

# EVOLVING FORMS OF MUSIC-IN-EDUCATION PRACTICES AND RESEARCH IN THE CONTEXT OF ARTS-IN-EDUCATION REFORM

*Implications for Schools that Choose Music as a Measure of Excellence and as a Strategy for Change*

by

DAVID MYERS, Georgia State University, and LARRY SCRIPP, New England Conservatory, Founding Members of the Music-in-Education National Consortium  
with contributions from Vincent Marron, Founding Member of the MIENC and former Executive Director of the A+ Schools Network

Due to compelling and ongoing research that has revealed the positive impact of arts learning on public school performance and climate, many schools are now finding ways to rethink the role of music and music-integrated learning as a key element and guiding principle for ongoing reform. From its inception, the Music-in-Education National Consortium (MIENC) adopted two primary perspectives in its mission to put music at the core of the public school curriculum: (a) the value of authentic and comprehensive study of music for its own sake, and (b) the contribution of music, musical concepts, skills and processes to teaching and learning in other areas, including academic, arts, and social-emotional development [Scripp, 2002; 2000]. The focus on music as both a medium and model for arts and arts-integrated learning explains why the Music-in-Education National Consortium has evolved as a collaboration between both schools of music such as New England Conservatory or Georgia State University, which specialize in music education and the training of music teachers, and arts education organizations like the Chicago Arts Partnerships in Education or the Metropolitan Opera Guild, which provide professional development and arts residencies through multiple arts and arts-integrated learning practices.

As the MIENC moves forward with its Learning Laboratory School Network program development—which includes working conferences, certificate programs, professional development exchanges, publications, and research on the distinct role and impact of music in general education—we as collaborating members from higher education, arts organizations, and laboratory schools continue to ask ourselves the following key questions:

- What is the purpose of continuing to highlight music learning as a particular strategy for optimizing school improvement and reform processes through the arts?
- How will inquiry, documentation, assessment, and evidence of music and music-integrated learning inform the evolution

of teaching practices in and through the arts in these schools?

- What are implications for research and policy for schools that choose music-in-education practices as a measure of excellence and as a guiding principle for school change?

## EXPLORING THE PRINCIPLE OF 'DIFFERENTIATION AND SYNTHESIS' THROUGH MUSIC

For Consortium members, one important purpose of focusing on music-in-education as a key strategy for school reform is to investigate the generative principle of 'differentiation and synthesis' in teaching and learning. As a guiding principle for working with our laboratory school partners, Consortium members believe that "a genuine, comprehensive, and interdisciplinary music program assumes its full power in education through the dynamic tension between music as a distinct, authentic subject area, and as part of a rich curriculum integrated with other subject areas" [Scripp and April, 2007 in this *Journal*]. Thus, we seek to maintain music in the curriculum as a separate discipline learned through its own language and literature and as a subject area *inextricably linked* with symbol systems, concepts, and cognitive skills in other areas of the curriculum, including other forms of arts learning and social-emotional development. This 'dynamic tension' is embraced when music is taught both by fully qualified music specialists in conjunction with teaching artists and specialists in other areas of the curriculum. As shown in opera, dance, theater, or visual arts residencies, the aesthetic power of music is enhanced by its combination with other art forms, including the language arts. To ensure their contribution to cognitive development, music-in-education practices will require the guidance of academic specialists. Thus, the process of differentiation and synthesis also depends on rigorous standards of collaboration with classroom teachers and music educators trained for and dedicated to 'teaching for transfer' with regard to musical concepts and processes shared with other disciplines and/or social-emotional development.

In essence, music's particular contribution to education rests both on establishing its integrity as a separate domain and on demonstrating the validity by which its concepts and processes can be integrated across other areas of learning [Hope 2000; 2003]. From this viewpoint, for example, rhythm in music cannot be understood deeply without knowledge of the principles of proportion, just as the principles of mathematical ratios cannot be understood deeply without knowledge of their application to musical rhythm. Similarly, auditory discrimination skills in language become tied to the understanding of musical pitch and melodic contour. Even the grasp of music notation will require acknowledgement of its explicit connection to mathematical coordinate systems.

Each differentiated art form and subject area needs to be learned for its own sake, its particular literature, and its medium of expression before the process of its explicit synthesis with other subjects becomes meaningful. Thus, learning in the context of its integration with other subject areas becomes an optimal condition for assuring that fundamental concepts and processes shared between music and other domains become more deeply and broadly understood. And so, paradoxically, a comprehensive understanding of music depends ultimately on its appropriate integration with other subject areas. If schools believe that music should be positioned at the core of the curriculum, music will require standards of teaching and learning based on the principle of differentiation and synthesis before it can serve as an effective measure of whole-school excellence or as a strategy for school reform.

School reform strategies driven by equity and high standards demand that music demonstrate high quality arts learning that optimizes all children's learning capacities across the curriculum. From the point of view of 'differentiation and synthesis,' demonstration of quality will require full commitment to the assessment of genuine forms of music and music-integrated learning as innovative curriculum are created and implemented. With new and evolving forms of music-in-education research in schools, the MIENC seeks to understand how and to what effect evidence-based music and music-integrated programs can assume a central importance in education.

## MUSIC AS A STRATEGIC PRIORITY FOR ARTS-BASED SCHOOL REFORM

The approach to arts-based school reform can begin with music. Choosing music as a strategic priority for arts-based school reform does not imply music is a preeminent arts learning medium, but rather that music can serve as an effective starting point for the eventual incorporation of multiple art forms into a school's professional development, curriculum, and assessment practices. For schools that choose music as their entry point into arts learning, the choice of music can be made with a strong measure of pragmatism. In many districts music already predominates the amount of arts programming offered in public and community school arts activities. The combination of choruses, bands, orchestras, general music classes, music technology studios, and private lessons reaches far more students than any other art form at every grade

level; thus, school reform objectives through music will reach a greater proportion of students in the initial stages of building multiple arts learning practices for the purpose of whole-school improvement. What is distinctive about MIENC 'learning laboratory' schools that focus on music is also their school community's commitment to support a broader variety and combination of arts and arts-integrated learning experiences throughout the processes of ongoing school reform.

MIENC laboratory schools moving forward with authentic, comprehensive, and interdisciplinary music programs as a strategic component of school reform take into consideration the following three points:

### (1) Music integration depends on standards-based music learning outcomes.

MIENC schools have found that increased curricular and professional development opportunities for interdisciplinary instruction in and through music do not necessarily translate to a wider range of learning outcomes unless there is also sufficient emphasis on the rigorous documentation and assessment of student musical growth and development. Educators cannot assume that evidence-based 'music-integrated' learning occurs in band rehearsals, general music classes, digital

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composing studios, or academic classrooms without first ensuring that rigorous standards for high-quality interdisciplinary curriculum design and instruction and specific learning benchmarks are already in place.

**(2) Rigorous standards of music-integrated instruction and assessment are needed.**

A rigorous education in music is a pre-requisite for successful music-in-education practices that cross over to other disciplines. Therefore, if we are to achieve high standards of authentic music and arts integration practices, we must focus on teaching music musically and on engaging students deeply in the kinds of cognitive processes and social-personal skills necessary for grasping the relationships we expect to occur in music-integrated teaching and learning. In addition, Music-in-Education 'meta-curricular' practices require that traditional music classes make room for student inquiry, creativity, and problem-solving tasks, so that, in their most authentic form, music learning processes are inherently related to the wealth of potential relationships and results we would claim for it [see Morrison School case study description below]. It is our view that only evidence of high quality, process-rich music and music-integrated instruction will enable schools to assert, for example, that

- (a) instrumental, choral, and general music classes can be focused on and assessed for literacy skill development in music and its connection to language arts, math, and other forms of arts or cultural literacies;
- (b) marching bands, drum lines, drum circles, and a host of other ensembles can contribute to the celebration of community values or to the promotion of social, emotional, or personal skill development;
- (c) folk, world music, and jazz improvisation ensembles which draw on diverse cultures and music-making processes can increase social and cultural understanding; or
- (d) digital technology can provide equal access to the composition, production, and analysis of music which, when combined with media arts or interdisciplinary art forms, can also support arts and academic-rich learning projects and residencies, such as creating original opera, theater, or dance productions in schools.

**(3) The transformation of music teaching and learning is best achieved in the context of action research among partnering organizations.**

The success of interdisciplinary learning in and through music requires a transformative evolution in the field of music in public school education and its higher education and arts organiza-

tion partners. Consortium members feel that when transformation of music teaching and learning fulfills the principles and action research practices of the MIENC [Scripp and April, 2007 in this *Journal*], we will be able to demonstrate the process by which the strategic priority of musical skill development draws on and enhances learning in other art forms, academic skills, and social-personal skills. Guided by research principles, indicators of transformative process become the principal outcome of collaborative aspects of music-in-education pre-service guided internship and in-service professional development programs.

Furthering the field of music-in-education requires co-creating and co-researching innovative education practices in the context of distributed expertise. That is, teachers with varied backgrounds must adapt their teaching and discipline-based expertise in order to create learning opportunities in and through the arts. Thus, action research methodology depends on teachers and artist-teachers willing to become collaborating action researchers who document the creation of curriculum and assessment practices aligned with the goals of their school's music-in-education program and its contribution to whole-school improvement. As the cyclical process of 'inquiry and investigation to evidence and revision' becomes the hallmark of music-in-education action research, not only will virtually all students have participated in some form or another of intensive music activity and experienced its intrinsic connections to other art forms and academic skills (as listed above), but teachers and administrators will have new forms of evidence of music learning in the context of its integration with other subject areas.

**EVIDENCE OF MUSIC'S PARTICULAR CONTRIBUTION TO LEARNING AND COGNITION**

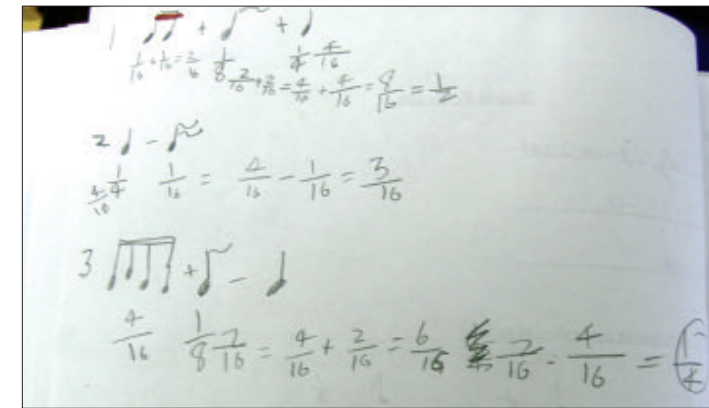
"IF THE ARTS HELP DEFINE OUR PATH TO THE FUTURE, THEY NEED TO BE BECOME CURRICULUM PARTNERS WITH OTHER SUBJECT DISCIPLINES IN WAYS THAT WILL ALLOW THEM TO CONTRIBUTE THEIR OWN DISTINCTIVE RICHNESS AND COMPLEXITY TO THE LEARNING PROCESS AS A WHOLE."

—FROM BURTON, J., HOROWITZ, R. AND ABELES, A. *LEARNING IN AND THROUGH THE ARTS: CURRICULUM IMPLICATIONS, IN CHAMPIONS OF CHANGE, 1999*

With the publication of the Critical Links Compendium [Deasy 2002], educators can cite three major strands of research that argue for schools adopting arts learning as a strategic priority for academic and social development. Each collection of findings described below reveals important implications for music as a strategic component of school improvement based on optimizing every child's capacity to learn.

**Music in the Context of Multiple Arts Learning**

There is evidence of the impact of multiple arts and arts-integrated learning practices on overall measures of school culture and performance.



At Morrison Elementary (Norwalk, CA), children explore fundamental concepts of ratio and proportion in relation to music reading, while learning the language and nature of music performance as applied to percussion instruments.

Following up on prior research on the nature [Perkins 1988] and impact of arts learning on school students [Fiske 1999; Fowler 1996], the Critical Links report [Deasy 2002] reviews a wide range of studies that examine participation in multiple arts and arts-integrated learning in the classroom as a possible causal link with improvement in learning outcomes in cognitive and social-personal development, as well as changes in teaching practices and school culture [Horowitz, R. & Webb-Dempsey, J. 2002; Burton, J., Horowitz, R. & Abeles, H. 1999].

From this viewpoint, music is studied as only one of several art forms that can share joint responsibility for the infusion of arts learning processes and collaborative teaching practices across the curriculum. This research shows how music can function as a piece of an overarching strategy for school improvement and ongoing school reform that encourages teachers to use arts learning processes (a) to enrich their teaching and assessment practices, (b) to increase their students' motivation and engagement with learning challenges that require creative problem-solving and self-expression, and (c) to enrich conceptual understanding of academic content standards and social development through a greater variety of arts experiences, literature, media and modes of expression and comprehension. Research demonstrates also that participation in music in conjunction with other art forms contributes to overall measures of school excellence and general effects in academic performance, creativity, and increased social discourse focused on learning [Ibid.].

**Music and Learning Transfer**

There is strong and pervasive evidence that suggests learning transfer occurs between—or is intrinsic to—the relationship among discipline-specific arts skills and academic and social personal learning outcomes.

There are many studies in the Critical Links report that focus on

enhanced student learning in specific areas of academic and social achievement linked with participation in a single art form. A common theme that connects many of these studies is the likelihood that arts learning promotes learning transfer [Catterall 2002a]. Thus, it is no longer surprising that researchers can demonstrate evidence consistent with links between (a) dramatic enactment and writing proficiency and the ability to understand complex social issues and emotions [Catterall 2002]; (b) drawing, visualization, or reasoning about art and language arts skills [Baker 2002]; or (c) traditional or creative dance and social tolerance, expressive skills, and general creative thinking [Bradley 2002].

Meta-analysis is a relatively new area of music research, yet it represents an accepted methodology for synthesizing a vast number of extant bodies of literature for the purpose describing its characteristics and for providing a basis for informed generalization from these data. In the case of music there is now a strong body of evidence from meta-analyses of a broad collection of studies which establishes positive significant associations between music and:

- spatial-temporal reasoning [Hetland 2000]
- achievement in math [Vaughn 2000];
- achievement in reading [Butzlaff 2000]; and
- the reinforcement of social-emotional or behavioral objectives [Standley 1996].

While the authors of these meta-analyses do caution against over-reaching claims of causal relationships between music and academic achievement in language or math, the extensive presence of strong associations between music and other subject areas overwhelmingly is consistent with evidence for positive extra-musical effects of music instruction. These findings also allow educators to envision a more interactive model of learning in and through music. Although music study mostly takes place in isolation from math and language learning in schools today, a review of research suggests that music functions as a catalyst for cognitive skills and aspects of social-emotional development across disciplines, especially when conditions for transfer are optimized through teaching to principles and processes that engage and deepen learning across disciplines [Scripp & Reider 2007; Scripp 2003; Scripp 2002; Bilharz, Bruhn & Olson. 2000; Rauscher, F. & Zupan, M. 2000; Graziano, Peterson, & Shaw 1999; Rauscher, Shaw, Levine, Wright, & Newcomb 1997].

What is unusual about music is the level of specificity of music-integration learning outcomes particularly with regard to music literacy skills [Scripp 2003; Scripp 2002; Gardiner, M. 2000]. Symbolic processing skills in music provide windows into a combination of listening, performance, and critical thinking skills that, particularly when integrated with language or math instruction, turn out to be highly related to measures of language literacy or math [Scripp 2003; Vaughn, 2000]. Music can clearly demonstrate how measurement of specific learning outcomes makes it possible to evaluate the success of quality of arts learning outcomes in relation to academic performance. Results in later studies show that

ongoing music literacy skill development coupled with classroom cultures that promote language literacy learning transfer can result in astonishingly high correlations among these factors of both music and language literacy skill development in early elementary school grades [Scripp and Reider, 2007].

#### *Music and Neurological Development*

There is evidence of the impact of arts learning skills on cognitive skill development and of music's particular impact on neurological development.

In the Critical Links Compendium, considerable attention is given to general cognitive skill development from all the arts disciplines [Catterall 2002]. Unlike other art forms, however, music has become the major focus of studies that measure the possible effect of arts learning on brain structure, activation, and growth in relation to cognitive development. With the onset of new technological advances in tracking brain activity and development, there is now new evidence for the impact of music learning on neurological and cognitive development.

*First*, long-term involvement with music appears to create differences in brain structure. Researchers investigating differences between professional, amateur, and non-musicians have found that musical skill and extensive musical practice predicts

a) unusual growth in the cerebellum [Hutchinson, Lee, Gaab, and Schlaug 2003], a region of the brain long understood to play an important role in the integration of sensory perception and motor output and more recently regarded as a structure that integrates motor with non-motor regions, making contributions to both the motor dexterity and the mental acuity required for the emergence of fluent human language; and

b) unusual density and growth of the corpus callosum—the tissues that connect the two main chambers of the brain—the overall density of gray matter (neuron processing cells) distributed throughout the brain [Gaser and Schlaug, 2003; Lee, Chen and Schlaug 2003; Schlaug 2001].

*Second*, patterns of bi-lateral activity have been detected with perception tasks relevant to musical skill development. That is, rhythm and pitch discrimination skills that are employed continuously in the rehearsal, performance, analysis, and composition of music are known to activate underlying neural networks outside of the auditory cortex that are associated with temporal processing and memory [Peretz and Coltheart 2003; Peretz and Hyde 2003; Ligeois-Chauvel, Peretz, Babai, Laguitton, and Chauvel 1998; Zatorre, Evans, and Meyer 1994].

The astonishing discoveries of changes in brain growth and structure described above reveal the neurological scope and power of musical skill development. But do musicians' brains differ from others' at birth or with training? The problem with the early research is that results did not control for the predisposition of

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**THE PROBLEM WITH THE EARLY RESEARCH IS THAT RESULTS DID NOT CONTROL FOR THE PREDISPOSITION OF MUSICIANS' NEUROLOGICAL STRUCTURE. COULD IT BE THAT IT IS THE GENETIC STRUCTURE OF THE CHILD'S BRAIN THAT PREDICTS MUSICAL INTEREST AND PROCLIVITY? OR IS MUSICAL TRAINING AT AN EARLY AGE THE MAJOR PREDICTOR OF THE STRUCTURAL AND BI-LATERAL PROCESSING DISTINCTIONS THAT WERE DISCOVERED IN THE NEUROLOGICAL PATTERNS AND STRUCTURES OF PROFESSIONAL MUSICIANS?**

musicians' neurological structure. Could it be that it is the genetic structure of the child's brain that predicts musical interest and proclivity? Or is musical training at an early age the major predictor of the structural and bi-lateral processing distinctions that were discovered in the neurological patterns and structures of professional musicians?

*Third*, there are now indications that young children's regular

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involvement with musical training predicts changes in both neurological and cognitive development. Gottfried Schlaug, an organist and neurologist at Beth Israel Deaconess Hospital, and his colleagues are now investigating the longitudinal effects of early musical training on the brain [Schlaug, Norton, Overy, and Winner 2005]. Identifying a cohort of young children that were matched for factors that included age, gender, brain structure and verbal ability, the researchers determined that there were "no markers for musical proclivity prior to training." The experimental group then received intensive instrumental training on strings or piano, and the control group received no formal musical training. Researchers systematically observed the brain activity and growth of both the control and treatment groups through newly developed functional MRI processes [Overy, Norton, Cronin, Winner, and Schlaug 2005]. A third cohort of children who have been studying music for four years was added to the study in order to anticipate any long-term effects of musical training.

Only fourteen months into this longitudinal study there are already measurable differences in the first cohort (ages 5 to 6) between the youngsters who have begun music lessons and those who have not in terms of brain bi-lateral activation (extra-temporal lobe activation) and structural differences indicated by increased levels of gray matter. Furthermore, the cross-sectional group (ages 9-11) who have been taking lessons for four years) demonstrated evidence of increased skill development in sensory motor dexterity and rhythm/pitch/melodic discrimination tasks as shown by the longitudinal sample, yet also demonstrated connections between musical development with other areas of learning such as phonemic awareness (auditory analysis) and mathematical concepts.

Thus, the trajectory of intensive musical training's impact on brain growth holds implications for both multi-modal skill development and learning in language and mathematical understanding. It appears that as highly practiced musical skills are being developed, a comprehensive and increasingly complex set of cross-domain cognitive functions takes root in the overall pattern of students' neurological growth. It appears also that the tracking of highly specialized musical skill development demonstrates how the principle of "differentiation and synthesis" manifests itself within the

neurological activity and structural growth in the early training of musicians.

In addition, neurological researchers in music are beginning to interpret their findings in terms of skills and concepts shared between what were formerly considered distinctly different cognitive domains [Gardner 1983]. The research team, which includes Andrea Norton, an experienced educator in music and music-integrated learning and assessment [Davidson, Crouch, and Norton 2000], explains the results of their study in terms of principles of cognitive development and learning transfer through music or music-integrated learning:

Because the tasks of reading music and playing an instrument call upon a wide variety of skills, there are plausible explanations for why music training could lead to transfer effects in other areas. For example, music training might enhance spatial reasoning, because music notation itself is spatial. Mathematical skills may well be enhanced by music learning because understanding rhythmic notation actually requires math-specific skills such as pattern recognition and an understanding of proportion, ratios, fractions, and subdivision (e.g., a half note is twice as long as a quarter note, and a quarter note can be evenly subdivided into four sixteenth notes). Phonemic awareness skills may be improved by music training because both music and language processing require the ability to segment streams of sound into small perceptual units. [Schlaug, Norton, Overy, and Winner 2005]

An overarching inquiry question stemming from this research can be formulated in terms of policy and practices for music's role in education: *To what extent do neurological studies of individuals involved with intensive musical training reframe our understanding of music's role in education?* One answer may stem from new representations and metaphors for music learning. When researchers report in this study, for example, that "the inferior and middle frontal regions that are activated by these rhythmic and melodic discrimination tasks may play a role in the integration of auditory events into larger units, or the sequential ordering of behaviorally relevant auditory events," they are recasting the cog-

nitive significance of music performance skill instruction and musical-cognitive development from a neurological perspective. Cognitive skill development in any domain can be framed by increased coordination of perception to behavior to reflective thinking. What is new is that evidence of these cognitive skill coordinations can be traced and verified, and perhaps more clearly understood, by corresponding measurable effects on the structure and activities of the brain. Assuming future research continues to illuminate the neurological consequences of musical development, the neurologically grounded metaphors of “shared neural networks” and “bi-lateral activation” may become conceptual markers for integrative learning in education policy stemming from results of research focused on music and music-integrated teaching and learning.

Another example of neurological research providing generative models or metaphors for music-integrated learning is the phenomenon of “mirror neurons.” Mirror neurons in the brain are known to become activated *both* when an action is observed and when that same action is performed. Schlaug and his colleagues suggest that neurological research on early training may provide new insights into relationships between the physically external and mentally internalized aspects of sophisticated musical performance and symbol processing skills:

These auditory-visual mirror neurons exemplify high-level abstraction in the representation of action—an identical neural system becomes activated regardless of whether a particular action is heard, seen or performed... As musical skills are acquired, the same kinds of action-sound mapping occur. The student learns by watching the teacher and/or conductor, by listening to the sounds that are produced by particular types of movement, by evaluating self-produced sounds either in isolation or in combination with sounds produced by other musicians, and by translating visual symbols into sound. [ibid.].

Thus described through the analogy of mirror neurons, the medium of music and music-integrated learning appears to represent an educational strategy for brain growth associated with externalized and internalized highly active, multi-modal, and connected forms of cognition. Through the analogy of music processing skills occurring by way of neural networks shared with other forms of cognition, educators can understand music’s contribution to education as a neurologically rich *medium* and *model* for the *simultaneously activated multimodal learning processes*. Musical skill development and understanding—from the first moments of listening to and learning to sing a melody or to play that melody on an instrument—takes place within a continuous interaction of listening (discrimination), performing (interpreting), creating (improvising), questioning (inquiry and discovery), and reflective thinking (self-assessment and making connections to other disciplines).

Given the implication of neurological research in music, educators can see that engagement in musical processes can result not only



Morrison Elementary School students (Norwalk, CA) are taught by fully-qualified music specialists, whose collaborations with classroom teachers and other academic specialists help to ensure that the ‘teaching for transfer’ process is inextricably linked to both the innate study of music and other academic disciplines.

in increased activation of sensory-motor and auditory processes that are now associated with measurable differences in brain development, but also, with sustained instruction, in increased activation of neural networks that support underlying cognitive skills not restricted to pitch or rhythmic processing.

**HOW MUSIC DEFINES THE QUALITY OF ITS SCHOOL COMMUNITY**

“IN SINGING GREAT CHORAL WORKS, HOWEVER IMPERFECTLY, STUDENTS GET TO EXPERIENCE ONE OF LIFE’S MOST HUMANIZING PLEASURES: THAT OF COOPERATING WITH OTHERS IN THE ATTEMPT TO FORM A BEAUTIFUL WHOLE THAT IS MORE THAN THE SUM OF ITS PARTS. STUDENTS THUS ATTAIN IN SOUND THE IDEAL OF A PERFECTED HUMAN COMMUNITY—A PERFECTED FRIENDSHIP THAT PRESERVES DIFFERENCES BUT RENDERS THEM HARMONIOUS.”

—FROM “THE NEGLECTED MUSE—WHY MUSIC IS AN ESSENTIAL LIBERAL ART” BY PETER KALKAVAGE, A CHORAL DIRECTOR AND PROFESSOR OF PHILOSOPHY AT ST. JOHN’S COLLEGE IN ANNAPOLIS, 2006

MIENC school communities are intent on rediscovering how everyone is moved by music as a unifying element of the learning process. Music’s embodiment as performance and interpretation, its tradition of early and intensive training, its ability to attract community involvement, and its unique pedagogy and language of expression all enhance its value as a universally appealing *medium* for engaged learning and as a *model* for social worth and life-long learning. Its ubiquitous presence in most children’s lives, its appeal to all ages, its presence and exportability in and across cultures all suggest why schools can benefit from choosing music as a strategic priority for school improvement and reform. Music has always been understood as an essential part of our culture and as

**GIVEN THE IMPLICATION OF NEUROLOGICAL RESEARCH IN MUSIC, EDUCATORS CAN SEE THAT ENGAGEMENT IN MUSICAL PROCESSES CAN RESULT NOT ONLY IN INCREASED ACTIVATION OF SENSORY-MOTOR AND AUDITORY PROCESSES THAT ARE NOW ASSOCIATED WITH MEASURABLE DIFFERENCES IN BRAIN DEVELOPMENT, BUT ALSO, WITH SUSTAINED INSTRUCTION, IN INCREASED ACTIVATION OF NEURAL NETWORKS THAT SUPPORT UNDERLYING COGNITIVE SKILLS NOT RESTRICTED TO PITCH OR RHYTHMIC PROCESSING.**



Teaching artist and percussionist Andrew Grueschow of the Music Center in Los Angeles uses a multicultural approach to teaching rhythm reading to classroom teachers as a way to understand music’s connections to language literacy at the Morrison Elementary School in Norwalk, CA.

The richness that is offered to students through music and the arts begins with the great variety of different “entry points” to learning made accessible to them. The potential for learning, both cognitive and social-emotional, is that students have access to arts learning processes that go far beyond what educators refer to when we speak of “transfer.” Because music is rich in the processes listed earlier in this Postlude—and as the student quoted above points out—schools can be confident in the positive effects of putting music and music-integrated learning at the core of the elementary school curriculum.

**HOW SCHOOLS FRAME THE TRANSFORMATIVE ROLE OF MUSIC IN EDUCATION**

For Marsha Guerrero, Principal of an MIENC Learning Laboratory Network School in Norwalk, California, and her professional collaborator Denise Grande of the Music Center in Los Angeles, the Morrison School music-in-education research and development project has become understood as a framework for probing into a deeper and broader understanding of music as a mode of inquiry into symbolic literacy development, cultural studies, and personal study habits. The project has also proven to be a stimulus for greater parent involvement and a resource for teacher professional development through the arts.

The Music-Integrated Teaching and Learning Framework (see Figure 1) illustrates how the school envisions working “inside of the paradox” so that music learning for its own sake and for the sake of learning across the curriculum benefits the entire school community. The framework is fashioned to show how framing music and music’s connection to other subject areas in the center of the core curriculum is optimized further by the presence of cognitive processes and meta-cognitive strategies and persona designed to maximize and sustain integrated learning throughout

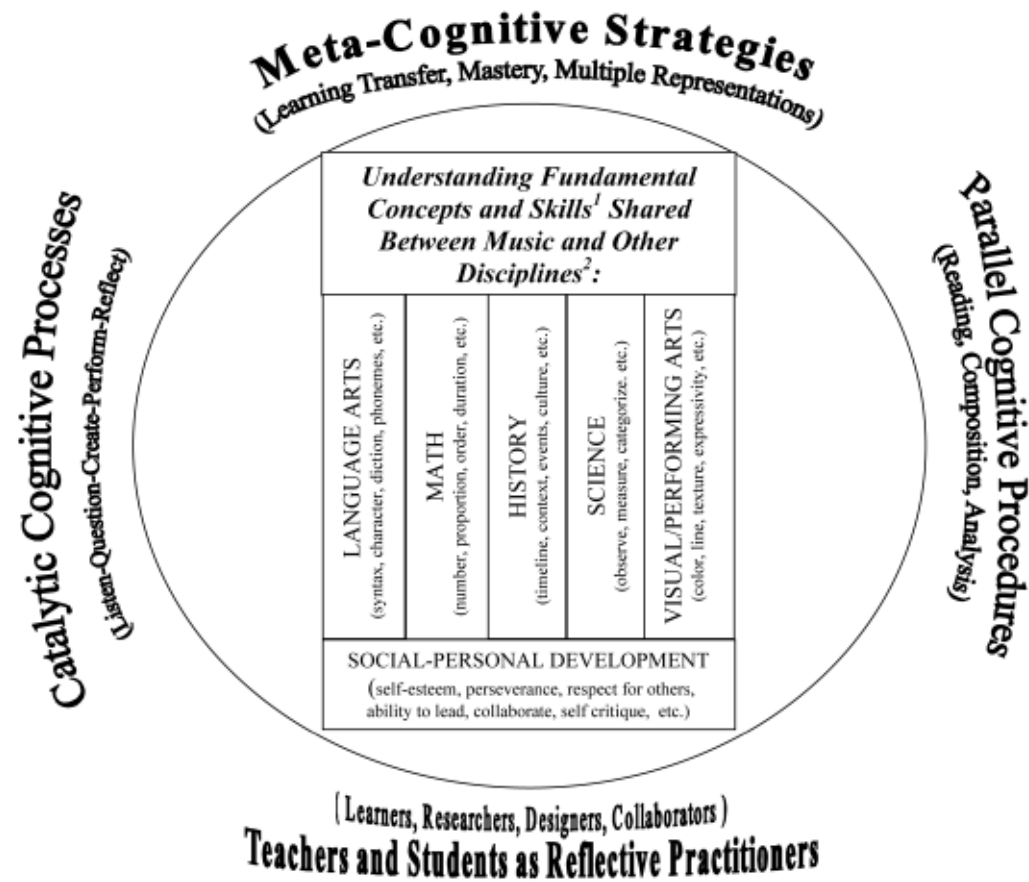
a model for excellence for gifted students. However, MIENC schools believe that when high quality, comprehensive musical experiences and training is made accessible to all students, music serves as a strategic medium and model for learning that, as research is beginning to suggest, provides a significant contribution to overall school excellence based on human potential, social action, and cognitive-neurological development.

As one student in a Chicago Saturday morning middle school all-city chorus states,

Music gets me up in the morning. Our music teachers are very critical sometimes, but then when we perform music, it makes us feel like we are all superstars. Does music help with other kinds of learning? Sure...because math and music have tricky problems to solve, and so you have to be really exact. But I think if math were taught like music, I guess we would practice it at home more. It would be more like music, it would be more fun, and we could work more together on the math, and I bet we would all succeed *together*, even if we weren’t all good at math to begin with.<sup>2</sup>

## Music-Integrated Teaching and Learning Framework

(for exploring the essential role of music in education as a discipline to itself and as a resource or model for optimizing teaching and learning in other disciplines)



<sup>1</sup>As described in national or district content and skill standards and as measured by national, state, and local forms of assessment in music and other disciplines.  
<sup>2</sup>There is a special focus on teaching and learning musical literacy skill development in a way that bridges both language and math literacy skills; this triangulation of music-math-language literacy skill development thus constitutes a deeper and broader understanding of general symbolic literacy that can be applied in any domain. Other fundamental concepts that cut across more than two disciplines such as pattern recognition, order, or perseverance can be approached similarly.

MIENC LLSN Morrison School Framework  
 (Scripp, Guerrero, Grande) 10.20.06

Figure 1

the school community. This new school-wide learning ethos is energized as music and music-integrated curricular units are directed centrifugally from rich encounters with core concepts and skills shared among music, arts, academic, and social-emotional development at the center of the curriculum toward the valuing of:

- **Cognitive Procedures** drawn from musical literacy skills that occur analogously across disciplines. Students read, compose, perform, and analyze music by using symbol systems and procedures closely paralleled with those found in language arts, visual arts, movement, and mathematics.
- **Cognitive Processes** indigenous to genuine music-making and thinking that serve as catalysts for engaging problem-solving skills and modes of expression relevant to other subject areas and social-personal development. As students develop a comprehensive array of genuine musical skills, they

are increasingly able to engage an assortment of Listening-Perceiving, Creating-Improvising, Performing-Interpreting, Inquiring-Investigating, and Reflecting-Assessing processes toward learning in other domains.

- **Meta-Cognitive Learning Strategies** intended to optimize 'teaching and learning for transfer' across the curriculum. Meta-cognitive strategies will not only challenge students (a) to demonstrate mastery of music's connections across disciplines through multiple modalities and representations, but also (b) to express awareness of 'teaching, learning, and assessing for transfer' strategies that lead to the discovery of music's interrelationships with other cognitive domains.
- **Reflective Understanding** that stems from a community of teachers and students who are becoming increasingly proficient designers, practitioners, and collaborators within a school culture of student excellence and social equity.

Evidence of positive teacher professional development and student learning outcomes through music provides a medium and a model for reflective practice within the persona of the self-disciplined learner and the ethos of a learning community that embraces change through the continual process of ongoing school reform.

The framework described above is used to organize lines of inquiry into musical skill development and its impact on various indicators of whole school improvement. As Marsha Guerrero, the Principal and instructional leader of the school puts it:

The framework we developed illustrates why music and music-integrated learning is a strategy to increase student learning across the curriculum, including social-personal development. If one deconstructs the framework into its various parts, what you have is a series of leverage points—any of which can be used with music as the lever—to raise the learning capacity of every student.

By reflecting on the collaborative work of artists and classroom teachers as co-researchers, Marsha is able to describe the everyday events of her school practices as vital episodes in the course of managing a music-in-education 'learning laboratory':

For example, when we witnessed the Music Center Teacher artist Andrew Greuschow working with early elementary students on the challenge of setting stories to music—essentially the concept of *text painting*—we could position the children's work with the percussion ensemble at the center part of the framework (see center of Figure 1) where fundamental concepts shared between music and other domains such as language arts are activated explicitly through the levers of the LQCPR (Listening, Questioning, Creating, Performing, Reflecting) processes listed on the perimeter. That is, as we go through this process in the context of the percussion ensemble, we will review students' reflections for indications of change of understanding of musical listening awareness, inquiry questions, composing and improvisation, and critical thinking skills.

Just the other day we were astonished to discover a com-

ment from a 'silent student' who writes that 'Sometimes music turns your ears into eyes.' We see in this reflection on the music residency an unusually perceptive comment about the power of musical imagination fused with storytelling (see Figure 1). Text painting in conjunction with children's literature and reflective writing helps us better understand music's connection to early literacy. In the next 20 weeks, however, the Music Center teaching artist is going to be developing a percussion festival with the students. How does that relate to literacy? Because Andrew is now familiar with our music-integration framework, we can anticipate that this time he'll be focusing more on the hidden and meta-curricular aspects of discipline and focus that students can use to understand better the underlying communication, social, and cognitive skills necessary for the development of music, language, and math symbolic literacy processes.

### MUSIC-IN-EDUCATION AS BOTH A FINE AND LIBERAL ART IN K-12 SCHOOLS

"...MUSIC IS NO MERE ADDENDUM TO HUMAN LIFE, NO HISTORICAL ACCIDENT THAT MIGHT JUST AS WELL HAVE NEVER BEEN, BUT AN ESSENTIAL PART OF WHO WE ARE AS HUMAN BEINGS."

—PETER KALKAVAGE, 2006

Examples of testimony from young children intensely involved in fine arts studies and in the MIENC laboratory school programs described above both support the view of studying music both as a fine art and an essential liberal art. In the passages from "The Neglected Muse" quoted above and at the beginning of the previous section, Peter Kalkavage provides a framework for understanding music as a community building enterprise in the context of a progressive liberal education based on music's connection between the study of fine arts and the humanities. As a teacher of both philosophy and music at St. John's College in Annapolis, he writes extensively on the value of teaching music—authentically and comprehensively—both for the sake of knowing music aesthetically and linguistically and for the sake of learning that can be applied to other subject areas. This latter purpose is less obvious

**JUST THE OTHER DAY WE WERE ASTONISHED TO DISCOVER A COMMENT FROM A 'SILENT STUDENT' WHO WRITES THAT 'SOMETIMES MUSIC TURNS YOUR EARS INTO EYES.' WE SEE IN THIS REFLECTION ON THE MUSIC RESIDENCY AN UNUSUALLY PERCEPTIVE COMMENT ABOUT THE POWER OF MUSICAL IMAGINATION FUSED WITH STORYTELLING.**

**THE CONSORTIUM DEFINES ARTS EDUCATION AS COMPRISING LEARNING IN, LEARNING THROUGH, AND LEARNING AMONG MULTIPLE ART FORMS AND GENRES. WITHIN THIS BROAD CONSTRUCT, THE MIENC ALSO RECOGNIZES THAT MUSIC CAN SERVE AS A CRITICAL FOCAL POINT IN THE SCHOOL REFORM PROCESS AND THUS EMBRACES THE DYNAMIC TENSION BETWEEN DEEP STUDY IN ONE ART FORM (MUSIC) AND THE AUTHENTIC INTEGRATION OF MUSIC WITH OTHER DISCIPLINES AND SOCIAL-PERSONAL DEVELOPMENT.**

to educators who have neglected music study or who don't recognize music's centrality in an education essential to citizenship in our liberal democracy.

Speaking of the need for a more comprehensive and personal understanding of music, he explains further:

Why should young people study music?...Music has a central place in the lives of young people. For many, music is their life. Teaching music to the young is therefore so much more than conveying historical information and technical facts, or helping students develop their musical talent. It is more that effort to make competent and aesthetically refined judgments. In getting young people to engage in a serious study of music, we are giving them an opportunity to know themselves better by becoming more precisely aware of the amazing power that music has over them. [Ibid.]

Moreover, music as an essential liberal art should provide opportunities for interdisciplinary aspects of music learning in order to deepen students' knowledge of the natural world and the humanities by helping them become more aware of the mathematical order and poetic forms that underlie music [Ibid.]. From this standpoint the serious study of musical performance, composition, and analysis is necessary as the basis for (a) discovering how musical elements acquire precise definition through the power of mathematics [Rothstein 1996]; (b) understanding how musical experience or interpretation becomes increasingly meaningful and beautiful through examination of historical context and music's vital associations with drama, poetry, visual arts; and yet also for (c) realizing that mathematical order, linguistic structures, or other extra musical factors cannot fully explain the beauty and emotional potency of music.

Education in music as a fine and liberal art requires melding listening and performance skill development toward an understanding of music informed by both perspectives: that, for example, beauty in music is more meaningfully detected and nurtured through the ear and mind of the educated listener and performer; that

music is not just a fleeting pleasure, but an invitation into endless re-experience and reinvestigation as to why music is worth knowing and creating alone and with others. Kalkavage notes that as the result of learning music in a liberal arts curriculum informed by musical practice,

With time and effort, most of us can detect the layers of order and the balance of forces at work in these pieces: the architecture of the whole. We can detect how tensions build and are sustained and how they are satisfyingly resolved. We can even learn to identify the technical means by which these effects are produced. We hear how a theme is announced and then develop, how it seems to take on a life of its own, occasionally even seeming to spin out of control only to be brought back into the economy of the musical whole [Ibid.].

Communities and families that choose to regard music as a core ingredient at any phase of a K-18 education will more likely better engage the interests and values of the students this education is intended to serve. From the MIENC standpoint, schools dedicated to music as a liberal art will find, as Kalkavage predicts, that the serious study of music functions as conduit for "fostering the habit of searching for the causes and details of beautiful things, and that the love of beauty will nourish the love of knowledge and truth." Educators may also perhaps hope that as students are opened to the power of music they will apply the musical virtues of "harmoniousness, proportion, good timing, appropriate flexibility or grace, and 'striking the right note' in thought, speech, feeling, and action" to their habits of body, heart, and mind in their day-to-day lives [Ibid.].

**OVERARCHING PRINCIPLES FOR POSITIONING MUSIC IN ARTS EDUCATION POLICY**

Considering the collective meaning, purpose and direction of the avenues of research-based program development in music contained in this inaugural issue of the *Journal for Music-in-Education*, there is a growing consensus that music and music-

integrated learning programs can serve as a strategic priority and leverage point for repositioning the essential role of arts learning in education. This repositioning has to do with understanding music as both a *unique medium* and a *generative model* for optimizing student learning and teacher professional development. Because the study of music itself has the power to transform public school students' lives, learning, and social-personal development, the principles of music-in-education can now be reframed in the even broader context of arts and arts-integrated learning. The following 'MIENC Arts Education Policy Principles' define music's essential and evolving role in the quest for sustaining school development and excellence for the benefit of all students and their families.

**MIENC ARTS EDUCATION POLICY PRINCIPLES**

**ARTS EDUCATION POLICY PRINCIPLE 1:  
*Develop Music-in-Education Programs to Serve as Primary Agents of Change within the Arts-Based Education Reform Process***

The Music-in-Education National Consortium advances the design and implementation of rigorous, developmental music learning and teaching practices as a strategic priority for school reform in and through the arts.

The Consortium defines arts education as comprising learning *in*, learning *through*, and learning *among* multiple art forms and genres. Within this broad construct, the MIENC also recognizes that music can serve as a critical focal point in the school reform process and thus embraces the dynamic tension between deep study in one art form (music) and the authentic integration of music with other disciplines and social-personal development. Thus, the MIENC seeks to catalyze arts-rich learning cultures in schools that leverage music's essential role throughout the curriculum. Such music-based endeavor may concurrently inform and draw from rigorous integration work in other disciplines *within and beyond the arts*.

Documenting and analyzing the process and achievements of this approach nationally will provide models necessary to advance the role of arts education from its longstanding peripheral status toward becoming a central element of the core curriculum and an integral component of school reform. The MIENC advocates this perspective not only for the education of youth in both in-school and after-school programs, but also for the professional development of pre-service and in-service teachers and artists.

**ARTS EDUCATION POLICY PRINCIPLE 2:  
*Design and Implement Music-in-Education Programs Based on a Curriculum of Differentiation and Synthesis***

MIENC teaching and assessment practices are aligned with national and local standards that require each art form to be

taught as a discipline and integrated throughout the curriculum. Art forms each have their own media, literature, syntax, conceptual structure, methods of practice, and pedagogy. The relationships among these attributes within particular art forms are the basis of each art form's expressive and cognitive power, and thus are the foundation of the meaning each art form contributes to interdisciplinary learning and social-personal development. In the medium of music, this deep meaning is expressed through song, movement, and instrumental performance. Its expressive power across diverse cultural and historical contexts is what has sometimes led to the characterization of music as a "universal language."

Arts integration across the curriculum is defined in terms of qualities such as repetition, contrast, intensity, flow, tension, repose, and fulfillment, which find expression in every art form through each form's unique elements. These expressive qualities underlie conceptual links that translate in some way to every area of study and, indeed, to every area of life itself. Thus, understanding the elements (pitch, rhythm, etc.) and skills of each art form is essential to grasping the unique expressions of feeling embodied in creating and performing (or producing) through those elements.

Conceptual growth, fostered through authentic and comprehensive practice of the arts (composing, playing, singing, drawing, acting, etc.), provides a foundation for the unique values the arts bring to learning across the curriculum. Tailoring concepts to the developmental needs of learners, aligning them with parallel concepts and learning processes in language or math or social studies or science, and ensuring the authenticity of the disciplines is how the power of the arts for learning is fully realized. The field of arts education is poised for models of music learning and music integration based on these precepts, and it is essential that such

**TAILORING CONCEPTS TO THE DEVELOPMENTAL NEEDS OF LEARNERS, ALIGNING THEM WITH PARALLEL CONCEPTS AND LEARNING PROCESSES IN LANGUAGE OR MATH OR SOCIAL STUDIES OR SCIENCE, AND ENSURING THE AUTHENTICITY OF THE DISCIPLINES IS HOW THE POWER OF THE ARTS FOR LEARNING IS FULLY REALIZED.**

**OUR COLLECTIVE LEARNING JOURNEY IS LIKELY TO BE CHRONICLED AS A CHALLENGING COUNTERPOINT OF TENSION AND SURPRISE, STIRRING DISSONANCE AND MOMENTS OF RESOLUTION THAT WILL TEST OUR PARTICIPANTS' RESOLVE AND FAITH IN THE VALUE OF MUSIC AND THE ARTS IN PUBLIC EDUCATION. OUR BELIEF IS THAT THE PROCESS OF INVESTIGATION, DISCOVERY, CAPACITY BUILDING, AND REFLECTIVE PRACTICE WITHIN AND ACROSS OUR PARTNERING ORGANIZATIONS WILL EVENTUALLY PRODUCE A SUSTAINABLE POLICY OF MEANINGFUL INCORPORATION OF MUSIC AND THE ARTS ACROSS THE CURRICULUM.**

models be developed if the promises touted for the arts in education are to be fulfilled.

**ARTS EDUCATION POLICY PRINCIPLE 3:**

*Use Multiple Methods of Documentation and Assessment for Evidence of Music's Evolving Contribution to Schools Dedicated to Meeting High Standards of both Equity and Excellence*

The MIENC recognizes that schools interested in the arts as a strategy for school reform may be challenged to provide rigorous arts learning in one discipline, let alone four or more arts disciplines. Building on the perspectives above, the strategic priority of the Consortium is to work with arts and education professionals who are committed to the 'evolving role of music and

musicians' in schools for the following purpose: to facilitate the creation of school cultures in which classroom and specialist teachers, community artists, children, and parents become collaborative learners in music-rich environments. Out of their musical work, schools will be encouraged to embrace additional art forms and integration opportunities. This model of integration may offer important insights into how schools and communities link to establish vital cultures of excellence in and beyond the arts.

**EVIDENCE-BASED MUSIC-IN-EDUCATION ASSESSMENT STANDARDS**

According to the MIENC, research-based guidelines for music and music-integrated curriculum design, professional development, and assessment serve as a strategy for promoting optimal conditions for teaching, learning, and school-community development that can be assessed for three outcomes:

- (1) evidence of the positive impact of authentic, comprehensive forms of music learning as a separate domain of experience, skills, repertoire, and artistic processes to be learned for its own sake;
- (2) evidence of the positive impact of rigorous music-integrated teaching and learning processes based on teaching for learning transfer and anchored by fundamental concepts, processes, and historical contexts shared between music and any number of disciplines;
- (3) evidence of the impact of multi-disciplinary and multi-modal learning focused primarily on music and based on working with multiple art forms that include music, art, and academic subjects simultaneously—as in the case of opera—in ways that equally support both the individual disciplines and their integration.

**SUMMARY**

The education policy principles posed here describe how the evolving role of music and musicians and their integration into school leadership and policy can become a strategic priority for arts-based school reform initiatives nationally.

The long-term sustainability of music-in-education programs in complex school environments will depend on far more than simply infusing conventional music into the curriculum and looking only for better test scores. To be effective as an agent for ongoing school reform, music must be deeply understood and assessed for the power it can have as both a fine and liberal art, as an extraordinary stimulus for neurosensory development, as a catalyst for interdisciplinary cognition and metalinguistic learning processes, and as a window into other forms of engaged learning through aesthetic experience, social, personal, and emotional development.

In the MIENC, music-in-education practices serve as an agent for

whole school transformation when reframed as lines of inquiry into the nature of learning itself. In the Learning Laboratory School Network, these inquiries are layered from the general to the specific and from the perspective of all stakeholders in the success of a public school. Ongoing questions such as those listed below become points of departure for curriculum innovation and the basis for presentation of new forms of evidence for school excellence:

- How can focus on music, music integration, and other arts learning processes improve teaching and learning across the curriculum?
- To what extent does collaboration between music and classroom teachers support "teaching for 'two-way' transfer" across subject areas?
- How might music literacy skill development contribute to a deeper and broader view of general symbolic literacy?
- How does musical illustration of children's literature or creating original opera support aesthetic awareness and music and language comprehension skills?
- What is the relationship between singing skills such as pitch accuracy, vocal diction, or expressiveness and the development of phonemic awareness, auditory discrimination or

spelling? Or the relationship between individual or group rhythm skills and number awareness, understanding of ratio and proportion, or phonetic decoding fluency?

- How does digital technology allow for a greater range of musical engagement, creative process, and cultural understanding?
- How can music improve school social cohesion and bonding of teachers working together as action researchers toward common professional development or school improvement objectives?

In the MIENC Learning Laboratory School Network we have learned that music's evolving role in education depends on new forms of professional development and productive collaboration among all disciplines as part of an overarching and multi-layered action research process. Thus, our collective learning journey is likely to be chronicled as a challenging counterpoint of tension and surprise, stirring dissonance and moments of resolution that will test our participants' resolve and faith in the value of music and the arts in public education. Our belief is that the process of investigation, discovery, capacity building, and reflective practice within and across our partnering organizations will eventually produce a sustainable policy of meaningful incorporation of music and the arts across the curriculum. ¶

<sup>1</sup> References to Endnotes in chronological order: Fowler (1996); Fiske (1999); Corbett, McKenney, Noblit, & Wilson. (2001); Deasy (2002); Scripp (2002, 2003b); Rabkin & Redmond (2004); Deasy (2005).

<sup>2</sup> From interviews and observations gathered from the Chicago Public Schools All-City Ensemble Teacher Professional Development Seminars led by MIENC Director Larry Scripp during the 2004-2005 academic year.

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