

## INVOLVEMENT IN **The Arts and Success in Secondary School**

*Americans for the Arts is pleased to present this new benchmark research study demonstrating the positive impact of the arts on education. Examining longitudinal data of 25,000 students, Dr. Catterall's research reveals how involvement in the arts is linked to higher academic performance, increased standardized test scores, more community service, and lower drop-out rates. Using sophisticated research methods, he also demonstrates that these cognitive and developmental benefits are reaped by students regardless of their socioeconomic status.*

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### INTRODUCTION

This paper describes relationships between student involvement in the arts and academic achievement. The analysis is based on a longitudinal study of 25,000 secondary school students sponsored by the United States Department of Education.<sup>1</sup> This national data collection project launched in 1988 has supported leading research on student achievement in recent years, including studies addressing school organization, curriculum and the problems of students at risk. This paper presents the first reported analysis of information in this national survey about student participation in the arts. Here the focus is arts involvement and its potential ties to academic success in the middle and high school years. The analysis is straightforward and largely descriptive. Yet despite the simplicity of the approach, the results seem unprecedented in their grasp of how arts-rich versus arts-poor youngsters do in school. The findings are likely to garner a warm reception by readers necessarily lacking much in the way of hard data supporting what philosophers eloquently contend about the meaning of arts in human development.<sup>2</sup>

*The study is reported in three sections.*

**ABOUT THE AUTHOR**

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The first section describes student participation rates in 8th and 10th grades in various school and community based arts activities such as school band or drama productions, arts classes in school, and art-related lessons outside of school.

The second section describes academic performance levels and selected behaviors and attitudes of students at grades 8 and 10, for two student groups with different experiences with the arts: one group is students reporting high levels of overall involvement in the arts; the other is students with low arts involvement. As one might expect, there are systematic differences between these two groups favoring the arts-rich on all measures. That such an outcome is expected stems from the fact that opportunities to participate in the arts are typically higher for children from more educated and affluent families — and these children tend to do better in school anyway for various reasons.

In an effort to control for so obvious a challenge to general claims for the importance of the arts when it comes to school performance, a different analytical strategy is used in the third section. Here, relationships between involvement in the arts and achievement are examined, this time for children from homes in the lowest quartile of the family income and parent education spectrum. The achievement differences between high and low-arts youth within this economically disadvantaged group remain significant.

Moreover, the importance of consistent involvement in the arts shows up in increased advantages for arts-rich (even though economically poor) youngsters by the 10th grade.

**A substantial case for the importance of the arts in the academic lives of middle and high schoolers is the primary implication of this research.**

### SECTION 1: ARTS PARTICIPATION RATES IN MIDDLE AND HIGH SCHOOL

The national survey used for this work provides the most comprehensive data on student participation in the arts available anywhere. Different indicators were used in the 8th and 10th grade surveys;<sup>3</sup> summaries of student participation rates are shown in Figure 1A and 1B (at right).

**FIGURE 1A:**

#### PERCENTAGES OF 8TH GRADERS INVOLVED IN ARTS-RELATED ACTIVITIES

##### TAKES ONE CLASS PER WEEK OR MORE:

Art	45.0%
Music	48.0%
Drama/Speech	10.2%

##### PARTICIPATES IN:

Band or Orchestra	19.0%
Chorus/Choir	21.0%
Debate/Speech	4.5%
Drama	7.4%

##### ATTENDS MUSEUM WITH FAMILY:

Art Museum	42.0%
Science Museum	55.9%
History Museum	53.4%

As shown in Figure 1A above, about half of 8th graders report taking an art or music class at least once per week. Only about one-tenth of 8th graders take drama classes. Approximately one fifth of students are involved in band, orchestra, or chorus. Art museum attendance is reported by 42 percent of 8th graders; over half in this group report attending science and history museums with their families.

By 10th grade, regular involvement in the arts in school seems to drop-off. As shown in Figure 1B, only about a third of students pursued art, music, or drama classes as 9th and 10th graders. The percentages of students studying the arts in school for more than two semesters during this time period are about 8 percent for art, 15 percent for music and 2 percent for dramatic arts. About one-fourth of students report taking out of school arts-related classes during grades 9 and 10, with about one in five of all students taking classes once per week or more.

**FIGURE 1B:  
PERCENTAGES OF 10TH GRADERS  
INVOLVED IN ARTS-RELATED ACTIVITIES**

TAKES COURSEWORK IN:		
Art	0 years	64.4%
	0.5 years	10.6%
	1 year	17.2%
	1.5 years	1.7%
	2 years	6.1%
Music	0 years	69.3%
	0.5 years	5.1%
	1 year	10.4%
	1.5 years	1.6%
	2 years	13.6%
Drama	0 years	70.5%
	0.5 years	3.7%
	1 year	3.9%
	1.5 years	0.4%
	2 years	1.4%
TAKES OUT-OF-SCHOOL CLASSES IN:		
Music, Art, or Dance	rarely or never	74.2%
	less than 1 / week	5.8%
	1-2 per week	8.6%
	every day or almost	11.3%

**SECTION 2: HIGH VERSUS LOW  
ARTS INVOLVEMENT AND GENERAL  
STUDENT PERFORMANCE**

The statistics shown above for 8th and 10th graders would support various perspectives on arts involvement for secondary school students. Analysis of relationships between the arts and academic success used the indicators shown in Figures 1A and 1B to develop scales indicating overall arts-involvement levels at grade 8 and over grades 8 and 10 combined. A point was assigned for participation in a given arts class or activity, an additional point for serving as an officer of an arts-related endeavor (e.g., president of the drama club) and additional points for engaging in added years or high weekly frequency of an activity

(e.g., taking lessons outside of school). Museum attendance by student families was assigned fractional points (one-third of a point).<sup>4</sup> Our main resulting scale — showing the point totals by student for cumulative involvement in the arts over both grades 8 and 10 — shows a total of 2 or fewer points for the lowest-involved fourth of all students, and shows about 7 or more points for the highest-involved quarter of all students. **This means something like the following: students in our low arts group typically enrolled in one arts course in either grade with no additional involvement in the arts. Students in our high arts group may have taken 2-3 arts classes, participated in the band and drama clubs, and may be taking regular lessons outside of school. About 3 percent of all students earn zero points on this scale; another 3 percent score more than 12 points.**

**THE ARTS AND EIGHTH GRADE STUDENT  
PERFORMANCE**

The highest and lowest arts-involved quartiles of all 8th graders and then 10th graders serve as a basis for general analyses of academic achievement. **In the discussion below, we refer to these groups as (high-arts) and (low-arts) students.** Shown in Figure 2A (below) are various indicators of academic achievement as of eighth grade, by respective level of arts involvement.

**FIGURE 2A:  
INVOLVEMENT IN THE ARTS AND 8TH GRADE  
ACADEMIC PERFORMANCE**

% IN EACH GROUP	High Arts (Top Quartile)	Low Arts (Bottom Quartile)
Earning mostly As and Bs in English	79.2%	64.2%
Scoring in top 2 quartiles on standard tests	66.8%	42.7%
Dropping out by grade 10	1.4%	4.8%
Bored in school half or most of the time	42.2%	48.9%

**The 8th grade academic achievement indicators shown in Figure 2A favor the arts-rich, and include the following:**

**English grades:** Nearly 80 percent of high-arts youth report mostly As or Bs in English, in contrast to about 64 percent of low-arts youth.

**Standardized test scores:** The national survey administered a variety of standardized tests to students every two years. The test score reported in Figure 2A for 8th graders reflects a ranking of students on a composite of verbal and mathematics tests. About two-thirds of high-arts students scored in the top 2 quartiles (or top half) of composite standardized test performance; in contrast, only about 43 percent of low-arts students made it into the top half of the test performance distribution.

**Persistence in school:** Another marked contrast is shown for the high-arts versus low-arts 8th graders. Although dropping out of school is relatively infrequent between grades 8 and 10, only 1.4 percent of students with high arts-involvement as of grade 8 dropped out over the subsequent 2 years; the dropout rate was four times higher for low-arts students.

**Boredom in school:** Ask any middle school kid or parent: boredom in school runs fairly high among all 8th grade students. But those not involved in the arts turn out to be more bored, more of the time: about 49 per-

cent of all low-arts students claim they are bored in school half or most of the time. A still-high 42 percent of high-arts students make the same claim of substantial disinterest with what's going on in school.

#### THE ARTS AND TENTH GRADE STUDENT PERFORMANCE

The 10th grade analysis used a scale of arts involvement that grouped students according to overall levels of involvement in the arts for both 8th and 10th grades — using the scaling process outlined above — and compared the highest arts-involved quarter of the student population with the lowest arts-involved quarter of all students. Because available indicators at grade 10 differed somewhat from (and were more numerous than) those available for 8th graders, the report shows a similar and extended set of achievement, behavior and attitude measures for 10th graders, shown in Figures 2B and 2C (bottom and right).

Figure 2B (bottom left) shows several academic performance contrasts between high-arts and low-arts 10th graders.

**Standardized test scores:** Nearly 75 percent of high-arts 10th graders scored in the top half of the composite (verbal and math skills combined) test score distribution. Only 45 percent of the low-arts youth met this standard.

**Reading performance:** Paralleling standardized test performance, about two-thirds of the high-arts students scored in the top half of the reading performance distribution for 10th graders.<sup>3</sup> Only 43 percent of low-arts students met the reading performance standard.

**Tests of History, Citizenship, and Geography:** The balance favoring high-arts involvement for 10th graders appears about the same for the National Educational Longitudinal Study of 1988 (NELS:88) test in history, citizenship and geography as for reading and the overall standardized test composite: about 71 percent of high-arts students scored in the top half of the perfor-

**FIGURE 2B:**

#### INVOLVEMENT IN THE ARTS AND 10TH GRADE ACADEMIC PERFORMANCE

% IN EACH GROUP	High Arts (Top Quartile)	Low Arts (Bottom Quartile)
Scoring in top 2 quartiles, Grade 10 Standard Test Composite	72.5%	45.0%
Scoring in top 2 quartiles in Reading	70.9%	45.1%
Scoring at Level 2 Reading Proficiency	66.5%	43.1%
Scoring in top 2 quartiles in History, Citizenship, Geography	70.9%	46.3%

mance distribution on this test, compared to about 46 percent of low-arts students.

**ADDITIONAL 10TH GRADE INDICATORS**

We explored in a very preliminary way the NELS:88 data base for other contrasts associated with student involvement in the arts. Three of these comparisons are shown in Figure 2C (at right):

**Community service performance:** High arts-involved students are more likely to involve themselves in community service. A very strong majority, 86 percent, of low-arts students rarely engage in community service activities such as volunteering for social programs. In comparison, more than one-third of high-arts youth perform community service activities occasionally or more frequently.

**Attitudes about community service:** Reported involvement in community service seems to go hand in hand with student beliefs about its importance. About 47 percent of high-arts 10th graders believe that community service is important or very important, in contrast to only 34 percent of low-arts students.

**Making time for the arts:** An important issue lurking in these data describing student involvement in the arts is just *how* students more involved in the arts make time available for this involvement. This is an issue deserving focused attention in inquiries about why the arts matter, and how the arts may contribute positively to the development of children and adolescents. Presented here is just a small glimpse of such an inquiry, namely the time youth in the NELS:88 survey spend watching television.

- ★ About twice as many high-arts 10th graders report watching less than an hour of television per day than low-arts students — 28 percent versus 15 percent.
- ★ The relationship for high television watching is the reciprocal: more low-arts youth report watching three hours or more of television than high-arts youth — 21 to 35 percent.

**FIGURE 2C:  
INVOLVEMENT IN THE ARTS AND SELECTED 10TH  
GRADE ATTITUDES AND BEHAVIORS**

<b>% IN EACH GROUP</b>	<b>High Arts (Top Quartile)</b>	<b>Low Arts (Bottom Quartile)</b>
Rarely perform community service	65.2%	86.0%
Consider community service important or very important	46.6%	33.9%
<b>Television watching, weekdays</b>		
Percentage watching 1 hour or less	28.2%	15.1%
Percentage watching 3 hours or more	20.6%	34.9%

**INTERIM CONCLUSIONS: GOOD NEWS FOR THE ARTS, BUT WHAT ABOUT FAMILY BACKGROUND DIFFERENCES?**

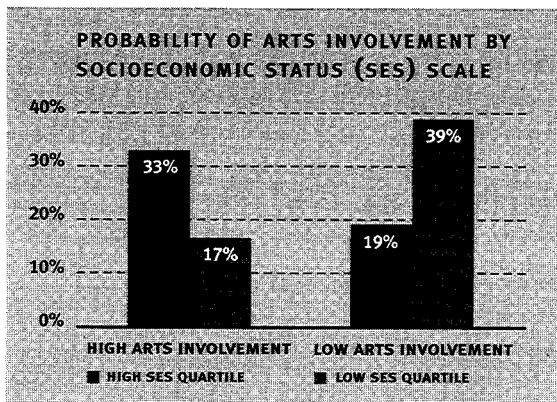
The preceding analyses and displays show unambiguous positive academic, behavioral and attitudinal associations with student involvement in the arts. High-arts students in general score better on academic tests, achieve more in school, and exhibit more community-minded values than low-arts students. While from the point of view of the arts enthusiast there seems to be much to cheer about in these findings, it does not take extensive experience with developmental and educational inquiry to realize that involvement in the arts is neither the only nor the most important difference between the high and low-arts groups compared. An unquestionable substantial contributor to the differences just shown is the fact that children differ in their access to, and engagement with, the arts.

A crucial difference is the fact that children from more educated and affluent households are more likely to be involved with the arts. This is expected because of various advantages that go hand in hand with **socio-economic status (SES)**:

- ★ ability to afford private lessons
- ★ increased parent resources to transport children to arts activities
- ★ living in more affluent school districts where arts programs are more prevalent

★ possibly more parent encouragement for the arts because of their own advantaged and comparatively arts-rich school years and adult lives

This view is substantiated by family income statistics about the high and low-arts groups in our database used for this analysis. The chart below shows a clear relationship between SES and arts involvement in the national sample enlisted for this research:



A simple symmetry is displayed in the chart above:

- ★ A student's probability of high arts involvement is twice as high if his/her family is in the highest family income quartile than in the lowest quartile.
- ★ Conversely, a student is twice as likely to show low arts involvement if he/she is from a low SES family than from a high SES family.
- ★ Thus high-SES youth are considerably over-represented in our high-arts group; low-SES youth are considerably over-represented in our low-arts group.

(The strong relationship between family background and arts participation is also noted in early analyses based on the National Assessment of Educational Progress and a 1981 report of the Second National Art Assessment.)<sup>6</sup>

So while the various advantages to arts involvement reported above seem substantial and powerful, it is by no means simple to tease out just what the arts per se have to do with this. Without attempting a fine-grained analysis, a substantial portion of the academic advantages associated with the arts should be attributed to

just who has access to and encouragement for the arts. At the same time, not all of the advantages should be assumed to be tied up in this primary selection factor. A case for this contention is supported by the subsequent analysis in Section 3, where we examine relationships between the arts and student performance within the low SES quartile of all students — a group for whom differences in access to the arts based on family economic resources are considerably more constrained. Besides arguing that such an analysis tends to meet the SES relationship challenge just described, we have ample additional reason for an interest in children from homes where parent income and education levels are low. The economically disadvantaged core of our youth have drawn a great deal of attention from educators and education policy scholars in their own right for decades — children in this group, on average, have the greatest difficulties succeeding in school and as adults. Far more poor than affluent children fail in school, drop out without graduating, and eventually lead adult lives dependent on public services such as welfare and involved in publicly costly behaviors such as a criminal activity.<sup>7</sup>

*Here is an exploration of what the arts mean for economically disadvantaged 8th and 10th graders.*

### SECTION 3: ARTS AND THE ECONOMICALLY DISADVANTAGED STUDENT

This section replicates the analysis performed for all 8th and 10th graders above, in this case comparing high-arts and low-arts students from within the least affluent quarter of the nation's student population. The analysis procedures are essentially the same, with the exception of restricting the inquiry to students whose families are in the lowest parent education and income (or SES) quartile. This means that only the poorest 6,500 out of the original 25,000 8th graders are considered; this group is then examined for students meeting the low and high arts-involvement criteria established for the analysis in Section 2.<sup>8</sup> Consistent with data shown in the chart is an observation that among the low SES youth in the NELS:88

survey, about four times as many youngsters fall into the low-arts group as into the high-arts group. It is these two groups that now draw interest.

**ARTS AND 8TH GRADE STUDENT PERFORMANCE IN THE LOW SES QUARTILE**

Paralleling the analysis for all students shown in Section 2 above, we here examine academic performance indicators for high-arts versus low-arts students from low SES families. **The overall performance levels of the entire economically disadvantaged group are lower than performance levels for all students, as we would expect. But the positive relationships between arts engagement and academic performance remain robust and systematic,** as shown initially in Figure 3A (at right). Even more important, the academic advantages for arts-involved economically disadvantaged youngsters are quite pronounced by grade 10, especially as shown in Figure 3B (at right).

**English grades:** About 8 percent more high-arts students report mostly As and Bs in English over grades 6-8. While the absolute increment between the two groups is 8 percentage points, the percentage of high-arts students showing lofty English grades (64.5 percent) is 14.4 percent higher than the percentage of low-arts students (56.4 percent) doing this well in English.<sup>9</sup>

**Standardized test scores:** An added 5 percent of high-arts students score in the top half of the composite test score distribution (reading, verbal and mathematics tests). This is a 20.4 percent difference favoring high-arts youngsters.

**Dropping out of school:** Dropout rates are higher for all students with low SES family backgrounds. But the dropout rate between grades 8 and 10 for low-arts students (9.4 percent) is 45 percent higher than the rate for high-arts students (6.5 percent).

**Boredom in school:** Student reports of being bored in school remain high, but boredom levels are slightly lower overall for low SES youngsters than for all 8th

**FIGURES 3A AND 3B:**

**3A: INVOLVEMENT IN THE ARTS AND 8TH GRADE ACADEMIC PERFORMANCE AND ATTITUDES**

**LOW SES STUDENTS (LOW PARENT EDUCATION / INCOME)**

% IN EACH GROUP	High	Low
Earning mostly As and Bs in English	64.5%	56.4%
Scoring in top 2 quartiles on standard tests (2)	29.5%	24.5%
Dropping out by grade 10	6.5%	9.4%
"Bored in school" half or most of the time	41.0%	46.0%
Medium to High Self Concept	64.2%	58.8%
Volunteer Work is somewhat to very important	52.5%	39.2%
Rarely or never performs community service work	74.5%	83.2%

**3B: INVOLVEMENT IN THE ARTS AND 10TH GRADE ACADEMIC PERFORMANCE**

**LOW SES STUDENTS (LOW PARENT EDUCATION / INCOME)**

% IN EACH GROUP	High	Low
Scoring in top 2 quartiles, Grade 10		
Standard Test Composite (2)	41.4%	24.9%
Scoring in top 2 quartiles in Reading	43.8%	28.4%
Scoring at Level 2 Reading Proficiency (3)	43.8%	28.4%
Scoring in top 2 quartiles in History, Citizenship and Geography	41.6%	28.6%

graders. For the low SES students, only 41 percent of high-arts students claim high levels of boredom, in contrast to 46 percent of low-arts 8th graders.

**Student self concept:** High arts-involved, low SES youngsters report higher self concepts by about 5.5 percentage points — 9.2 percent higher than low-arts students. The self concept scale is based on student answers to questions about how much they value themselves, their abilities, and their achievements.

**Behavior and attitudes about volunteerism and community service:** Conforming to what is reported above for all students, within the low SES group, high-arts students report more community service activities by

more than 10 percent; high-arts students also report with considerably more frequency that volunteer work is somewhat to very important (by a percentage difference of about one-third).

#### ARTS AND 10TH GRADE STUDENT PERFORMANCE IN THE LOW SES QUARTILE

Above is a report of modest but significant and systematic academic performance differences favoring high-arts 8th grade students within the low SES quartile. Below is an examination of academic performance differences related to arts involvement by 10th grade for the same low SES group.

To summarize in a few words: the academic performance differences for low SES children linked to arts involvement are greater and more significant by the 10th grade. This contrast reflects a better and more sustained indicator of arts involvement — the high-versus low-arts groups are based now on a composite of indicators of arts involvement over both 8th and 10th grades. And the outcomes are more meaningful because by the spring of 10th grade, academic performance tends to get closer to what student high school careers will eventually amount to.

As shown in Figure 3B, the academic performance levels of high-arts 10th graders outstrip the performance levels of low-arts students by more than half across the board — the shares scoring in the top two

quartiles of the standardized test composite; the proportions scoring in the top half of the reading test score distribution; the fraction reading at standard for grade 10, and the share scoring in the top half of the test distribution in history, citizenship, and geography.

Various additional indicators of advantage for arts-involved students within the low SES ranks also show up in NELS:88 data. Several are shown in Figure 3C (bottom left).

As reported for students more generally, low SES students line up along arts involvement lines when it comes to community service practices and attitudes:

- ★ more than twice as many high-arts low SES students are actively involved in community service
- ★ 21 percent more consider community service important<sup>o</sup>

Again, consistent with what is reported for all students, high-arts youth from low SES family backgrounds report watching less television than low-arts youth:

- ★ nearly one-third more low-arts youth report watching 3 hours or more per weekday
- ★ about 23 percent more high-arts youngsters than low-arts youngsters report watching one hour or less of television on a typical school night

#### CONCLUSIONS

This study finds considerable advantages for youth highly engaged in the arts during grades 8 and 10 when compared to arts-poor students. Academic grades, standardized test scores, measured reading levels and attitudes concerning commitment to community were all higher for students maintaining high levels of activity in music, chorus, drama and the visual arts. And the academic performance differences were quite pronounced by 10th grade, where students demonstrated consistent involvement (or lack of involvement) through two years of data collection across the middle and early high school years. This pattern holds both generally in this 25,000 student sample, and most importantly for students in the lowest quartile of family education and income.

**Explaining these differences?** This brief report does not explore the theoretical rationales for why the arts might

**FIGURE 3C:  
INVOLVEMENT IN THE ARTS AND 10TH GRADE  
BEHAVIORS / ATTITUDES  
LOW SES STUDENTS (LOW PARENT EDUCATION / INCOME)**

% IN EACH GROUP	High	Low
Rarely perform community service	65.2%	86.0%
Consider community service important or very important	49.2%	40.7%
<b>Television watching, weekdays</b>		
Percentage watching 1 hour or less	16.4%	13.3%
percentage watching 3 hours or more	33.6	42.0%



matter in ways suggested, although much can be said about such foundations and has been documented in previous work by the author and others. These can be grouped into major categories reflecting the various roles that the arts play in promoting cognitive development (from specific relations such as the influence of music on perception and comprehension of mathematical structure to the more general roles of imagery and representation on cognition). The arts serve to broaden access to meaning by offering ways of thinking and ways of representation to youngsters possessing a spectrum of “intelligences” scattered unevenly across the population. The arts also show links to student motivation and engagement in school, attitudes that contribute to academic persistence and achievement. Many arts activities, particularly the performing arts, also promote community — advancing shared purpose and team spirit required to perform an *ensemble* musical or dramatic work, or to design and paint a public mural. With the promotion of community surely comes empathy and general attachment to the larger values of the school and the adult society which high school students will soon join.

**Success by artistic association?** The arts show advantages when it comes to academic achievement in the relationships we describe. Even in the absence of causal attributions yet to be proved in our work with this national database the perspectives we show elicit another reason to promote more involvement in the arts for more youngsters. This analysis of the NELS:88 survey establishes that students involved in the arts are doing better in school than those who are not — for whatever constellation of reasons. Research into academic achievement going back three decades and more argues that the motivation and success of one’s peers have an influence on how a youngster does in school. At very least, these data support the contention that rubbing shoulders with arts-involved youngsters in the middle and high school years is, on average, a smart idea when it comes to choosing friends and activities.

**Inequal access to the arts.** Although not the main theme of this study, the data support popular convic-

tions as well as research concluding that access to the arts is inequitably distributed in our society. Students from poor and less educated families are much more likely to record low levels of participation in the arts during middle and high school; affluent youngsters are much more likely to show high engagement in the arts. The arts *do* matter — not only as worthwhile experiences in their own right, but also as instruments of cognitive growth and development and as agents of motivation for school success.

**A FINAL NOTE — SCALING UP RESEARCH ATTENTION TO THE ARTS**

More than eight years into the most important educational survey addressing educational conditions and outcomes for American youth, this brief exploration appears to be the first analysis of student participation in the arts to appear in print. The likely reasons for this speak to the lagging place of the arts in the imaginations of most contemporary education leaders, policy makers and researchers. When academics have turned their lenses to the powerful NELS:88 survey, the issues they explore concentrate on the tried and true, even if their questions are important: Why do children fail? Who drops out of school? What curriculum designs or teaching practices contribute to math, science, and reading achievement? What accounts for the personal, educational and occupational aspirations of youth? Who is at-risk, who is resilient, and why? Which family and community supports for education matter? Good and critical questions, all.

But scholars with the patience, computing facilities and modeling skills needed to work with this data base seem as much interested in their techniques as in their subjects, and when it comes to tackling educational issues they gravitate to mathematics, science and reading because that is what the policy community is so keen on nowadays. There is reason to spend more time in our large-scale queries into educational achievement on what we can know about the arts and student development and accomplishment of all sorts. This work is a start on this agenda.

## ENDNOTES

1. This research is based on the National Educational Longitudinal Study of 1988 (NELS:88), United States Department of Education, Office of Educational Research and Improvement. This national study followed about 25,000 students in 1000 diverse schools across the United States beginning in 8th grade in spring of 1988, with follow-up data collection in 1990, 1992, 1994 and ongoing. Data are based on student surveys, achievement tests, parent surveys, teacher surveys and school principal surveys. This preliminary analysis is based on analysis of data for 8th graders through the 10th grade follow up.
2. Our recent broad review of research on the arts and learning, like other reviews before and since, turned up a huge imbalance favoring exhortation and argument for the importance of the arts as opposed to good research designs and defensible data about student performance supporting these arguments. There are hundreds of small-scale studies suggesting that various art forms bring developmental benefits to children. See Jaye T. Darby and James S. Catterall, *The Fourth R: The Arts and Learning*. *Teachers College Record*, 96/2 (Winter 1994), 299-328.
3. Detailed descriptions of National Educational Longitudinal Study of 1988 (NELS:88) variables used for this analysis and additional detailed information about the methods used to construct scales of student arts involvement are available from the author. See contact information in Footnote 1.
4. It is possible to "weight" these indicators of arts-involvement in many ways. We chose assign less weight to museum-going than to taking regular arts classes because of our belief that regular arts classes probably suggest more engagement with the arts than occasional or infrequent museum attendance. The data base contains very limited indicators of frequency or duration for museum attendance.
5. Levels refer to criterion standards for different scores on the reading test. Students who demonstrate specific levels of reading comprehension are pegged at specific levels, usually 0, 1 or 2 for a given grade level or cluster of levels. What a give level indicates corresponds to the test designers agreed standards for what each level means and how student reading is to be scored.
6. National Assessment of Educational Progress, Art Technical Report: Exercise Volume, Report no. 06-A-20 (Denver: Education Commission of the States, 1978); also *Art and Young Americans, 1974-79: Selected Results from the Second National Art Assessment*, Report no. 10-A-01 (Denver: Education Commission of the States, 1981).
7. See James S. Catterall, *On the Social Costs of Dropping Out of School*. *The High School Journal* (71)/1 (October-November, 1987), 19-30.
8. Students scoring 2 or fewer "points" related to involvement in arts activities over grades 8 and 10 are included in the low-arts group; students scoring more than 7 points are included in the high-arts group.
9. This way of framing differences is analogous to the following contrast: If two groups score 15 percent and 10 percent respectively on a measure, there are two ways of characterizing this difference: in one representation, one group is 5 percent ahead of the other; we call this an increment. In another representation, the 15 percent group has outperformed the 10 percent group by 50 percent; we call this a percentage difference.
10. Note that a 49.2 percent share is incrementally 21 percent higher than a 40.7 percent share. See previous note.

## ABOUT americans for the arts

Americans for the Arts is the national organization for groups and individuals across the United States dedicated to advancing the arts and culture. Founded by the American Council for the Arts, representing a broad network of arts supporters, patrons and business leaders, and the National Assembly of Local Arts Agencies, the country's largest alliance of community arts organizations, Americans for the Arts strives to make the arts more accessible to every adult and child in America. To this end, Americans for the Arts works with cultural organizations, arts and business leaders and patrons to provide leadership, advocacy, visibility, professional development and research and information that will advance support for the arts and culture in our nation's communities.

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