evaluate the user interface with iPad-based **REAL** activities up to 12 times during the course of each school year. To support on-going revision and improvement of the program, the TS will convene with the TT to report his observations regarding engagement with and flow of the iPad-based activities when used by students, including elements of confusion. The TT will incorporate this feedback into their revisions in order to further refine the user interface of the **REAL** program. The TT also will manage the infrastructure to support iPads used in school and coordinate with LBUSD Technology Coaches.

Dissemination Specialist (consultant) will work alongside all partners to develop and pitch stories, get **REAL** program accepted as conference presenters and at community events, coordinate/write articles in peer reviewed and/or other professional and commercial publications and support dissemination of program into new districts/states by Year Five.

Principal Investigator. Drs. Waldorf and Atwill are each committing **.35 FTE** to oversee the evaluation of the proposed project. Dr. Atwill will take the role of communication liaison to coordinate the efforts of the Curriculum Developer and the TT. During the first year of the project, 2014-15, Dr. Atwill, the Project Director, and the TS will form a management team that

will communicate regularly about the development of **REAL** and coordinate the day-to-day and long-term conduct of the development project. Dr. Waldorf will work with Dr. Atwill to ensure that the design and conduct of the development and accompanying evaluation adheres to the highest possible standards. From the onset of the project, the Principal Investigators, Project Director, Curriculum Developer and TT will work together to develop **REAL** and to collect the requisite data to ensure the end product is of high-quality and utility.

(c) The adequacy of procedures for ensuring feedback and continuous improvement in the operation of the proposed project.

The rigor of our iterative feedback loop covers all areas of the **REAL** model to ensure feedback and continuous improvement, including the administration of **REAL**, revisions to the program, development of the iPad-based Program, implementation of professional development for classroom teachers, program delivery to students, independent evaluation of the project, buy-in from site/district administration for arts integration, and support from community partners to sustain the program beyond federal support. The Project Director will monitor the milestones in the feedback process to ensure all objectives are met.

Our iterative feedback loop is conducted at two levels: (1) informal and (2) formal. **Informal feedback** will be gathered weekly from Classroom Teachers, Teaching Artists, students, site and district administration. Informal feedback also will be gathered regularly from the TS, families, community partners and evaluators during the course of program delivery. This feedback is discussed and acted upon by DR's Project Director or Curriculum Developer, Teaching Artists and the TS at our weekly meetings, or immediately when needed. **Formal** feedback will occur at regular intervals (i.e., monthly, end of each program unit, and year-end) via monthly partner meetings (in-person and via Google+), pre/post-anecdotal surveys of classroom teachers, activity logs kept by Teaching Artists, pre-unit trainings in **REAL**, and unit end assessment meetings

with classroom teachers, Teaching Artists, Curriculum Developer, and TS. This formal feedback is further enhanced by the rigor of our independent evaluation (tools outlined in both our management timeline and in the evaluation section of this narrative).

6. Quality of the 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.*

To ensure a high-quality project evaluation, the proposed project will utilize an **independent evaluator** to conduct a **randomized control trial** measuring the impact of the *REAL* program.

Independent evaluator. The *REAL* program evaluation will be conducted by staff from the Griffin Center for Inspired Instruction, a non-profit education service organization with offices in Portland and Aspen. The evaluation team will be led by Griffin Center Executive Director Dr. Lynn Waldorf. Dr. Waldorf has been the principal investigator on more than 20 efficacy studies over the past decade focused primarily on arts education and literacy development with at risk students, and has published numerous technical reports and articles based on the findings. She also has prior experience evaluating AEMDD project, as well as other large-scale projects funded by the U.S. Department of Education and private foundations. Dr. Waldorf is also a visual artist so her expertise in the area quality art lessons is invaluable.

Dr. Waldorf will be assisted by Dr. Kim Atwill, Senior Director at Griffin Center. Dr. Atwill has been the co-principal investigator for numerous U.S. Department of Education-funded projects, including AEMDD, Early Reading First, Head Start, and Indian Education projects. She is a seasoned expert in professional development for improved academic outcomes and research on both small and large-scale classroom interventions, including randomized control trials. Dr. Atwill has authored or co-authored numerous publications focused on K-12 educational issues, and is a frequent panelist and presenter at state and national conferences.

The Griffin Center evaluation team has extensive experience using a wide range of experimental designs, designing instruments with high reliability and validity, and conducting both qualitative and quantitative data analyses (done in house using SPSS and Excel software).

The evaluation team will be responsible for selecting or developing objective measures, monitoring the data collection, conducting all statistical analyses, and reporting the formative and summative results to the **REAL** curriculum and technology team and to the funder. The evaluation team will collaborate with all project stakeholders (i.e., **REAL** staff, students, teachers, and LBUSD administrators) to collect the necessary and relevant data over each of the four years of this project (*see Letters of Support and Resumes, pp. 4-5, LBUSD Letter*). To facilitate data collection, participating treatment and control teachers will attend a short orientation meeting and receive an orientation packet delineating the project's objective, the assessment timeline, and sample of the measures themselves. Working collaboratively on the evaluation will allow for the opportunity to equip **REAL** program partners with the tools and skills necessary to use data effectively for ongoing program improvement and for sustaining changes and lessons learned.

Randomized Control Trial (RCT) research design. To ensure a rigorous experimental design, the evaluation team will work with LBUSD's administrators and research department to randomly assign qualified elementary schools to one of the three treatment conditions: Intervention A (**REAL** + 8 iPad-based lessons), Intervention B (**REAL** + 16 iPad-based lessons), and Control (business as usual). The proposed project includes two intervention groups to ascertain whether and to what degree utilizing the iPad-based program to extend and enhance the curriculum, and thereby reducing some of the social and kinesthetic components of the math and arts curriculum, impacts the overall results.

DR has implemented three previous AEMDD projects in the LBUSD, each of which utilized

a randomized control design. LBUSD fully supports random assignment within the identified Title I schools and has provided their full assurances that they will support the implementation of *REAL* in any of the schools selected to receive the program (*see Letters of Support and Resumes, pp. 4-5, Planning, Research and Evaluation*). In addition, teachers in the control schools will be provided with \$125 as an additional incentive for participation.

Use of the *REAL* lessons and professional development is conceptualized as a school-wide program. Although school level random assignment is not the ideal level of assignment, the multi-year structure of the *REAL* professional development program requires that a cohort of 4th grade teachers learn to implement the program gradually and have an opportunity to work with peers at their grade level.⁹¹ Thus, classroom level assignment is not possible due to the fact that treatment teachers are encouraged to share ideas within their elementary school building, effectively contaminating the rest of the sample.

As a result, the study will employ a hierarchical design, with schools as the unit of assignment. Student-level data will be nested within classroom and school-level clusters, wherein teachers will implement the *REAL* lessons themselves.

Conducting this randomized-control trial over the course of three years ensures that teachers are exposed to the *REAL* program for multiple years. Research shows that at least two years of training or experience with a curriculum is needed for teachers to learn the curriculum.⁹² In control schools, teachers will use their existing strategies and materials for teaching. If private funding sources are located, schools that are assigned to the control condition will receive the *REAL* program, if interested, after the study is over.

Random assignment procedure. During year one, schools and their 4th grade teachers will be assigned to the *Intervention A*, *Intervention B* and *Control* participating condition or to a ‘business-as-usual’ control condition. Schools will remain in the assigned condition all three

years of the study. There currently is a pool of 32 Title I-funded elementary schools in LBUSD, in which 35% or more of the children enrolled are from low-income families. A power analysis was conducted based on previous results with *MIAB* to determine the requisite sample size to reliably detect a statistically significant difference. The minimum sample per group is 229. The elementary schools to be involved in the proposed project vary in size, but most have four 4th grade classrooms with 35 students in each, or a total of 140 4th graders.⁹³ As a result, a random number generator will select three schools (2 primary and one alternate) for each of the three treatment conditions: Intervention A, Intervention B, and Control. It should be noted that the Title I schools in LBUSD are relatively homogeneous in their ethnic diversity and socioeconomic status.⁹⁴ Baseline differences between the treatment and control schools will be noted in the research and evaluation reports, and, wherever possible, controlled for statistically.

Participants. During each of the three implementation years, the evaluation study will collect data from three distinct, randomly selected participant groups: (1) Classroom teachers ($N = 8$) and their students ($N \cong 280$) from 2 **Intervention A** schools will represent the *Intervention A: Participating teacher* group and the *Intervention A: Participating student* group; (2) Classroom teachers ($N = 8$) and their students ($N \cong 280$) from 2 **Intervention B** schools will represent the *Intervention B: Participating teacher* group and the *Intervention B: Participating student* group classroom; and (3) Classroom teachers ($N = 8$) and their students ($N \cong 280$) from 2 **Control** schools will represent the *Control: Participating teacher* group and the *Control: Participating student* group. Each year, the evaluation team will track arts, math, and social-emotional outcomes among 840 students (i.e., all students from *Cohort A: Participating student*, *Cohort B: Participating student*, and *Control: Participating student*); by the end of the third year project of implementation, evaluation data will have been collected from just over 2,500 fourth graders!

Similarly, the evaluation team will monitor instructional practices in the arts, arts-integration, and use of technology for all 24 fourth grade teachers, *participating* and *control* cohorts, over three years.

Research questions. Using an RCT framework, the evaluation study will measure the degree to which the three **REAL** program goals address the AEMDD program purposes:

Goal One: Increase the integration of standards-based arts education within the mathematics curricula at grade 4.

Goal Two: Strengthen the quality of standards-based arts instruction at grade 4.

Goal Three: Improve students' mathematics performance, including their skills in creating, performing and responding to the arts, by integrating the arts and a newly-developed digital tool.

Five evaluation questions guide the documentation of changes in teachers' instructional practice and students' achievement. These evaluation questions (EQ) along with their corresponding ancillary questions (AQ), performance objectives (PO), annual benchmarks, and data collection measures are summarized in Tables 4-6. Since the program structure entails a three-year professional development model, we can track teachers' knowledge, skills, and use of arts and arts-integration strategies across time. We will also document the persistence in any differences in student outcomes achieved after experiencing **REAL** by following students through the end of 5th grade (one year after completing the program).

By the end of the baseline data collection year (2014-15), all 24 teachers (16 Intervention, 8 Control) will complete the *Teaching with the Arts Survey (TWAS)*.⁹⁵ The *TWAS* was developed under a US Department of Education Grant to document teachers' knowledge and use of arts and arts-integration techniques. This survey will also provide the data evidencing the achievement of other project goals, such as their beliefs and attitudes about the role of arts instruction in the core curriculum. As shown in the Evaluation Timeline (*see Bibliographical, et al, p. 72*), the *TWAS* will be administered annually to participating and control group teachers to capture incremental

changes in knowledge, skills, and practice. Beyond providing a measure of change in sustained teacher practice, the annual surveys will evidence where the *REAL* program is most effective in increasing arts integration, and where it needs to be revised as the intervention proceeds.

Teacher-report Implementation Logs that record their use of *REAL* lessons and/or other arts integrated lessons will be reviewed and analyzed.

Table 4. Evaluation table for Goal One: Arts-integrated with core math

EQ1: To what extent does the <i>Making it REAL: Math</i> professional development series affect teachers’ use of arts-integrated instruction to teach the mathematics curricula?			
AQ(1) How often do teachers provide arts-integrated math instruction using the <i>Making it REAL: Math</i> program or other arts-integration lessons?			
PO1: <u>80%</u> of participating 4 th grade teachers integrate arts instruction with the teaching of other core subjects at least once a week.	Benchmarks	2015/16	80% of teachers, once a month
		2016/17	80% of teachers, twice a month
		2017/18	80% of teachers, once a week
Measures: Pre-post <i>Teaching with the Arts Survey</i> ; Monthly Implementation logs; Year-end focus group interviews with teachers and Teaching Artists.			

At the end of each year, separate focus group interviews will be used to capture the perspectives of 50 percent of participating teachers, all teaching artists, and all *REAL* professional development staff on the impact of the program on preparing teachers to offer arts-integrated lessons on a regular basis in benefit of increased student achievement in the arts, math and technology. The focus group data will be used to triangulate the findings from the survey and implementation log data. The teacher sample size, while small, is within the range to document a difference. Also, since the pre-post outcomes are measured annually as well as longitudinally, if teachers are transferred in or out of Intervention classrooms, new teachers will complete the baseline surveys and be added to the group.

Table 5.a Evaluation plan for Goal Two: Quality standards-based art instruction

EQ2: To what extent does the <i>Making it REAL: Math</i> professional development model affect teachers' knowledge of and ability to implement <i>Making it REAL: Math</i> ?		
	(AQ2a) What do teachers comprehend (i.e., skills, knowledge) and what can they implement within the <i>Making it REAL: Math</i> program?	
	(AQ2b) What do teachers comprehend (i.e., skills, knowledge) and what can they implement within the <i>Making it REAL: Math</i> technology enhanced lessons?	
	(AQ2c) To what degree are the <i>Making it REAL: Math</i> lessons implemented with fidelity according to stated program goals?	
PO2: 80% of participating teachers acquire the knowledge and skills needed to implement the full <i>Making it REAL: Math</i> curriculum with high fidelity (90% complete).		
2015/16	80% of teachers achieve low fidelity (50%)	DATA: Pre-post <i>Teacher Knowledge Survey</i> ; <i>Making it REAL</i> Lesson Fidelity Checklists; Monthly Implementation Logs; Reflection Session Summaries; Year-end focus group interviews with teachers & TAs.
2016/17	80% of teachers achieve medium fidelity (70%)	
2017/18	80% of teachers achieve high fidelity	

Some of the measures used to evaluate Goal 2 *on an annual basis* are the same as used to evaluate Goal One, allowing for multi-purpose data collection efforts over the course of the grant period. The *Teacher Knowledge Survey* will be developed during Year One of the project to ascertain teachers' knowledge of and self-efficacy for utilizing the arts, arts-integration, technology, and technology-integration. The evaluators have developed, piloted and achieved reliability of similar measures in intervention evaluations previously.

Table 6. Evaluation plan for Goal Two: Quality standards-based art instruction

EQ3: To what extent does the <i>Making it REAL: Math</i> professional development model affect teachers’ knowledge of and ability to facilitate students in creating, performing and responding to art both as a core academic subject and through integrated instruction?		
	AQ(3a) Do the <i>Making it REAL: Math</i> lessons address National and VAPA standards?	
	AQ(3b) Is there an increase in teacher knowledge and skill in teaching in and through the arts, relative to the National and California Visual and Performing Arts Content Standards?	
PO3a: 100% of the <i>Making it REAL: Math</i> lessons align with National and California Visual and Performing Arts Content Standards, Grade 4. Raw numbers.		
2015/16	100% alignment	DATA: Alignment of <i>WOA</i> lessons with National and VAPA standards
2016/17	100% alignment	
2017/18	100% alignment	
PO3b: 80% of participating teachers increase their knowledge and skill in facilitating students in creating, performing and responding to art both as a core academic subject and through integrated instruction.		
2015/16	40% of teachers have statistically significant increase	DATA: Pre-post <i>Teacher Knowledge Survey</i> ; Year-end focus group interviews with teachers and Teaching Artists.
2016/17	60% of teachers have statistically significant increase	
2017/18	80% of teachers have statistically significant increase	

Classroom instructional sessions will be observed on a randomly selected basis (at least 16 observations per year across the 16 participating classrooms at each grade level) to capture evidence that teachers are acquiring and practicing the skills and strategies included in the **REAL** program, including their skill at integrating the technology enhanced lessons. **REAL** Lesson Fidelity Checklists will be completed during each observation. The individual data will be shared with the classroom teachers and Teaching Artists, and then input for aggregated data analysis. An additional analysis will entail a content analysis of the **REAL** lesson plans by District

curriculum leaders, as well as by the evaluators. The lead evaluators have vast experience and expertise in curriculum development in the arts and cognitive development. Focus group interview items will be used verify data collected through other measures and to provide insights into how the training program functions in raising the capacity of teachers to provide quality arts instruction integrated with language arts learning that results in greater student achievement.

To evaluate learning in the arts, the evaluators will collect and analyze student scores attained from rubric-based assessments used to each student’s three individual projects. By the end of year three, classroom teachers should be delivering the arts-integrated lessons well enough to maintain high marks for all students (*see Table 7, below*)

Table 7. Evaluation plan for Goal Three: Student performance in math and art

EQ4. To what extent does <i>Making it REAL: Math</i> increase students’ skills in creating, performing and responding to the arts?		
AQ(4) What are students able to demonstrate they know and can do, relative to the National and California Visual and Performing Arts Content Standards?		
PO4: 70% of <i>Making it REAL: Math</i> students will demonstrate "Proficient" or above in their knowledge and skill in creating, performing and responding to the arts.		
2015/16	40% of participating students achieve proficiency	DATA: Standards-based arts rubrics; Year-end focus group interviews w/ teachers and TAs
2016/17	55% of participating students achieve proficiency	
2017/18	70% of participating students achieve proficiency	

To evaluate the impact of **REAL** on math proficiency levels across the 280 *Intervention A: Participating student, Intervention B: Participating students*, 280 *Control: Participating students* California Standards Tests (CST) Mathematics subtest scores will be collected from the district on an annual basis, as well as District reading benchmark test scores (*see Table 8, on page 32*). The scores will be analyzed from each test on an annual basis to determine whether **REAL** has

had a statistically significant impact on student achievement and to ascertain progress toward achieving the *WOA* program and district achievement goal of 70 percent of all students scoring at or above the proficiency. The year-to-year comparisons provide a way to track the impact of the program and provide insights into how the program is affecting students' ability to demonstrate increased achievement in math proficiency.

Table 8. Evaluation plan for Goal Three: Student performance in math and art

EQ 5. To what extent does <i>Making it REAL: Math</i> improve student achievement in math?		
AQ(5) How has <i>Making it REAL: Math</i> impacted students' math proficiency?		
PO5a: <i>Making it REAL: Math</i> students will demonstrate a greater increase in the percentage scoring "Proficient" or above on the CST math subtest from year-to-year, comparing Intervention A to Control and Intervention B to Control (Intervention A and B will also be compared).		
2015/16	Statistically significant	DATA: CST Math scores; Focus group interviews with teachers
2016/17	Statistically significant	
2017/18	Statistically significant	
PO5b: <i>Making it REAL: Math</i> students will demonstrate a greater increase in the percentage scoring "Proficient" or above on the District math benchmarks subtest from year-to-year, comparing Intervention A to Control and Intervention B to Control.		
2015/16	Statistically significant	DATA: District math benchmark scores; Focus group interviews with teachers
2016/17	Statistically significant	
2017/18	Statistically significant	

Data analysis. The results of the performance objectives will be compared with data from the control group teachers and students in completing the randomized control study and providing evidence of a causal relationship between the intervention, teacher knowledge and skill in

delivering quality arts integrated instruction, and student achievement.

(b) The extent to which the methods of evaluation will provide performance feedback and permit periodic assessment of progress toward achieving intended outcomes.

The evaluation timeline includes data collection to evaluate both short- and long-term progress. This ongoing data collection is designed to judge progress towards performance objectives as a check to program implementation. As a result, the evaluators can share interim formative results with the **REAL** staff in order to facilitate revisions to the program to maximize success. Tracking progress incrementally with an eye on both teacher and student outcomes will also help the **REAL** staff identify where the model is less successful. **REAL** staff will have enough information to adjust their professional development to better support change in teacher practice. Information from this iterative loop is important because it helps to ensure that ineffective strategies and activities are modified or deleted. The evaluation team will share this interim data on a quarterly basis. This system of checks and balances helps ensure that challenges are recognized and addressed in a timely fashion, helping to ensure the overall success of the intervention during the grant period.

(c) The extent to which the methods of evaluation will, if well-implemented, produce evidence of promise.

The current project includes an RCT design that will include randomly assigned participant and control groups of schools and follow the longitudinal growth of participating teachers and students over a three-year period. A power analysis was conducted utilizing DR's previous AEMDD results to ensure that the sample size was sufficient to detect a statistically significant difference should one exist. Data collection includes both qualitative and quantitative methods plus a review of **REAL** program itself. Whenever possible, previously utilized measures will be employed as appropriate to help the field begin to develop a set of reliable and valid assessment tools. The measures to be developed include: Implementation log, *Teacher Knowledge Survey*,

focus group protocols, *REAL* lesson fidelity checklists, teacher and teaching artist reflection session summary protocol, and standards-based student art project rubric assessments. The evaluation team will create a prototype, gain input from *REAL* program staff, pilot the measure, and revise if necessary.

Some of the quantitative measures are beyond the control of the evaluation team, such as the CST and the District reading benchmarks. This existing student data will be utilized to reduce the burden on students and teachers to gather similar information from an additional standardized assessment. The validity and reliability for these measures is strong, and the evaluation team have no reason to doubt their overall accuracy.⁹⁶