

## **Discussion Paper: Arts in Education**

Prepared by Debbie Look for PUSD Excellence Committee

January 2006

### **A. Introduction**

There is a widely held belief that the arts should be an integral part of education, both for its intrinsic value as well as for its impact on student achievement and the development of valuable skills. Arts is recognized as one of the core components of a well-rounded education that will prepare students for the working world, for their roles and responsibilities as citizens and to prepare them for life in an increasingly interdependent and culturally diverse world.

A 2001 national survey reported that 91% of American adults think the arts are vital to a well-rounded education for children; 95% agree that the arts teach creativity and self-expression; and 89% think arts education is important enough to be included in the curriculum. In a 1997 Gallup poll, 88% of Americans said that schools should offer instrumental music as part of the regular curriculum. An earlier poll showed that a majority of parents think that the arts are as important as reading, writing, math, science, history or geography. More than half said they favored cuts in administration or sports in order to pay for arts classes. Top business executives believe that arts education programs can help repair weaknesses in American education and better prepare workers for the 21<sup>st</sup> century.

The Arts Education Partnership, a private nonprofit coalition of education, arts, business, philanthropic and government organizations, notes the following benefits relating to arts in education:

- The arts are serious and rigorous academic subjects that are an essential aspect of human knowing.
- The arts have far-reaching potential to help students achieve educational goals.
- Creativity is naturally developed through the arts.
- Student engagement and persistence improve with an arts-based curriculum.
- High-risk students are helped through the arts.
- Understanding of one's self and others expands with arts education.
- Arts education prepares students for jobs.

The following sections look at the current status of arts education in the nation and in California, in particular. We also look at the body of research that supports the claims regarding the multitude of benefits of arts education. Finally, we point out some cautions regarding the research conducted to date and outline recommendations that have been made about the future of arts education.

## B. The Current Status of Arts Education

In 1998, the National Endowment for the Arts (NEA) highlighted the especially poor status of arts education in the U.S. with “Toward Civilization: A Report on Arts Education”. Statewide arts education programs were enhanced or begun in nearly two-thirds of states as a result of the NEA initiative. The Goals 2000: Educate America Act, approved by Congress in 1994, includes the importance of raising expectations for all students and meeting high academic standards in core subjects, including the arts. Also in 1994, the Improving America’s Schools Act reinforced the importance of the arts in relation to other subjects and as vital subjects in themselves.

In recent years, local communities have repeatedly focused attention on arts education. Concerns about the lack of programming and schools’ substantial cutbacks in the arts have led to new initiatives. In some cases, new programs have started with public and private backing and community support.

California experienced a severe decline in arts education after the passage of Proposition 13, a property tax freeze, in 1978. Funding to schools was negatively impacted and as education budgets shrank, arts programs were seen as frills and were subject to severe cutbacks. In recent years, arts organizations, parents and educators have been fighting to bring back the arts. The California State PTA has identified arts education as one of its top priorities and has been promoting the “SMARTS: Bring Back the Arts” awareness and advocacy campaign for the past five years. In 2001, the California State Board of Education adopted standards that identify what students need to know to develop and demonstrate competency in dance, music, theater and the visual arts. This was seen as a step toward integrating the arts into the public schools’ core curriculum.

Arts education is increasing being viewed as an essential component in a student’s preparation for college. The U.S. Department of Education suggests one year of Visual and Performing Arts for college-bound high school students. The arts are one of the six subject areas in which the College Board recognizes as essential in order to thrive in college. Both the University of California and the California State University systems have added a full-year credit in fine arts to their admissions requirements.

The following data provides a picture of the availability of arts programs, by type, in the nation’s public elementary and secondary schools:

Figure 1: Availability of arts education in U.S. **elementary schools** in 1999/00 (National Center for Education Statistics).

<b>Factor</b>	<b>Music</b>	<b>Visual Arts</b>	<b>Dance</b>	<b>Drama/theater</b>
Offer instruction	94%	87%	20%	19%
Of those offering instruction, # with full-time specialists	72%	55%	24%	16%
Of those offering instruction, # with dedicated facilities/equip.	67%	56%	14%	13%

In addition, in the 1998/99 school year, of the nation’s public elementary schools:

- 77% sponsored field trips to arts performances.
- 65% sponsored field trips to art galleries or museums
- 38% sponsored visiting artists
- 22% sponsored artists-in-residence
- 51% sponsored after-school activities that included the arts.

Figure 2: Availability of arts education available at the **secondary** level in 1999/00:

<b>Factor</b>	<b>Music</b>	<b>Visual Arts</b>	<b>Dance</b>	<b>Drama/theater</b>
Offer instruction	90%	93%	14%	48%
Of those offering instruction, # with >1 full-time specialists	91%	94%	77%	84%
Of those offering instruction, # with dedicated facilities & equipment	91%	87%	41%	53%

In addition, in the 1998/99 school year, of the nation’s public secondary schools:

- 69% sponsored field trips to arts performances.
- 68% sponsored field trips to art galleries or museums
- 34% sponsored visiting artists
- 18% sponsored artists-in-residence
- 73% sponsored after-school activities that included the arts.

Despite renewed interest in arts education and a concerted effort on the part of many, the provision of quality arts programs in our schools continues to offer significant challenges. One of these is the degree to which the push towards accountability, through No Child Left Behind and statewide initiatives, will lead school systems to emphasize those core subjects that are subject to standardized testing at the expense of other important parts of the curriculum, including the arts.

A second major challenge to the implementation of successful arts education for all students is a shortage of qualified teachers. It is estimated that there is only one arts specialist for every 1,200 students nationwide. California State University teacher preparation programs no longer require elementary teachers to take music or arts education classes to achieve their credential. There are no current credentialing programs for theater and dance teachers. In California, the Department of Education reports that there are 8,126 full-time credentialed teachers of the arts teaching almost 1.5 million students in discipline-specific arts classes. This represents only 23% of the state’s student population.

## **C. Research on the benefits of arts education**

Researchers have suggested a number of ways in which arts can have value in education. These include:

- Study of arts has an intrinsic value.
- Skills developed in arts education lead to learning in other areas.
- Arts education fosters brain development.
- Arts education leads to development of social skills.

Each of these is discussed below and is accompanied by a sampling of research findings that support the position.

### **1. Intrinsic value of arts education**

Advocates stress the importance of valuing arts education for its intrinsic value. Music, visual arts, dance and drama provide experiences that cannot be duplicated by other means. These art forms provide pleasure and meaning. Some argue that explorations, discoveries and insights from the arts are on par with the sciences in giving sense and meaning to the world. Arts have consistently been a part of human society and history.

- Students in suburban elementary school classes in Arizona were exposed to two 30-minute lessons on North American Indian music per week for 6 weeks. Students acquired the desired content and skills, developed cultural awareness and held less stereotypical beliefs after the unit. (Welch).
- Students performing well in at least one art form reported a wide range of positive effects from arts education including direct learning of skills in the art form, enjoyment, relief of tension, learning about social & cultural issues, development of creativity & thinking skills, enriched expressive skills and a multitude of social skills. (Harland, Critical Links).
- "...among the compelling reasons for arts education...are the likelihood that skill and craft gained in the arts help students to understand that they can improve in other consequential activities and that their heightened skill can give pleasure to themselves and to others." (Gardiner, Critical Links, p. 154).
- "When a child learns by experience that music forges direct links between self and world, self-expression becomes more fluent; the music helps interpret 'who I am'." (Support music.com / National Commission on Music Education, 1990).
- "Music making is fun and children love to make music. When you consider the developmental benefits with the fun of music-making, this creates an even more compelling argument..." (Rauscher).

## **2. Skills developed in arts education lead to learning in other areas**

A leading researcher in the field has suggested, “quality learning in the arts stimulates and supports learning in other domains for all students, but this is especially true for students from impoverished backgrounds.” (Deasy). A comprehensive listing of potential positive outcomes for arts learning supported by research is included as Appendix A on page 12.

### **a. Researchers suggest that skills learned through arts education transfer to study skills, communication skills and cognitive skills that are useful in all aspects of the curriculum.**

- In 1995, SAT scores for students who studied the arts for more than 4 years were 59 points higher on the verbal and 44 points higher on the math portion than students with no coursework or experience in the arts. (Arts Education Partnership).
- In 1999, music appreciation students scored 61 points higher on the verbal and 42 points higher on the math portion of the SAT. (Children’s Music Workshop).
- Survey data from 25,000 high school students followed in the National Educational Longitudinal Study (NELS) found that 79.2% of 8<sup>th</sup> graders involved in the arts reported earning mostly As and Bs versus 64.2% of students with no artistic involvement. In controlling for possible effects due to family income, the study found that 64.5% of low SES 8<sup>th</sup> graders involved in the arts reported receiving mostly As and Bs versus 56.4% of the students uninvolved in the arts. (Deasy & Catterall).
- An additional analysis of the NELS data found that, of low SES 10<sup>th</sup> graders with arts involvement, 41.5% scored in the top two quartiles on standardized tests as opposed to 24.9% of their peers who were not involved in the arts. (Deasy & Catterall).
- The NELS data also showed that high school music students received more academic honors and awards than non-music students. (Children’s Music Workshop).
- An elementary school program that includes art study and integration was evaluated in two districts in Ohio. Students showed gains on creativity measures, in some aspects of academic achievement, and in appreciation of the arts. (Welch).
- In the “Different Ways of Knowing” program, a total of 920 elementary school students in 52 classrooms in Boston, Cambridge & L.A. were exposed to visual and performing arts lessons and content incorporated into interdisciplinary thematic units. High-risk elementary school students with three years in the program outscored non-program students with significantly higher report card grades in the core subject areas of language arts, math, reading and social studies. Participants showed significantly higher levels of engagement and increased beliefs that there is value in personal effort for achievement. (Welch).

- An evaluation of artist-in-residence programs offered in 65 classrooms in 11 schools (4<sup>th</sup>-9<sup>th</sup> grade) in the L.A. area found that students involved showed improvement in communications skills and attitudes. (Welch).
- A meta-analysis of 25 studies indicated a significant relationship between music study and mathematics achievement. Students who take music classes in high school are more likely to score higher on standardized math tests such as the SAT. This study also suggests that the increases in math scores are not simply correlational, but are due to the music instruction. (Vaughn, Critical Links).
- A study, which looked at a small group of students at risk for high school dropout found that 41% said that something about the arts kept them in school. (Barry, Critical Links).
- One study, involving 96 children aged 5-7 years, found that those who received 7 months of supplementary music and visual arts classes achieved higher standardized mathematics scores than children who received the school's typical music and arts training. (Rauscher).
- "The schools that produced the highest academic achievement in the United States today are spending 20% to 30% of the day on the arts, with special emphasis on music." (Support music.com /IAEEA test 1988).
- "The world's top academic countries place a high value on music education. Hungary, Netherlands and Japan have required music training at the elementary and middle school levels, both instrumental and vocal, for several decades." (Support music.com / IAEEA)

**b. Some have hypothesized that arts education affects basic reading skills, language development and writing skills.**

- An evaluation of the "Humanitas Program", an interdisciplinary arts and humanities program implemented in 29 L.A. area secondary schools showed positive outcomes for participants in writing, attendance and other measures. (Welch).
- A 20-year program operating in 8 inner-city New York elementary schools designed to integrate visual and performing arts with other areas of study showed positive results in improving reading performance among low achieving students. (Welch).
- 2<sup>nd</sup> & 3<sup>rd</sup> grade classes in a rural Rocky Mountain region were exposed to a 15-week program of drawing, drama or traditional discussion-based pre-writing activities. Drama and drawing were found to be more effective pre-writing activities. (Welch).
- Urban 3<sup>rd</sup> & 4<sup>th</sup> grade remedial readers were exposed to 10 sessions of classroom theatre over the course of a year. Positive outcomes were observed in reading levels. (Welch).

- The Chicago Arts Partnership in Education (CAPE) program teaches 6-12 week classes that integrate arts education and more traditional academic studies. After six years of the program, 9<sup>th</sup> grade students were reading one full grade level ahead of their peers who were not involved in the program. (Deasy & Catterall).
- A yearlong music and poetry-related program offered to low achieving 4<sup>th</sup> graders found positive outcomes in “total language” achievement. (Welch).
- A meta-analysis of 32 studies on the effects of creative drama on children’s skills in reading, oral and written communication, person-perception and drama found that moderate gains were shown. (Welch).
- A 6-week creative drama program designed to enhance reading comprehension among 5<sup>th</sup> grade remedial readers in 3 different schools found that comprehension gains on standardized tests were recorded for the students involved. (Welch).
- Drama techniques were found to be an effective method for promoting facility in English as a second language among young children. (Arts Education Partnership).
- Results of 2 meta-analyses of research studies that link instruction in the visual arts to improved reading abilities found that art-based reading instruction promotes better reading, largely through the added motivation that art offers for learning. The more indirect connection between the transfer of doing art and increasing reading achievement was not clearly proven. (Burger & Winner, Critical Links).
- A study found that 90 6-15 year-old boys with music training had significantly better verbal memory than children without such training. This provides support for a correlation between music instruction and verbal abilities. (Rauscher).

c. **Studies have shown that music helps develop spatial reasoning.**

Research suggests that music training at an early age can develop the neural connections that are necessary for understanding complex mathematical and scientific concepts. This research shows a link between musical training and other cognitive abilities, particularly spatial abilities. Spatial reasoning is a form of abstract reasoning that is used for understanding the relationships between objects and is important to many fields, including music and to concepts in math such as proportions and fractions.

- The NELS data shows that students who report high levels of involvement in instrumental music show significantly higher levels of mathematics proficiency by 12<sup>th</sup> grade. (National Association for Music Education).
- A UC Irvine study showed that after 8 months of keyboard lessons, preschool children showed a 46% boost in their spatial reasoning IQ. (Beyette).

- Children given piano lessons significantly improved in their spatial-temporal reasoning scores. (National Association for Music Education).
- In Kindergarten classes in Wisconsin, children who were given music instruction scored 48% higher on spatial-temporal skill tests than those who did not receive music training. (National Association for Music Education).
- A meta-analysis of 15 studies involving 701 children ages 3-12 years suggests that children provided with music instruction score higher than controls on spatial-temporal tasks. (Rauscher).
- Researchers compared the proportional reasoning scores of several groups of children, aged 7-9 years, including one group who received computer-generated spatial-temporal training coupled with piano keyboard instruction. The group that included piano training scored significantly higher than the group that did not. (Rauscher).
- Up to 3,000 studies provide a clear picture of the connections between music learning and the fundamental cognitive capacity called spatial reasoning. Mathematical skills as well as language facility benefit directly from spatial reasoning skills. (Cattrall, Critical Links).

### **3. Arts education fosters brain development**

It has been suggested that the study of music, in particular, leads to brain development.

- Researchers in Leipzig discovered through the use of brain scans that musicians had larger planum temporale (the region of the brain associated with reading skills) than those of non-musicians. (Children's Music Workshop).
- Scientists used functional MRIs to scan the brains of pianists and non-musicians of the same age and sex. They found that, compared to non-musicians, the brains of pianists are more efficient at skilled movements. (National Association for Music Education).
- University of Montreal researchers used various brain imaging techniques to investigate brain activity during musical tasks and found that sight-reading musical scores and playing music both activate regions in all four of the cortex's lobes; and that parts of the cerebellum are also activated during these tasks. (National Association for Music Education).

#### **4. Arts education and the development of social skills**

Catterall notes that instruction in the arts affects social skills including positive social behaviors, social compliance, ability to express emotion, courtesy, tolerance, conflict-resolution skills, ability to collaborate, and attention to moral development. Rauscher suggests that only by working together can students play a musical performance and thus, they learn that cooperation is a means to an end, which can be applied to other goals.

- The Arts Alternatives Program was offered to 4<sup>th</sup> through 6<sup>th</sup> grade students in New Jersey urban schools serving disadvantaged students (low SES, high minority). The program included role-playing and story writing activities. Students reported significantly improved attitudes relating to self-expression, trust, self-acceptance and acceptance of others. (Welch).
- A review of 57 research studies found that self-concept is positively enhanced through the arts. The relationship between music participation and self-concept was strongly in evidence. (Arts Education Partnership).
- 5<sup>th</sup> grade band students derived satisfaction from peer and adult recognition through their band experience regardless of their perception of their talents. (Arts Education Partnership).
- Texas secondary school students who participated in band, orchestra or choir reported the lowest lifetime incidence of substance abuse. (Children's Music Workshop).
- 'With music in schools, students connect to each other better – greater camaraderie, fewer fights, less racism and reduced use of hurtful sarcasm.' (Support Music.com).
- Two studies among elementary school students receiving training in the Kodaly Music program which builds skills in individual and group singing found that students receiving more extensive Kodaly training showed greater improvements in classroom behavior and standardized reading scores. (Gardiner).

#### **D. Cautions Regarding Interpretation of Research Results**

Vaughn & Winner (Critical Links) urge caution when making causal claims for the arts. They suggest that higher-performing students have greater access to arts classes, and are more likely to participate in them. Availability of arts classes tends to be a characteristic of high-performing schools. Many independent and affluent suburban school districts have been able to retain their arts programs, even in difficult financial times. Conversely, inner-city schools, often with lower-performing students, have not fared as well in retaining their arts programs, therefore those students are less likely to be taking art classes due to a lack of availability.

Catterall and Deasy note that residual family and background influences, rather than arts involvement, may also be responsible for the higher academic achievement of the students they examined. More highly educated or affluent parents often place great value on arts training. However, many of the studies cited did make some attempt to control for income level. The studies suggest that, overall; arts education is, at least, a strong contributing factor to academic achievement. More research is needed to determine what specifically about instruction in the arts improves learning.

Advocates suggest that educators should be careful about overemphasizing the causal relationship between arts education and student achievement, "...the talk of learning mathematics through music or producing increased standardized test scores through the visual arts would demean the higher place of art in society, further shielding the intrinsic worth of the arts from the public eye." (Catterall, Critical Links). "We must be careful not downplay the importance of music for the beauty and value it brings into the lives of children. We should not engage our children in musical activities solely because they encourage brain development." (Rauscher).

## **E. Summary and Conclusions**

Despite the cautions noted above, however, the consistent positive correlations between arts education and positive outcomes for students, including achievement, across so many studies cannot easily be ignored. There are many strong studies supporting the connections between drama and music with academic and social outcomes. Although there are not as many studies relating to the impacts of visual arts and dance, it would still appear that there is some relationship between these areas and academic and social outcomes. Researchers highlight the need for more research in these fields.

Studies clearly show the impact of arts on engaging and motivating students. The direct connection between participation in arts education and student achievement, although more difficult to prove, is also evident. This is particularly the case for low-achieving students. The arts can attract students who have not achieved success in school in other areas. Many of the studies quoted refer to the academic and social benefits accruing to at-risk and failing students who are involved in various arts education programs.

In 1998 a group of ten leading educational organizations in the U.S., including the American Association of School Administrators, American Federation of Teachers, National Education Association, National Parent Teacher Association and the National School Boards Association, adopted a Statement of Principles regarding “The Value and Quality of Arts Education”. This statement outlines the following seven principles:

- Every student in the nation should have an education in the arts.
- To ensure a basic education in the arts for all students, the arts should be recognized as serious, core academic subjects.
- As education policy makers make decisions, they should incorporate the multiple lessons of recent research concerning the value and impact of arts education.
- Qualified arts teachers and sequential curriculum must be recognized as the basis and core for substantive arts education by all students.
- Arts education programs should be grounded in rigorous instruction, provide meaningful assessment of academic progress and performance, and take their place within a structure of direct accountability to school officials, parents and the community.
- Community resources that provide exposure to the arts, enrichment, and entertainment through the arts all offer valuable support and enhancement to an in-school arts education... however, these kinds of activities cannot substitute for a comprehensive, balanced, sequential arts education taught by qualified teachers.
- We offer our unified support to those programs, policies, and practioners that reflect these principles.



**APPENDIX A:  
COMPENDIUM SUMMARY: THE ARTS & ACADEMIC & SOCIAL OUTCOMES**

Source: “Arts & the Transfer of Learning” by J. Catterall, Critical Links, p. 151.

This table provides a listing of the many arts-related academic and social outcomes that find support in the research.

<b>ARTS LEARNING</b>	<b>FORM</b>	<b>COGNITIVE CAPACITIES &amp; MOTIVATION TO LEARN</b>
<b>Visual arts</b>	Drawing	Content & organization of writing
	Visualization training	Sophisticated reading skills/interpretation of text
	Reasoning about art	Reasoning about scientific images
	Instruction in visual art	Reading readiness
<b>Music</b>	Early childhood music training	Cognitive development
	Music listening	Spatial reasoning; spatial temporal reasoning; quality of writing; prolixity of writing
	Piano/keyboard learning	Mathematics proficiency; spatial reasoning
	Piano and voice	Long-term spatial temporal reasoning
	Music performance	Self-efficacy; Self-concept
	Instrument training	Reading; SAT verbal scores
	Music with language learning	English skills for ESL learners
<b>Classroom Drama</b>	Dramatic enactment	Story comprehension (oral & written); character identification & motivation; increased peer interactions; writing proficiency & prolixity; conflict resolution skills; concentrated thought; understanding social relationships; ability to understand complex issues & emotions; engagement; skill with subsequently read, unrelated text; problem-solving dispositions/strategies; general self-concept.

ARTS LEARNING	FORM	COGNITIVE CAPACITIES & MOTIVATION TO LEARN
<b>Dance</b>	Traditional dance	Self-confidence; persistence; reading skills; nonverbal reasoning; expressive skills; creativity in poetry; social tolerance; appreciation of individual/group social development.
	Creative dance	General creative thinking: fluency, originality, elaboration & flexibility.
<b>Multi-arts programs</b>	Integrated arts/academics	Reading, verbal & math skills; creative thinking; achievement motivation; cognitive engagement; instructional practice in the school; professional culture of the school; school climate; community engagement and identity.
	Intensive arts experience	Self-confidence; risk-taking; paying attention; persevering; empathy for others; self-initiating; task persistence; ownership of learning; collaboration skills; leadership; reduced dropout rates; educational aspirations; higher-order thinking skills.
	Arts-rich school environment	Creativity; engagement/attendance; range of personal & social developments; higher-order thinking skills.

## REFERENCES

- Arts Education Partnership, "Eloquent Evidence: Arts at the Core of Learning". [www.nasaa-arts.org/publications/eloquent.pdf](http://www.nasaa-arts.org/publications/eloquent.pdf)
- Arts Education Partnership, "Gaining the Arts Advantage: More Lessons from School Districts that Value Arts Education", [www.aep-arts.org](http://www.aep-arts.org)
- Beyette, Beverly, "The Arts Come Back to Class", The California Arts Project, September 2001. [http://csmp.ucop.edu/tcap/news/09\\_09\\_01.html](http://csmp.ucop.edu/tcap/news/09_09_01.html)
- California Alliance for Arts Education, "Who teaches the visual and performing arts in California public schools?" [www.artsed411.org](http://www.artsed411.org)
- Children's Music Workshop Online, "Music Advocacy Facts and Statistics". [www.childrensmusicworkshop.com/advocacy/factsandstatistics.html](http://www.childrensmusicworkshop.com/advocacy/factsandstatistics.html)
- Deasy, Richard and James Catterall, "Increasing Student Achievement Through The Arts". American Youth Policy Forum. 2000. [www.aypf.org/forumbriefs/2000/fb020400.htm](http://www.aypf.org/forumbriefs/2000/fb020400.htm)
- Deasy, Richard J., "Critical Links: Learning in the Arts and Student Academic and Social Development". Arts Education Partnership. 2002. [www.aep-arts.org/clinkspage.htm](http://www.aep-arts.org/clinkspage.htm). Note this document includes a large number of research papers, which were cited in this paper.
- Gardiner, Martin F., "Arts Training in Education". The Teaching Exchange. January 1999. [www.brown.edu/Administration/Sheridan\\_Center/pubs/teachingExchange/jan99/TE\\_artstraining.shtml](http://www.brown.edu/Administration/Sheridan_Center/pubs/teachingExchange/jan99/TE_artstraining.shtml)
- Music Education Coalition, "Music Education Statistics and Information". [www.supportmusic.com](http://www.supportmusic.com)
- National Association for Music Education, "The Value and Quality of Arts Education: A Statement of Principles". [www.menc.org/information/prek12/princip.html](http://www.menc.org/information/prek12/princip.html)
- National Association of Music, "Music Education Facts and Figures". [www.menc.org/information/advocate/facts.html](http://www.menc.org/information/advocate/facts.html)
- National Association of State Boards of Education, "The Complete Curriculum: Ensuring a Place for the arts and foreign languages in America's schools". 2003. [www.nasbe.org](http://www.nasbe.org)
- National Center for Education Statistics, "Arts Education in Public Elementary and Secondary Schools: 1999-2000". <http://nces.ed.gov/surveys/frss/publications/2002131/3.asp>
- Rauscher, Frances H., "Can Music Instruction Affect Children's Cognitive Development?" September 2003. Eric Digest #ED480540. [www.ericdigests.org/2004-3/cognitive.html](http://www.ericdigests.org/2004-3/cognitive.html)
- Welch, Nancy and Andrea Greene, "Schools, Communities and the Arts: A Research Compendium". Morrison Institute for Public Policy. June 1995. [www.asu.edu/copp/morrison/public/schools.pdf](http://www.asu.edu/copp/morrison/public/schools.pdf)