

# Creativity in 21st Century Workforce Preparation

Creativity and innovation are the keys to success for students entering the workforce of the future according to business and technology leaders who addressed Texas Legislators at a special briefing January 26, 2009 in the Senate Chamber co-chaired by Senator Florence Shapiro (R-Plano), Senate Education Committee Chair, and Representative Rob Eissler (R-The Woodlands), House Public Education Committee Chair.

“Schools need to promote creative, inventive thinking by integrating the arts with other subjects,” Sen. Shapiro said. “It’s not about art or science; it’s about melding the two and promoting both of them together.”

Dan Pink, author of the *New York Times* and *BusinessWeek* bestseller, *A Whole New Mind—Why Right-Brainers Will Rule the Future* shared his message on why “left-brain” dominance is gone and why the future belongs to a different kind of person with a different kind of mind—creative and emphatic “right-brain” thinkers.

Pink was joined by Dr. Viktors Berstis, IBM master inventor; Raymond Hartfield, Director K–12 Education, AT&T; and Jack Bacon, NASA systems engineer and former project manager of the International Space Station.



It's not art or science; it's art and science combined. We should promote both of them together, not either or. What this is about is melding the two, not one in place of the other.

—Sen. Florence Shapiro

We look for artists because those are the people who are going to fill 21st century jobs. They have to know the science to comprehend but they have to go beyond the science to serve the customer.

—Raymond Hartfield, AT&T

We have the strongest arts education programs in the country. And people look to Texas as a leader. We want to make sure we are not moving in the wrong direction when other countries are getting it and are moving to enhance right brain creativity and thinking.

—Robert Floyd, TMEA Executive Director

We need to make sure we are preparing our kids for their future and not our past . . . What I see in businesses is a premium on novelty, nuance and customization. That's what business is about today. And I fear that our schools are going exactly in the opposite direction. They are increasingly about routines, right answers, and standardization at precisely the moment that the economy is no longer about those things.

—Dan Pink



Dan Pink

The last few decades have belonged to a certain kind of person with a certain kind of mind—computer programmers who could crank code, lawyers who could craft contracts, MBAs who could crunch numbers. But the keys to the kingdom are changing hands. The degree of the future is the MFA, and this future belongs to a very different kind of person with a different kind of mind. These people will now reap society's richest rewards and share its greatest joys.

—from *A Whole New Mind* by Dan Pink

# Learning, Arts, and the Brain

## The Dana Consortium Report on Arts and Cognition Released March 2008

### The Study

In 2004, the Dana Arts and Cognition Consortium brought together cognitive neuroscientists from seven universities across the United States to grapple with the question of why arts training has been associated with higher academic performance. The following are conclusions from this ground breaking research that further solidify the correlation between arts study and improved cognition.

### Significant Conclusions

- An interest in a performing art leads to a high state of motivation that produces the sustained attention necessary to improve performance and the training of attention that leads to improvement in other domains of cognition.
- Specific links exist between high levels of music training and the ability to manipulate information in both working and long-term memory; these links extend beyond the domain of music training.
- In children, there appear to be specific links between the practice of music and skills in geometrical representation, though not in other forms of numerical representation.
- Training in acting appears to lead to memory improvement through the learning of general skills for manipulating semantic information.

All information reported here is from the Dana Consortium Report, "Learning, Arts, and the Brain," released in March 2008. The full report is available in the Data and Study Results section of the Resource Center on [www.tmea.org](http://www.tmea.org).



*Children with early training in the visual arts had a higher degree of phonological awareness (auditory skill correlated with reading ability) than children with no such training.*



*Participants who had formal musical training showed significantly stronger neural enhancement and suppression effects, indicating better cognitive control . . . results suggest that formal musical training may generalize by having an impact on other brain systems that are different than those affected by training.*

*Musicians scored better compared to the non-musicians on a test of long-term verbal memory, but this advantage disappeared when we prevented the musicians from rehearsing the material. We also found evidence that the musicians had a greater span of verbal working memory compared to the non-musicians. We attribute both of these effects to the enhanced use of rehearsal skills in musicians, rather than to a "hard-wired" difference in verbal memory capacity.*



*Intensive music training is associated with improved performance in the core mathematical system for representing abstract geometry.*

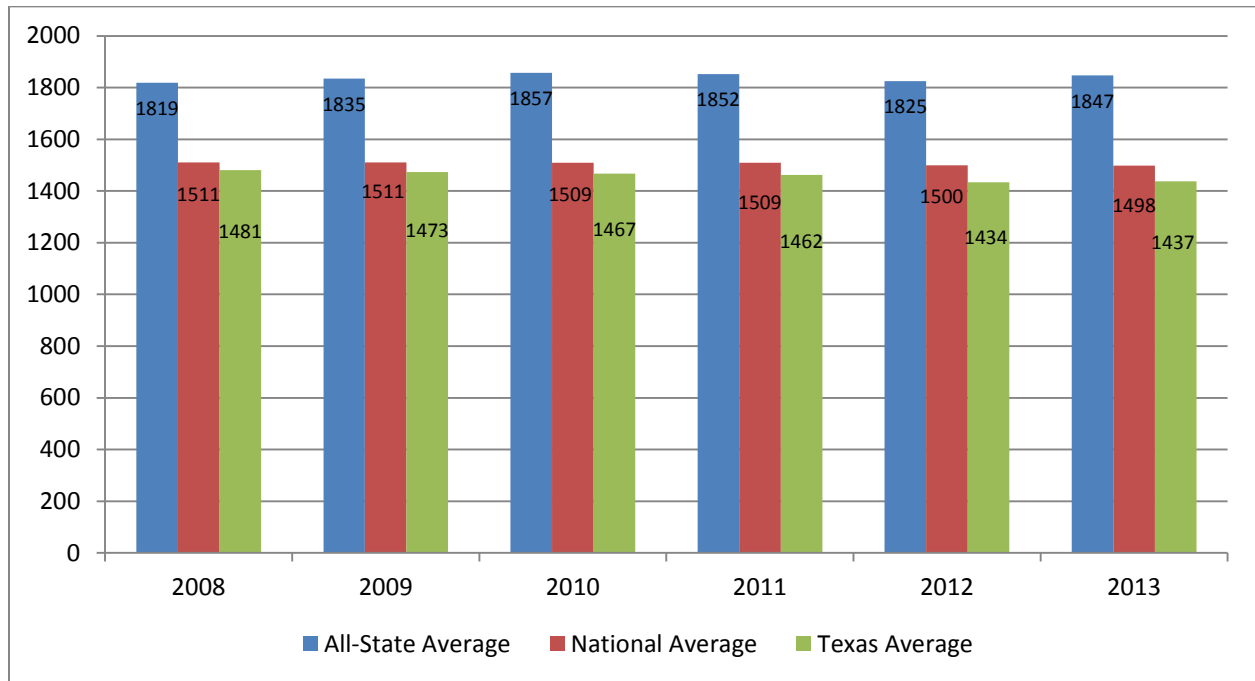




## Six-Year SAT Score Comparison

Texas All-State Musicians Compared to the National and State Average

*Texas All-State musicians have consistently scored on average 22% higher than the national average and about 26% higher than the Texas average.*

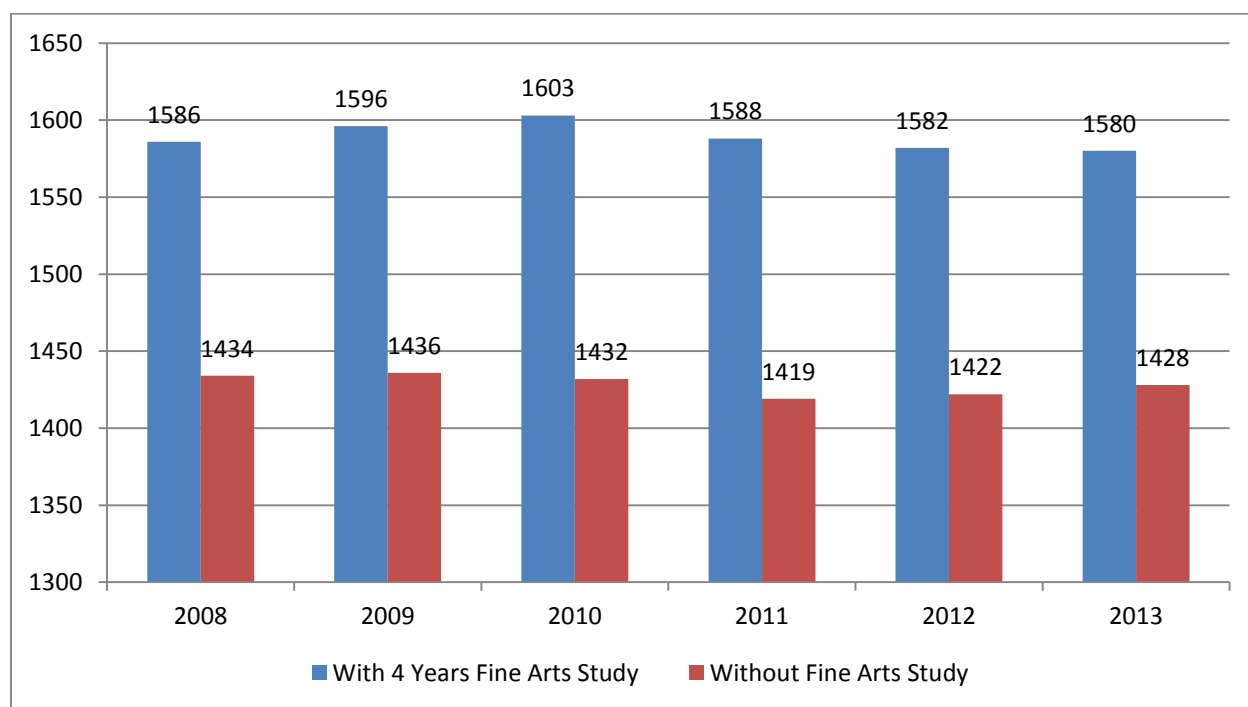


**Texas Music Educators Association**

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## Students Enrolled in Fine Arts Courses Score Higher on the SAT than those with no Fine Arts Coursework

*Students of the arts continue to outperform their non-arts peers on the SAT, according to reports by the College Entrance Examination Board. Data from the College Board, Profile of College-Bound Seniors National Reports from 2008–2012 show that students enrolled in fine arts courses score 11–12% higher than students not enrolled in any fine arts courses.*



Sources:

*The College Board College Bound Seniors Total Group Profile Reports, 2008–2013.*

# Opting for Creativity

**Thanks to developing economies, liberal-arts courses are blooming in the developing world.**

**Duncan Hewitt**

**NEWSWEEK**

From the magazine issue dated Sep 22, 2008

China's academies are obsessed with engineering and the hard sciences, so the photojournalism master's program that Dalian Medical University introduced three years ago seemed surprising. Run in cooperation with Britain's University of Bolton, the program exposes foreign and Chinese students to fresh ideas in composition and ethics. "Chinese photographers are pretty good, technically," says course leader D.J. Clark, "but this is about getting them to think more critically."

Not long ago, such esoteric pursuits were almost unheard of. It's no coincidence that 17 of 25 Chinese Politburo members are engineers by training. But the boom they've created is granting a growing number of students the luxury to explore arts and design courses long taught in the West but relatively neglected in Asia. Many of these programs still have a pragmatic bent, turning out the industrial designers and advertising illustrators China needs as its industries move from copying foreign products to creating their own. The China Academy of Art now offers courses in arcane specialties like video art. Zhongshan University in Guangzhou has started classes in feminist studies.

This academic evolution is already well underway in Asia's richer states. Singapore's government exhorts students to "have fun" and is expanding academic programs in soft sciences and the media. And the campaign to inspire creativity is expanding into poorer states. In India, for example, students can now study subjects ranging from desktop publishing to fashion technology (designing, manufacturing and marketing clothes). And almost every major Indian city has a few drama schools for aspiring Bollywood performers.

Still, a creative focus remains largely alien to educational bureaucracies. In China the environment has typically been studied as an engineering discipline, ignoring any social, philosophical, even esthetic dimensions. And innovative approaches to education are also hampered by ingrained Confucian attitudes to teaching—respect for authority, hierarchy and rote learning. Zhao Zhongjian, director of the Center for Global Education at East China Normal University, says teachers need to "foster 21st-century talents." That means understanding that creative arts are no longer a frivolous luxury, but essential to achieving a competitive edge.

*With Melinda Liu in Beijing and Sudip Mazumdar in New Delhi*

URL: <http://www.newsweek.com/id/158589>

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# Educating Through the Arts:

How Fine Arts TEKS Correlate to TAKS Objectives

## 933 direct correlations

Fine Arts TEKS to TAKS connections from K-12

397 direct correlations: Elementary TAKS to Fine Arts TEKS

222 direct correlations: Middle School TAKS to Fine Arts TEKS

314 direct correlations: High School TAKS to Fine Arts TEKS

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358 correlations of **Theater Arts TEKS\*** to the TAKS\*\* objectives.

94 direct correlations of **Dance TEKS** to the TAKS objectives.

359 direct correlations of **Music TEKS** to the TAKS objectives.

213 direct correlations of **Art TEKS** to the TAKS objectives.

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*TEKS to TAKS correlation study conducted by the Center for Educator Development in Fine Arts (2006)*

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\*TEKS—Texas Essential Knowledge and Skills (State Standards)

\*\*TAKS—Texas Assessment of Knowledge and Skills (Statewide Student Performance Assessment)

# Fine Arts Education: What the Law Says

*Fine Arts holds its most prominent placement in law and State Board rule that it has enjoyed in recent years. Fine arts is defined in State Board rule as music, art, theatre and dance.*

## **Mission and Objectives**

Objective 4 of the Texas Education Code (TEC) states: A well-balanced and appropriate curriculum will be provided to all students. Chapter 28 of the TEC states, “Each district shall ensure that all children in the district participate actively in a balanced curriculum designed to meet individual needs.”

## **Required Curriculum**

All the courses in the Required Curriculum, which includes Fine Arts, are necessary for a child to receive a well-balanced, meaningful education. The word “Required” in the TEC means that “each school district that offers kindergarten through grade 12 shall offer this curriculum.”

## **Texas Essential Knowledge & Skills**

The State Board of Education will identify the Texas Essential Knowledge and Skills (TEKS) for all subjects of the Required Curriculum. The TEKS define what students should know and be able to do in each academic subject area and each grade level. TEKS are currently in place for all Fine Arts disciplines.

## **Foundation Courses**

English language arts, math, science, and social studies are called Foundation courses because the TEC’s academic objectives identify these courses as the foundation of a well-balanced and appropriate education. These subjects will continue to be assessed on the state level.

## **Enrichment Courses**

Fine Arts courses are a part of the Enrichment Curriculum, a component of the Required Curriculum. By definition, enrich means “to make richer, to add greater value or significance.” It does not mean “extra,” “not necessary,” “elective,” or “optional.” These courses are an integral part of the educational process and in many cases are the courses that give meaning and substance to a child’s education and to his or her life.

By law, school districts, as a condition of accreditation, must utilize the TEKS in delivering instruction in all subjects of the Required Curriculum - not just in Foundation courses.

## **Graduation Requirements**

Under state law, the Foundation School Program requires one credit of Fine Arts for graduation for all students. Students under this latest graduation program may pursue an Arts and Humanities endorsement that allows the serious music student the flexibility to take multiple fine arts courses that count toward graduation. Fine Arts continues to be defined as an “academic core component” in the Foundation School Program.

## **Elementary Requirements**

State Board rule (19 Texas Administrative Code, Chapter 74, subchapter A) now mandates that school districts provide TEKS-based instruction in all subjects/courses of the Required Curriculum in grades K-5. This requirement includes music, art and theatre at each of these grade levels. School districts may deliver this instruction in a variety of arrangements and settings.

## **Middle School Requirements**

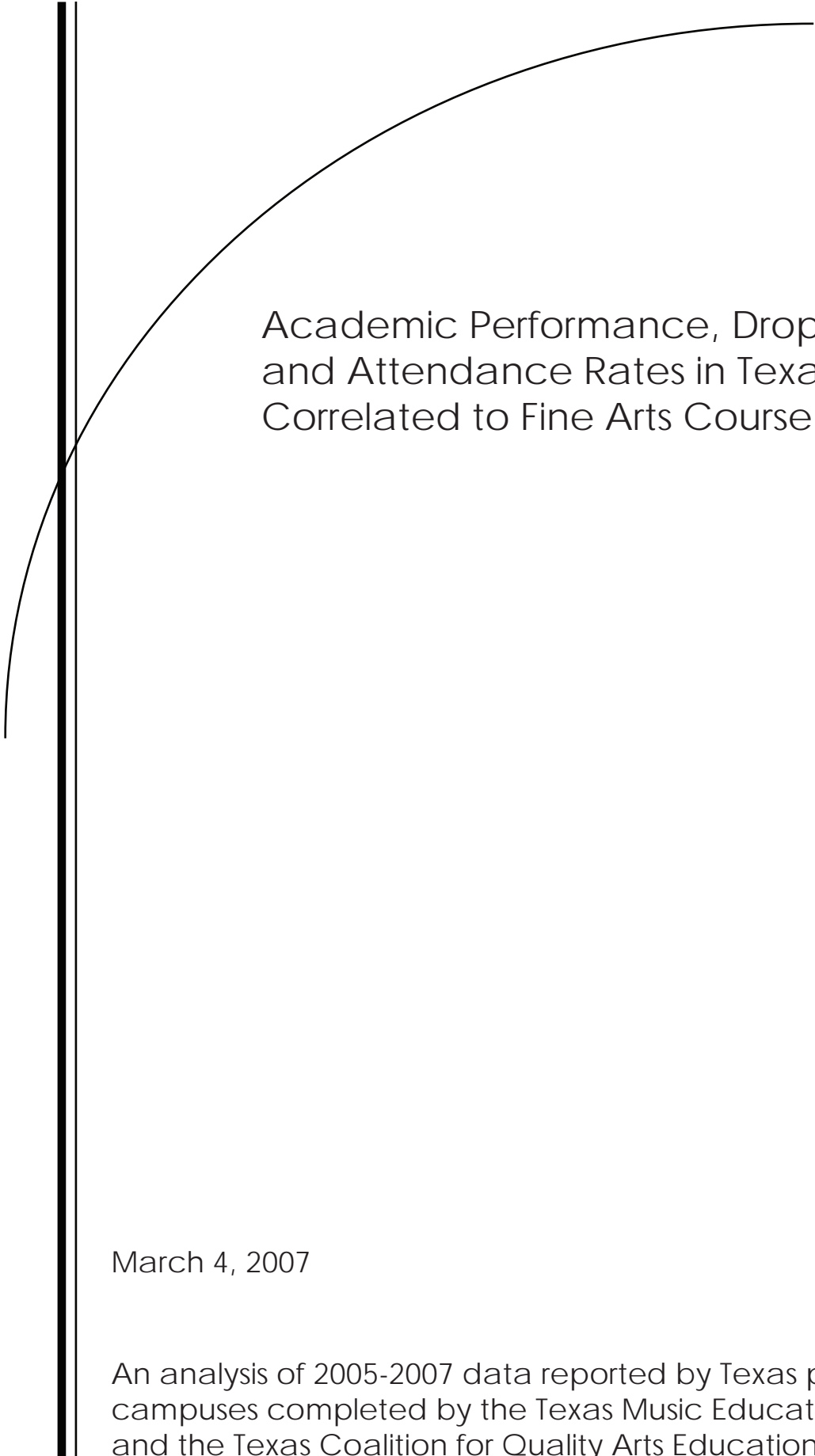
Beginning with students who enter grade 6 in the 2010–2011 school year, each student must complete one fine arts course in grades 6, 7, or 8.

## **High School Required Course Offerings**

High schools must offer at least two of the four state-approved fine arts subjects (art, dance, music, theatre).

## **No Child Left Behind**

The federal legislation, No Child Left Behind, includes fine arts as a part of the academic core curriculum.



Academic Performance, Drop Out Rates  
and Attendance Rates in Texas Public Schools  
Correlated to Fine Arts Course Enrollment

March 4, 2007

An analysis of 2005-2007 data reported by Texas public school  
campuses completed by the Texas Music Educators Association  
and the Texas Coalition for Quality Arts Education



# Academic Performance, Drop Out Rates and Attendance Rates in Texas Public Schools Correlated to Fine Arts Course Enrollment

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## Purpose

Research continues to demonstrate a correlation between the study of fine arts and overall academic achievement—from brain research showing that the same type of cognitive abilities are used in mathematics and fine arts to studies revealing that SAT scores of students who participate in fine arts courses are higher than non-participants. Data from the College Board, Profile of College-Bound Seniors National Report from 2001, 2002, 2004 and 2005 shows that students enrolled in fine arts courses score from 6% to 11% higher than students not enrolled in any fine arts courses. Additionally, since 2000, Texas All-State musicians have scored about 18% higher than the national average and about 22% higher than the Texas average

To further explore this relationship of fine arts participation to academic achievement in Texas schools, the Texas Coalition for Quality Arts Education, together with Texas Music Educators Association (a TCQAE participating organization) analyzed academic achievement ratings, drop out rates and fine arts enrollment data reported by public schools across Texas.

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## Overall Conclusions

After analyzing the data on campus academic ratings, attendance rates, drop out rates and fine arts course enrollment, the following overall conclusions were reached:

*Academic Rating:* campuses with a higher percentage of student enrollment in fine arts courses achieved higher academic ratings.

*Student Drop out:* campuses with a higher percentage of student enrollment in fine arts courses report lower drop out rates.

*Student Attendance:* campuses with a higher percentage of student enrollment in fine arts courses reported higher attendance rates.

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## Analysis Method

The analysis included data from all “Regular Instructional” campuses for the entire state. Data from high school (grades 9-12) and middle school (grades 6-8) campuses was included in this study. County-District-Campus codes were used to match the data mined from the analysis data sources: campus ratings, total student enrollments, total student enrollments in Fine Arts, drop out rates and attendance rates. The data used in this study

is maintained by TEA on its website: Texas Education Agency Website ([www.tea.state.tx.us/](http://www.tea.state.tx.us/)) → Data Resources & Research ([www.tea.state.tx.us/data.html](http://www.tea.state.tx.us/data.html)) → askTED (Texas Education Directory) <http://askted.tea.state.tx.us/> .  
*The following data was included:*

Fine Arts Enrollment Data (requested data):  
Grades 6 – 8 (enrolled [2006-2007]) and Levels I – IV (completion [2005-2006])  
- Music, Art, Theater, Dance

2006 Accountability Rating System  
Ratings by District  
Ratings by Campus

Secondary School Completion and Dropouts in Texas Public Schools  
2005 Attendance rates  
2005 Drop out rates (7-8 and 7-12)

The analysis consisted of determining the percentage of students at each campus enrolled in fine arts courses and calculating that average for the campuses assigned each academic ranking. This same analysis was completed for campuses within a specified drop out range.

## Data Analysis Summary

The following is the summary-level data that supports the overall conclusions in this analysis.

### *Campus academic rating compared to average fine arts enrollment*

The following demonstrates that campuses with higher academic ranking have a higher percentage of students enrolled in fine arts courses.

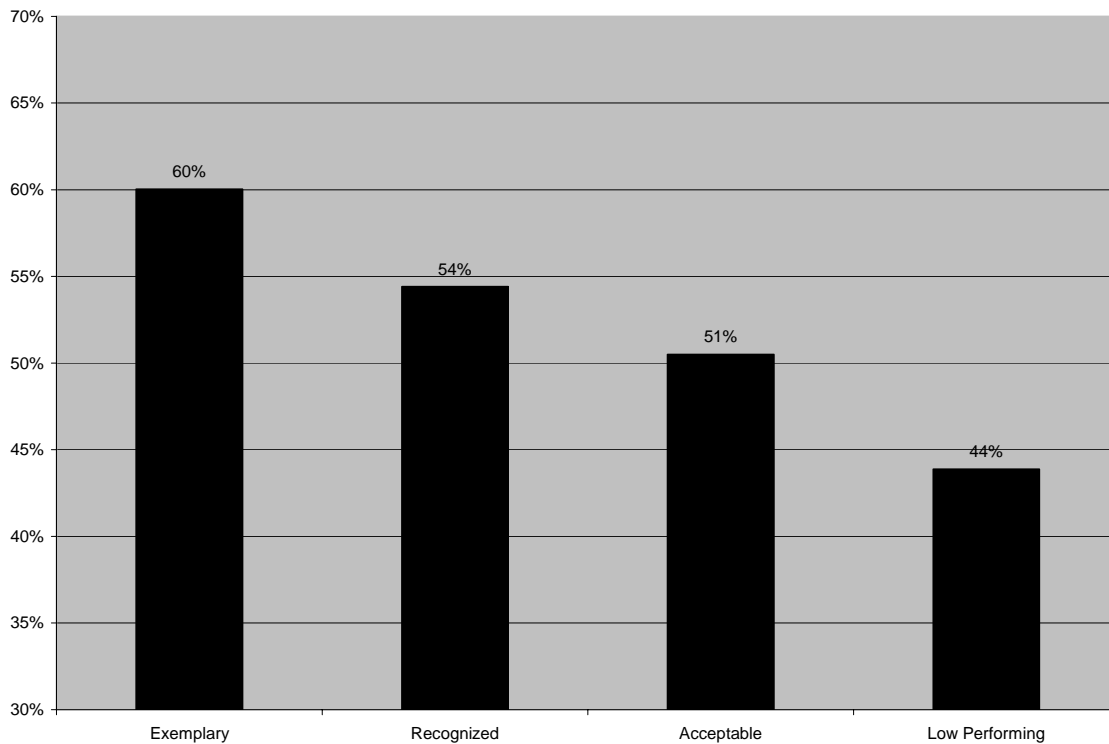
#### *9-12 Campuses*

<b>RATING</b>	<b>Number of Campuses</b>	<b>Fine Arts Average Enrollment</b>
Exemplary	8	60.04%
Recognized	123	54.41%
Acceptable	713	50.50%
Low Performing	107	43.88%

#### *6-8 Campuses*

<b>RATING</b>	<b>Number of Campuses</b>	<b>Fine Arts Average Enrollment</b>
Exemplary	24	72.63%
Recognized	307	70.19%
Acceptable	481	66.97%
Low Performing	52	66.02%

### *Fine Arts Course Enrollment in Texas High Schools by Campus Academic Rating:*



### ***Campus drop out rates compared to average fine arts enrollment***

The following demonstrates that campuses with lower drop out rates have a higher percentage of students enrolled in fine arts courses.

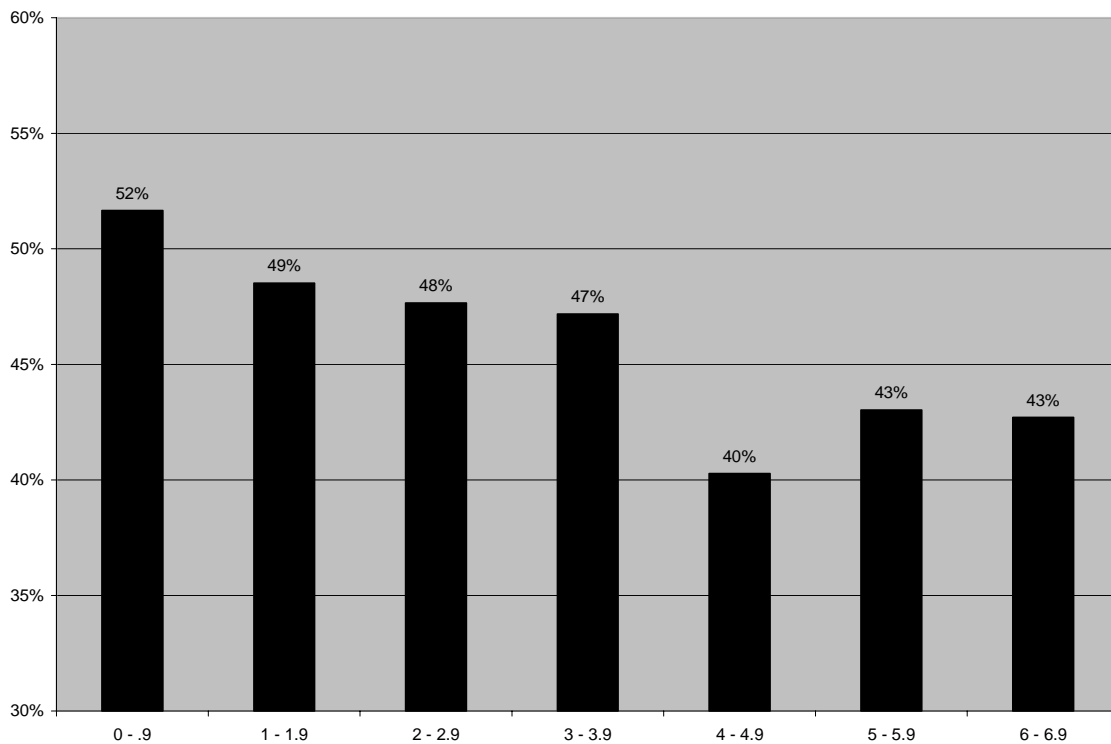
#### ***9-12 CAMPUSES***

<b>Drop out Rate</b>	<b>Number of Campuses</b>	<b>Fine Arts Avg Enrollment</b>
0 - .9	617	51.66%
1 - 1.9	207	48.52%
2 - 2.9	77	47.65%
3 - 3.9	30	47.18%
4 - 4.9	19	40.28%
5 - 5.9	4	43.03%
6 - 6.9	4	42.70%

#### ***6-8 CAMPUSES***

<b>Drop out Rate</b>	<b>Number of Campuses</b>	<b>Fine Arts Avg Enrollment</b>
0 - .9	836	67.58%
1 - 1.9	18	60.29%

### ***Fine Arts Course Enrollment and Drop Out Rates in Texas High Schools***



### ***Student attendance compared to average fine arts enrollment***

The following demonstrates that campuses with higher attendance rates also have a higher percentage of students enrolled in fine arts courses:

#### ***9-12 CAMPUSES***

<b>Attendance Rate</b>	<b>Number of Campuses</b>	<b>Fine Arts Avg Enrollment</b>
98 <sup>th</sup> Percentile	6	51.02%*
97 <sup>th</sup>	40	52.59%
96 <sup>th</sup>	150	54.44%
95 <sup>th</sup>	254	50.54%
94 <sup>th</sup>	249	50.45%
93 <sup>rd</sup>	117	48.40%
92 <sup>nd</sup>	59	46.80%
91 <sup>st</sup>	29	48.91%
90 <sup>th</sup>	20	44.43%
89 <sup>th</sup>	8	40.29%

*\*Trend exception based on a single-campus anomaly*

#### ***6 - 8 CAMPUSES***

<b>Attendance Rate</b>	<b>Number of Campuses</b>	<b>Fine Arts Avg Enrollment</b>
98 <sup>th</sup>	6	63.77%*
97 <sup>th</sup>	97	74.94%
96 <sup>th</sup>	364	70.49%
95 <sup>th</sup>	261	66.20%
94 <sup>th</sup>	95	60.60%
93 <sup>rd</sup>	16	54.33%
92 <sup>nd</sup>	25	59.10%

*\*Trend exception based on a single-campus anomaly*