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U.S. DEPARTMENT OF EDUCATION

Successful Magnet High Schools

INNOVATIONS IN EDUCATION

Successful Magnet High Schools

I N N O V A T I O N S I N E D U C A T I O N

Prepared by WestEd

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Office of Innovation and Improvement

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Foreword

Schools influence our lives in many ways. Families may buy their homes based on proximity to high-performing school systems. Businesses locate in areas where schools have produced a knowledgeable and skilled workforce. As a result, great schools help to create more employment opportunities, higher incomes, and an improved quality of life for everyone around them. For far too long, many low-income and minority families in this country did not have access to these schools or the option to send their children elsewhere. Since the passage of the *No Child Left Behind Act of 2001*, families have more freedom than ever before to make decisions about how and where their children are educated. Magnet schools represent one of the many public school choice options available to families today.

Magnet schools were first created nearly 40 years ago to achieve racial integration and resolve educational inequities. These schools still serve as tools to provide traditionally underserved students with better educational options, but they also are hubs for unique and innovative instructional practices and programs.

We know that a lack of relevant course work is one of the top reasons why high school students drop out, and studies have shown that low-income and minority students are less likely to be enrolled in college preparatory curricula than their more affluent peers. In today's world, it's critical to make sure that all students have access to a rigorous, high-quality education that will equip them with the skills they need to succeed in the 21st century.

Magnet high schools like the ones featured in this guide serve populations from diverse socioeconomic and racial backgrounds and use themed instruction in such subjects as biotechnology, the arts, engineering, and medicine to attract students. When students are empowered to choose a school based on their interests, they often are more engaged in learning, which can translate into improved academic achievement.

The profiled schools demonstrate that students—regardless of race, background, or economic status—can meet and exceed the academic standards set for them. As a matter of fact, each school's requirements for graduation are more challenging than those of the local district.

In the following pages, you will learn how these magnet high schools have sustained success through a focus on five common strategies. Each school innovates for excellence; provides rigorous course work; promotes equity by holding high expectations for all students; builds a culture of high-quality teaching where educators feel connected through an integrated curriculum; and forges partnerships with families, communities, universities, and businesses.

This guide is one in a series of *Innovations in Education* publications produced by the U.S. Department of Education and complements an earlier guide on creating and sustaining K–8 magnet schools. I hope that policy-makers, district and school staff, and parents will find the examples highlighted here as inspiring as I do. These schools have had a powerful impact on the families and communities they serve, and are models for preparing students for successful futures.

Margaret Spellings, Secretary
U.S. Department of Education



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Introduction

Since the 1960s, many school districts have promoted magnet schools as a vehicle for reducing minority-group isolation and increasing school choice for parents, students, and teachers. By definition, magnet schools are public schools that are able to attract students of diverse racial and socioeconomic backgrounds by offering a special curricular theme or pedagogical approach. In contrast to conventional zone schools, where students are assigned by geographic location, magnet schools usually enroll students on a voluntary basis, drawing from areas beyond the traditional neighborhood locale. The underlying premise is simple: A magnet's specialized focus is compelling enough to draw a diverse range of families to attend a school outside their immediate zone, even if this requires travel to a different, or even distant, neighborhood.

Magnet schools originally emerged as a response to involuntary busing to achieve racial integration of schools and the growing demand for variation in traditional public education. Experiments with “alternative schools,” “street academies,” and “open classrooms” provided models for magnet schools and gained prominence after federal court rulings in the 1970s that accepted magnet programs as a strategy for voluntary desegregation.¹ Between 1982 and 1991, the number of magnet schools doubled, from 1,019 to 2,433, with magnet school enrollment nearly tripling from 441,000 to 1.2 million students.² Funding from the federal government—with the *Emergency School Aid Act* from 1972–81—and the Magnet Schools Assistance program (MSAP) from 1985 until present—also encouraged the growth of magnet programs. By 2001–02, more than 3,100 magnet schools were operating in 230 districts.³ Today in 2008, according to Magnet Schools of America (MSA), a nonprofit education association, there are more than 5,000 magnet schools serving approximately 2.5 million children.⁴

Evolving Goals and Changing Communities

As the movement for magnet schools gained momentum, districts also expanded their goals to focus on achievement-oriented outcomes as well as to address issues of the changing community context and demographics. New purposes for magnet schools include modeling innovative educational methods and leveraging the element of choice to increase student learning and parent satisfaction. In some districts, magnet schools have dramatically improved student achievement levels, renewing interest in these schools as a promising strategy for improving student learning. As part of a strategy for increasing school choice and the dissemination of innovative education practices, magnet schools also can serve as effective vehicles for providing low-income and minority students with better options for education. As MSA founder Donald Waldrup says, “Magnet schools are based on the premise that all students do not learn in the same ways, that if we find a unifying theme

or a different organizational structure for students of similar interest, those students will learn more in all areas.”⁵ The MSAP evaluation of its 1998 grantees found that teachers in the magnet schools funded by the program emphasized higher-order thinking skills and used more varied assessment practices than teachers in traditional schools. As a magnet school principal explains, “A primary benefit of launching a theme concept is that it motivates staff members to implement innovative strategies in the classroom ... brings cohesiveness to a school’s staff, and offers new opportunities for leadership.”⁶

Choice is a powerful element that can help create the conditions for successful magnet schools. Students are more engaged in the classroom, parents and community members become more actively involved with school life, and staff members feel connected by the curricular coherence and shared culture in schools of choice.

There is an ongoing challenge to prepare secondary students to demonstrate academic achievement at high levels. Magnet high schools are producing positive results, as the schools profiled in this guide illustrate. Part of the secret of their success has to do with the opportunity to experience innovative learning and the level of rigor they provide in their programs and instruction. At these schools, academic excellence and innovation go hand in hand, preparing students for college and for success in careers beyond.

This guide is written for policy-makers, district and school staff, as well as educators and parents interested in understanding what successful magnet schools offer and how the strategies they use to implement innovative programs can increase equity and achievement levels for their students. Readers of this guide will need to select, adapt, and implement practices that meet their individual needs and school contexts using the ideas and

practices from the schools featured in this guide as a springboard for their own action research.

The Schools Profiled in This Guide

The guide examines eight exemplary magnet high schools, analyzing their common characteristics and profiling them as models of success. The site selection process, detailed in Appendix A, involved screening on several levels. As a whole, the eight schools demonstrated that their students, including those with disabilities and those from minority or economically disadvantaged backgrounds, are developing proficiency on their state’s assessments and content standards. The selected sites serve students that mirror the diversity of their district population in terms of race, ethnicity, and socioeconomic background, and demonstrate success with reducing or eliminating minority-group isolation. Each of these magnet schools made adequate yearly progress, or AYP, for at least three years, 2004–06, and each one has used a magnet focus to support high achievement through a rigorous curriculum that applies to all students. Each of the sites has graduated at least one class of students that started at the school in ninth grade. Another achievement criteria for school selection concerned student proficiency rates: Researchers looked for schools that scored at least at the 50th percentile in math and reading on state standardized tests, with demonstrated evidence of continued improvement over several years, or for those that were consistently high achieving in the 90th-percentile range annually.

The schools were selected to represent a range of magnet types, including those with selective and nonselective admissions criteria; an interdistrict model; programs with multiple- and single-focus themes; and those with a clear career focus. Selected variables for each school are provided in

table 1 and also in the individual school profiles in Part II of this guide.

To understand the components of their success, a case study of each school was developed. An external advisory group provided insight for creating a research-based conceptual framework for analyzing the schools, as detailed in Appendix A. The group made recommendations for schools to consider, and determined site selection criteria. A two-day visit was arranged at each school to talk with administrators, teachers, parents, and students both individually and in focus groups. Artifacts and sample tools were collected from each site, some of which appear in Part I of this guide to illustrate specific strategies implemented at the school level.

These schools are trailblazers in education. Some were launched in response to court-ordered district desegregation of schools. Others were created out of efforts to engage in high school reform and innovation. But from their inception, all of these schools shared the goals of raising the standard of academic programs offered to students in the community and providing those from lower-income families and diverse ethnic backgrounds opportunities for education excellence.

The schools profiled in this guide demonstrate a range of magnet program types. Three schools have more than one magnet strand within the same school. G.W. Carver Magnet High School (Houston) offers students programs in mechanical, electrical, and architectural engineering, applied technology and visual arts. Galileo Magnet High School (Danville, Va.) offers the International Baccalaureate Programme, air and space technology, biotechnology, and advanced communications and networking. Northeast Magnet High School (Wichita, Kans.) houses a law program on the same campus with a visual arts and a science strand. Chattanooga School for the Arts

and Sciences (Chattanooga, Tenn.) (CSAS) offers a Paideia model, a curriculum derived from the pedagogic ideas of American Aristotelian philosopher Mortimer J. Adler and combines seminars, coaching, and didactic instruction.⁷ Several of the schools offer in-depth study in career-related fields. For example, Francisco Bravo Medical Magnet High School (Los Angeles) provides internships focusing on careers in the health professions, such as physical therapy, nursing, and medicine, while both Booker T. Washington High School for the Performing and Visual Arts (Dallas) and Design and Architecture Senior High School (Miami) prepare students for future careers in the arts and have admission and audition requirements. Two of the schools, Carver and CSAS, are part of districts with a K–12 magnet program that features a continuous theme and focus throughout the grade levels. And Metropolitan Learning Center (Bloomfield, Conn.) is an interdistrict school whose interdisciplinary theme emphasizes global and international studies. These schools have expanded the range of school choice for the families and communities they serve by offering outstanding educational programs that are innovative and rigorous.

Their distinct programs and qualities notwithstanding, these eight schools share five common elements and strategies:

1. **Innovating for Excellence:** These schools are pushing the boundaries of innovation in education to create trailblazing programs that inspire students and teachers to do their best work. Technology and partnerships provide cutting-edge resources for students, engaging them in state-of-the-art research programs and professional-grade projects.
2. **Promoting Equity:** These magnet high schools serve a diverse group of students and work to ensure the success of all of them. All students are held to high academic standards

Table 1. Selected Variables of Profiled Magnet High School Sites

School and Location	Year Established As a Magnet	Theme	Grades/ Enrollment
Francisco Bravo Medical Magnet High School, Los Angeles ^b	1990	Health and medical professions	9–12 1,723
G.W. Carver Magnet High School, Aldine Independent School District, Houston ^c	1995	Engineering, applied technology, and visual arts	9–12 938
Chattanooga School for the Arts and Sciences, Hamilton County, Tenn. ^d	1986	Paideia, a curriculum based on the ideas of philosopher Mortimer J. Adler, combining seminars, coaching, and didactic instruction	K–12 1058 9–12 470
Design and Architecture Senior High School, Miami ^e	1990	Architecture; interior, fashion, and industrial design; visual communications; entertainment technology	9–12 479
Galileo Magnet High School, Danville, Va. ^f	2002	International Baccalaureate Diploma Programme, air and space, biotechnology, advanced communications, and networking	9–12 250
Metropolitan Learning Center, Bloomfield, Conn. ^g	1998	Global and international studies	6–12 681
Northeast Magnet High School, Wichita, Kans. ^h	1990	Visual arts, law, science	9–12 538
Booker T. Washington High School for the Performing and Visual Arts, Dallas ⁱ	1976	Performing and visual arts	9–12 696

^a Data reported by schools for the 2007–08 school year.

^b 2006–07 school year, <http://dq.cde.ca.gov/dataquest>.

^c 2006–07 school year campus performance report, Academic Excellence Indicator System, <http://www.tea.state.tx.us>.

^d Data reported by school for the 2007–08 school year.

^e Data reported by school for the 2007–08 school year.

^f Data reported by school for the 2007–08 school year.

^g 2006–07 school year, <http://www.greatschools.net>.

Student Population Ethnicity	Free & Reduced-Price Lunch	Special Education	English Language Learners	Percentage of 2- and 4-year College Acceptance (Class of 2007) ^a
66% Hispanic 1.9% African-American 12% Asian American 14% White 5% Filipino	82.8%	1.3%	4.1%	61% 4-year 33% 2-year 94% total
53% African-American 37% Hispanic 7% White 2% Asian American	58%	3%	<1%	45% 4-year 25% 2-year 70% total
40% African-American 3% Asian American 56% White 2% Hispanic	23% ^e	10% ^f	0	84% 4-year 13% 2-year 97% total \$4.2 million in scholarships
52% Hispanic 28% White 16% African-American 3% Asian American	36%	4% (2005–06)	<1%	87% 4-year 13% 2-year 100% total \$9.6 million scholarships to 106 seniors, class of 2007
33% African-American 2% Hispanic 60% White 1.5% Asian American 2% Native American	31%	8.4% ⁱ	2.4% ^j	57% 4-year 38% 2-year 5% military 95% total college bound
61.5% African-American 9.8% Hispanic 24.7% White 3.8% Asian American	35%	5.6%	.4%	68% 4-year 30% 2-year 98% total
25.7% African-American 13.2% Hispanic 47.4% White 13.8% Other	44%	4.5%	<1%	53% 4-year 47% 2-year 100% total
29% African-American 26% Hispanic 42% White 3% Asian American 1% Native American	27%	3%	<1%	93.4% 4-year 6.6% 2-year 97.5% total

^h Virginia Department of Education school level report 2007.

ⁱ Data reported by school for the 2007–08 school year.

^j Data reported by school for the 2007–08 school year.

^k 2006–07 profile, <http://www.csde.state.ct.us/public/der/ssp/sch0607/school.htm>.

^l 2006–07 school year, http://online.ksde.org/rcard/search_database.aspx.

^m 2006–07 campus performance report, Texas Education Agency Academic Excellence Indicator System, <http://www.tea.state.tx.us>.

Five Common Elements and Strategies of the Profiled Schools

- Innovating for Excellence
- Promoting Equity
- Forging Community Partnerships
- Designing Rigorous Academic Programs
- Building a Culture of High-quality Teaching

and have access to rigorous learning opportunities and, when needed, support through tutoring and small group workshops. Outreach to parents and families, opportunities for research and internships are some other strategies that they use to empower students from all backgrounds.

- 3. Forging Community Partnerships:** These schools engage support from the community, families, university, and business partners with the intent that all students achieve academically. External resources and supports enable them to offer high-quality programs.
- 4. Designing Rigorous Academic Programs:** These schools focus on preparing their students for college and successful professional careers. Their rigorous graduation requirements exceed those of the host district, with the goal of preparing students for admission to selective university programs. Several of these schools offer Advanced Placement courses and dual enrollment programs with local universities, setting the expectation that college is attainable for all of their students.
- 5. Building a Culture of High-quality Teaching:** The featured schools have exceptional teachers who encourage creativity through innovative theme-based curricula with meaningful learning experiences that connect classroom

study to real-world applications and experiences. With theme-based programs that are atypical of traditional high schools, these magnet high schools offer an integrated curriculum that seems to encourage teachers to be collaborative. Just as teachers hold high expectations for students, the school leadership holds teachers to rigorous standards for high-quality instruction.

Part I of this guide explores these common elements and strategies in more depth. Examples are provided from the eight schools to highlight how they implement these shared features. Sample materials collected from the schools are provided throughout this section to illustrate some of the tools and strategies these schools use to support their work.

Part II profiles each school to highlight individual and distinctive characteristics including its history, mission, organization, community partnerships, student support, and achievements. These narratives are intended to provide a more comprehensive understanding of each school site.

The guide is based on case study research of eight magnet high schools and involved a visit by researchers to each site, interviews with district and school staff, focus groups with members of the school community, and a review of school- and district-related documents. Thus, the guide is based, in part, on documented information about a school and its outcomes, in part, on researcher observation, and, in part, on the perceptions of those interviewed, including staff, parents, and students. Because it is not based on experimental research that can yield valid causal claims about what works, readers should judge for themselves the merits of these practices. Also, readers should understand that these descriptions do not constitute an endorsement of specific practices or products.



PART I

Successful Magnet High Schools: Common Themes

Common Elements and Strategies in The Profiled Magnet High Schools

The eight schools presented in this guide exemplify successful magnet programs that provide students with opportunities for rigorous learning experiences. Working with the district and community, each school has developed an innovative curriculum designed for a student body from diverse socioeconomic, racial, and ethnic backgrounds. Students and teachers are both held to high expectations for achievement and performance. Inspiring curriculum and meaningful classroom activities engage and motivate students to do their best work. Reaching out to university, business, and community partners helps these schools leverage resources so they can offer top-notch career and college preparatory programs. In their communities, they are trailblazers making a positive impact. They show what is possible when administrators, teachers, and the community work together to create an outstanding high school.

Innovating for Excellence

How are these magnet programs meeting the challenge of high school reform? Each of these profiled schools was created as an instrument for change, either as a means to reduce

minority-group isolation in schools or to answer the call for a more skilled workforce by raising the quality of high school education. To meet those challenges, these schools have developed a variety of promising strategies and responses that may be useful to other schools and districts.

The eight schools profiled in this guide exemplify some of the innovative program strands and curricular themes found in magnet schools. The schools have attracted students to select these demanding, content-rich educational programs and bring families from diverse backgrounds to the schools. Some themes are designed to prepare students for careers, such as the health professions and engineering, that have workforce shortages, making the magnet programs even more attractive to students and their families. For example, Galileo Magnet High School (Danville, Va.) offers study strands in air and space technology, biotechnology, advanced communications and networking, as well as the International Baccalaureate (IB) Diploma Programme (see fig. 1 on p. 8). Miami's Design and Architecture Senior High School (DASH) is another exemplar of a career-focused high school program, the first in its district to focus on design careers in the arts. DASH combines a rigorous academic program with specialized

Figure 1. Magnet Strands of Study at Galileo Magnet High School, School Brochure (Excerpt)

<i>Strands</i>	<i>of</i>	<i>Study</i>
<p>Air and Space</p> <p>Air and space technology—a diversified, complex field—offers a wide variety of careers for scientists, engineers, technologists, and technicians. From solving the mysteries of space to designing communication and weather satellites, air and space technology offers the benefits of dynamic innovation to the 21st century society.</p> <p>Air and Space classes:</p> <ul style="list-style-type: none"> ◆ ADVANCED ASTRONOMY ◆ PRINCIPLES OF FLIGHT ◆ ADVANCED AERODYNAMICS ◆ SYSTEMS DESIGN 	<p>Biotechnology</p> <p>Biotechnology is a rapidly growing field with rewarding career opportunities in research, medicine, technology, and business. Offering scientific solutions for the challenges of today's world, biotechnology has important applications for human health, agriculture, forensics, industry, and the environment.</p> <p>Biotechnology classes:</p> <ul style="list-style-type: none"> ◆ CELL BIOLOGY ◆ DNA TECHNOLOGIES ◆ ADVANCED APPLICATIONS OF BIOTECHNOLOGY ◆ LIVING SYSTEMS 	<p>Advanced Communications and Networking</p> <p>Advanced communications and networking have applications to numerous fields of endeavor. From education to health care, and from business and industry to aerospace and forensics, challenging careers are available in computer programming, engineering, networking, technology, statistics, and digital media.</p> <p>Advanced Communications and Networking classes:</p> <ul style="list-style-type: none"> ◆ COMPUTER CONCEPTS ◆ WEB DESIGN ◆ AUDIO-VIDEO BROADCASTING ◆ NETWORKING
		

Source: Galileo Magnet High School. Used with permission.

The U.S. Department of Education does not mandate or prescribe particular curricula or lesson plans. The information in the figure above was provided by the identified site or program and is included here as an illustration of only one of many resources that educators may find helpful and use at their option. The Department cannot ensure its accuracy. Furthermore, the inclusion of information in this figure does not reflect the relevance, timeliness, or completeness of this information; nor is it intended to endorse any views, approaches, products, or services mentioned in the figure.

design training. Other magnets emphasize innovative pedagogic approaches as a way of setting high standards for children of all backgrounds. At Chattanooga School for the Arts and Sciences (CSAS), founder Jack Murrah believed that the principles of democratic liberal arts education, espoused by the philosopher Mortimer Adler in *The Paideia Proposal*, could change how students learn by empha-

sizing critical thinking, reflection, and active participation in seminar classroom settings. Nationally recognized as a Paideia model, CSAS offers a college preparatory, liberal arts education that aims to realize the potential of any student who comes through its doors.

Magnet schools can be innovative in the thematic curriculum they provide, but sometimes

it is the organizational structure in the district or the school environment itself that is inventive. Forward-thinking districts have implemented systemic change by creating feeder systems, aligning thematic magnet schools from kindergarten to 12th grade. In Houston, the Aldine Independent School District developed thematic curricular vertical strands spanning K–12, starting with students at a young age to prepare them for rigorous high school programs (see fig. 2 on p. 10). This strategy has been so popular in the district that in 2007–08, G. W. Carver Magnet High School (Carver) had only 25 lottery seats open for 300 non-feeder applications, with most of their 845 students coming up through the vertical feeder elementary and middle schools.

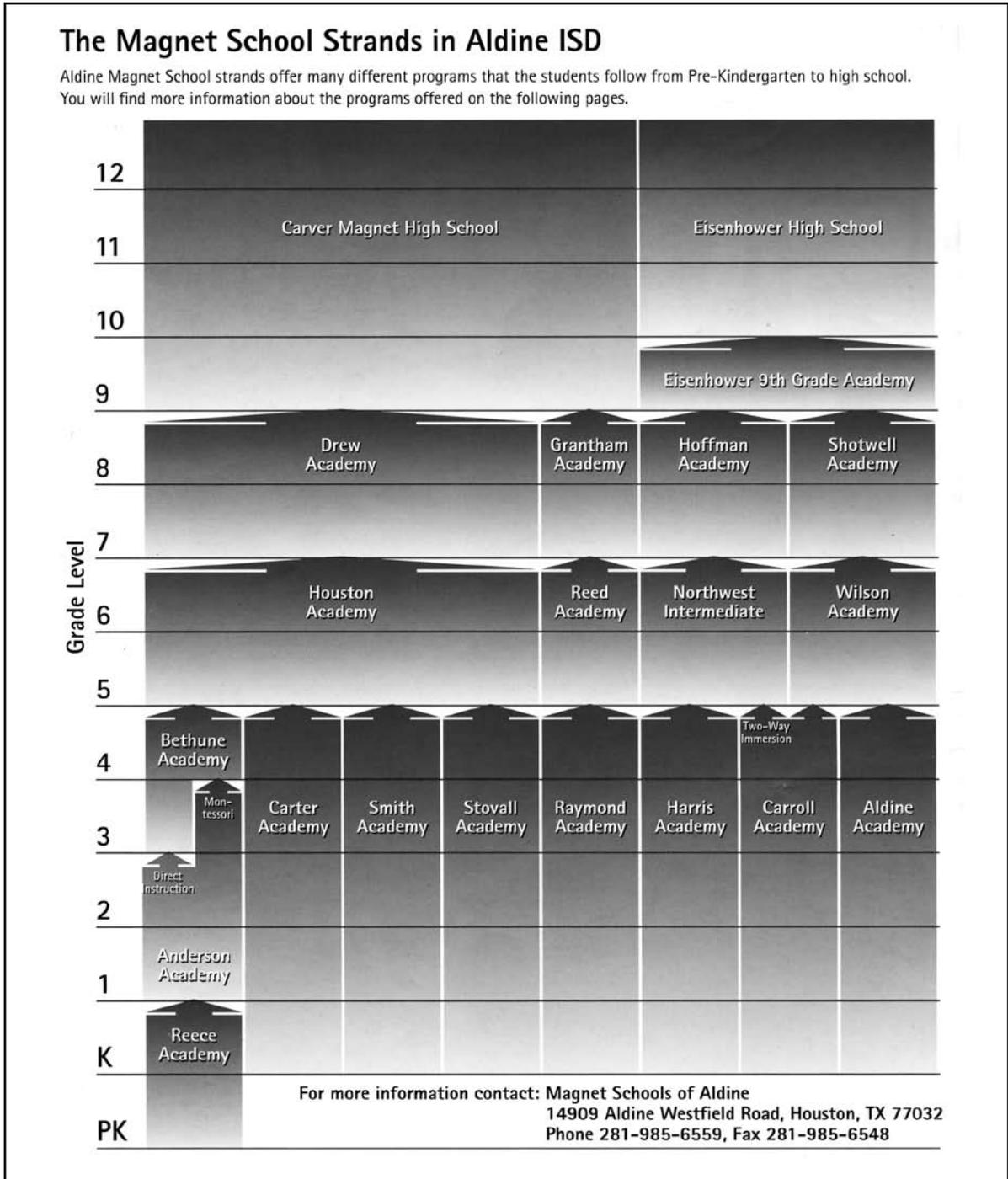
Magnet programs also have been developed as part of community solutions to complex challenges. Metropolitan Learning Center (MLC), a grade 6–12 magnet, whose interdisciplinary theme focuses on global education, grew out of a climate of crisis for public schools in the Hartford area. Due to the nature of that community's housing and demographics, an inter-district model was adopted as a strategy for desegregating public schools there as mandated by a 1996 Connecticut Supreme Court case settlement.⁸ MLC serves students from the 543-square-mile capitol region of Hartford, with six or more towns sending students and contributing funding for them. The Capitol Region Education Council (CREC) manages the cooperative partnership among the participating districts that send students to MLC.

Innovation at the district level is one avenue for improving high school programs. In the late 1980s, Miami-Dade County, Fla., launched

the Saturn School project, as a means to create cutting-edge teaching and learning models throughout the district. A request for proposals called on educators and community members “to design the school of your dreams.” That led to the development of Miami's Design and Architecture Senior High (DASH), whose program focuses on preparing students for careers in the visual arts and design. At Northeast Magnet High School (NEM) in Wichita, Kans., it was district superintendent Stuart Berger who spearheaded the use of magnet programs as a catalyst for high school reform.

A distinctive feature of these schools is the sophisticated way that they leverage thematic curriculum, exposing students to professional quality projects with real-life applications. In some instances, this teaching strategy connects classroom-level work to community-based practice; in others, it involves raising the accountability and performance level for final products. For example, when Hurricane Wilma blew down an observatory tower in the southern part of Everglades National Park in 2005, students in the DASH architecture program were invited to design a replacement structure. Each student drafted plans, and submitted them to a local architectural firm to select one design for the park. At the same school, students in the industrial design program created drawings for a chair design contest (see fig. 3 on p. 11) sponsored by a local real estate firm and the HSBC bank in Switzerland. Students completed 48 chair designs and from these, 11 finalists were selected, and five were manufactured as prototypes demonstrating the students' professional quality work.

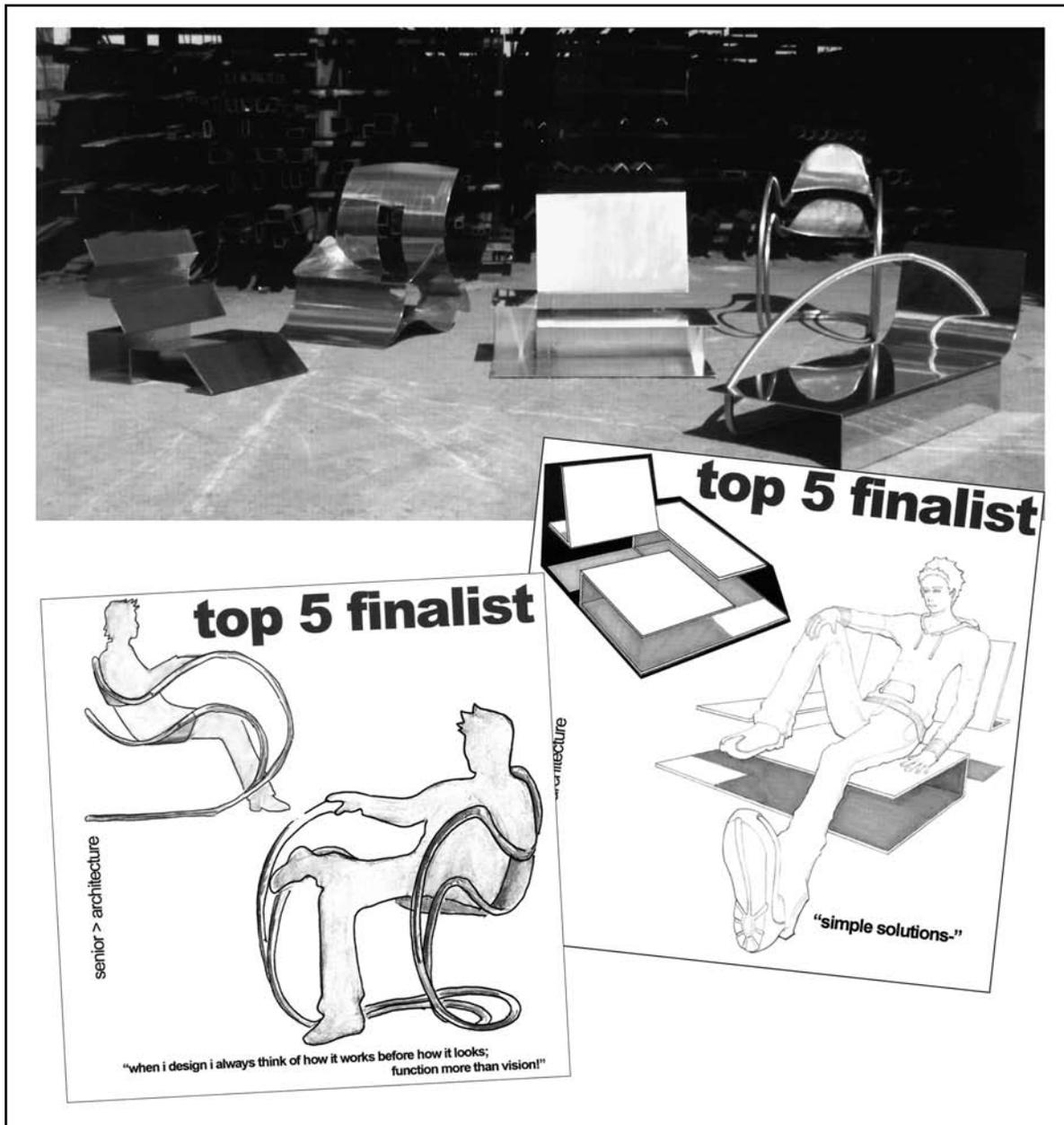
Figure 2. The Magnet School Strands in Aldine Independent School District, Houston (Excerpt)



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Source: Magnet Schools of Aldine. Aldine Independent School District. Used with permission.

Figure 3. Sample Chairs Designed By Students in the Industrial Design Program At Design and Architecture Senior High School (Miami)



Source: Design and Architecture Senior High School. Used with permission.

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Teaching in these schools is often project-based, with students experiencing the relevance of their rigorous learning. For example, at Galileo Magnet High School (Galileo), in an Advanced Application of Biotechnology class, students work in pairs in a state-of-the-art laboratory. Using a special kit with pipettes to detect antibodies in the blood stream, they can determine if there has been exposure to a disease, such as smallpox.

Several of these schools have innovative strategies for infusing technology in their environments. At Carver, the principal piloted an internal communication technology system for staff so that any teacher can check the status of a student's grades, attendance report, and testing data with the click of a mouse. At MLC, teachers use interactive whiteboards, and every student has a laptop. Instead of a school library with books, Galileo has a research center to give students access to cutting-edge science. They can download data, reports, and conduct their own online research. For students in rural areas, small towns, and inner-city neighborhoods that are often quite insular, new technology offers an expansive array of resources that aims to open local viewpoints to global perspectives.

Promoting Equity

All of these magnet high schools show a strong commitment to equity, ensuring that a diverse group of students have outstanding educational opportunities, adhere to high standards, and receive the necessary support for success.

Several of these schools were founded as part of desegregation efforts in response to court

cases, providing families with new choices and education options. Established in 1922 as the first African-American high school in Dallas, Booker T. Washington High School for the Performing and Visual Arts (BTWHSPVA) was originally 100 percent African-American, and now in 2007–08 has 42 percent white students, a contrast with the district's student population that is 5 percent white and 65 percent Hispanic. "Magnets are still serving the goal of creating balanced diversity," says Faustina Gallagher, Dallas Independent School District's magnet schools program coordinator.

Many of these magnet high schools engage in active outreach throughout their districts to ensure continued ethnic and socioeconomic student diversity. At DASH, school site magnet coordinator Mary Hartley goes to every middle school in the county and also to private schools, telling teachers that she is "looking for kids who want to make art an important part of their life, [youths who] might want to design cars or clothes or buildings." At DASH, the result is a diverse student body whose families have immigrated from over 37 different countries, including Guatemala, Dominican Republic, Cuba, Chile, Morocco, and Pakistan.

Serving a diverse population, these schools want to ensure that every student has outstanding educational opportunities. Chattanooga School for the Arts and Sciences (CSAS) began with a vision for education equity. "What we wanted," says founder Jack Murrah, "was to establish a demonstration school that was intentionally diverse socially and academically in student makeup, but with one uniformly high standard of intellectual expectations for every student."⁹ At CSAS, there is no tracking, no class ranking,

and no Advanced Placement (AP) classes that require minimum test scores or grades for entry. True to the school's philosophy, the one-track curriculum is applied equally to all students, based on the assumption that everyone is capable of learning and benefiting from a heterogeneous environment.

Teachers support students while simultaneously holding them accountable to high academic expectations. As a Galileo teacher says, "We expect college for everyone." Another explains that the school staff "does not dumb down the curriculum, no matter what. This produces great success, and we surpass so many state and district standards in the process." A variety of studies have found that children growing up in poverty typically have access to fewer resources and less breadth of exposure to intellectual and professional opportunities than their peers growing up with two white collar professional parents.¹⁰ These magnet schools seek to provide all their students with opportunities and exposure to the world beyond their neighborhoods. At Francisco Bravo Medical Magnet High School, students from inner-city Los Angeles have chances to do research in the professional world of doctors and scientists working in neighboring, world-class medical centers, such as the Keck School of Medicine of the University of Southern California. Students from farm towns and inner-city Hartford have opportunities to learn from international students who attend MLC and from their own experiences traveling overseas. In Dallas, students at BTWHSPVA interact with famous artists and professionals, such as actor Sidney Poitier, who visit the school to give master classes for promising high school performers.

If setting high academic expectations is one-half of the equation for increasing student learning,¹¹ then the other is providing support for student success. Staff at these magnet high schools aim to achieve equity through active tutoring and resources for students who need additional support.

By engaging students' families as partners in the education process, teachers and families can work together to optimize the possibility of student success. Many of these magnet high schools devote resources that help parents participate in their students' education. At Bravo, parents of incoming freshmen who were failing classes during middle school are invited to participate in a six-week Saturday Bridge Achievement Academy (see fig. 4 on p. 14). Currently, around 150 of Bravo's 1,726 students are enrolled. In its first year, nearly 60 families took part, and parents had opportunities to work with school counselors in different academically focused workshops with such topics as how to read your child's report card and how to use the daily progress report. Other Bridge workshops taught skills that could be used at home, such as time management and how to build a positive learning environment. As part of Bravo's outreach, parents were introduced and encouraged to make use of such school resources as the Counseling and Career Center. The goal is to empower parents to support their children's education so that they will feel comfortable enough to communicate concerns and requests to their child's teachers. In communities where many of the students will be the first in their family to attend college, or parents do not speak English, this type of communication between school and home can be vital to students' success.

Figure 4. Francisco Bravo Medical Magnet High School (Los Angeles), Parent Evaluation of Bridge Achievement Academy (Excerpt)

Bridge Achievement Academy/*Academia de Éxito*
Session/*Sesión* 4 – Saturday, October 13, 2007
Evaluation/*Evaluación*

A. Please select the answer that corresponds to your opinion for each of the following statements.
Favor de seleccionar la respuesta que corresponde a su opinión.

	YES/ SI	NO/ NO	I DON'T KNOW/ NO SÉ
I know how to interpret the information on my child's report card. <i>Sé como entender la información en el informe de calificaciones.</i>	25		1
I know the options and resources available to help my child improve his/her grades. <i>Entiendo las opciones y los recursos disponible para ayudar mi hijo/a mejorar sus notas.</i>	26		
I know how to communicate (i.e., request parent conference) with my child's teachers and counselors. <i>Sé como comunicarme (por ejemplo, como pedir una cita) con los maestros y consejeros de mi hijo/a.</i>	25		1
The parenting principles information was helpful. <i>Siento que la información sobre la crianza de los hijos me ayudó.</i>	25		1

B. What was the most important thing you learned today?
¿Cual fue la información más importante que aprendió hoy?
About report cards. How to read report cards, and how to bring grades up. How to request a parent conference. About raising up children. That I can have conferences with teachers. How to sum up grade points. About report cards. I understand the report cards. How to find out his grades and speak with his teachers. I learned how I can communicate with the teachers and how to read his report card. The most important thing is that now I understand my child's report card. How to schedule an appointment with teachers, and how to motivate my daughter so she can be a better students. Knowing my son is not doing good, and how to help him. How to read the report card. My sons grades. Raising up our children, and how to make appointments with teachers. How to interpret the information on the report card. How to keep a good communication with the students, and how to interpret his report card. How to request parent conferences with my child's teachers, and counselor. Methods on how to raise our kids. Progress reports. All the information was very helpful.

C. How will you use this new information to support your child's academic success?
¿Cómo va a usar esta información para apoyar el éxito académico de su hijo/a?
Talk more with him, and give him more advice. By having a conference with some of the teachers. This conference will be very helpful, I will be able to detect when my son is having trouble with his grades. Putting this information to good use. Give him more support and spend more time with him. Convince him to go to tutoring, and explain to him how important it is for him to do all his assignments. Help and support her. Putting to use what I learned, and be positive. Help him improve in the classes he is having trouble in. I will use this information in a positive way and come to any future workshops. I'm going to encourage my daughter in what she needs. Asking the school for help. Give him more attention. Give him support with school work. I will put this information to good use. Support him in what I can. Check every report card and find out if he is doing better or worst. Rewarding him with what he likes most. Stay firm on the consequences for getting bad grades. Participate in more activities with my son regarding class and homework. By helping and working more with him. Putting more rules about education.

D. List any additional issues/topics you would like discussed in future sessions?
¿Hay otros temas que quisiera platicar en las próximas sesiones?
How to communicate with my son. About other educational programs this school offers. Everything is well explained. How to help my child. About future classes they need to take so they can advance. How teachers teach and grade. How to reach success with my son. Money for college for students who do not have legal papers. All the information they give us, helps us. I am very pleased. Everything you teach us is perfect. How to enroll him for tutoring.

E. How would you improve the session? / *¿Cómo mejoraría la sesión?*
More time. Everything is great. Putting more attention. Thank you for your time. The counselors are doing everything very well. Supporting the students and teachers. I would like to congratulate all the professionals for helping us, and ask for patience, thank you. Everything is great. Everything is well organized, 100% "A". Everything is good. Talk about how to be a better parent.

Thank you! We appreciate your participation and support.
¡Gracias! Le agradecemos su participación y apoyo.
– Bravo Counseling Team

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Source: Francisco Bravo Medical Magnet High School. Used with permission.

These schools both seem to positively impact students' lives and strengthen their communities. In Danville, Va., Galileo Magnet High School is helping to revive an economically distressed area. A group of local Virginia Tech and city leaders collaborated on how to create a local workforce skilled for white-collar, not just blue-collar, work. They decided on a magnet school focused on three career strands—networking, biotechnology, and air and space—infused with the skills needed to apply to college and for future careers. They recruited the National Aeronautics and Space Administration (NASA) staff at the Langley Research Center in Hampton, Va., to help develop the air and space program. “We’re part of the economic development of the city,” explains retired principal Bill Lawrence. Today, because of its rigorous and high-tech academic program, when new industries visit Danville, city leaders always include a visit to Galileo as part of their marketing strategy. If you achieve equity in the school building, it can have a huge impact in the community. “Companies come to Danville because of this school,” says Lawrence.

Forging Community Partnerships

Mobilizing community support has been a key strategy in how these schools develop rich programs for students. A spirit of entrepreneurship inspires their lead administrators to devote time and energy to build partnerships with students' families, universities, and civically minded businesses and nonprofit organizations. These proactive principals reach out to the community to garner resources. For many of these magnet schools, innovative curriculum is enhanced through internship programs sponsored by community businesses and local universities. As

NEM's founding principal Jim McNiece recalls, “I was on a first-name basis with anyone who I thought could help the school. We felt that we have to give kids a reason to get on the bus and travel 15 miles to come to our school. There has to be a really good program at the end of the bus ride.” He developed a 10-year active partnership with the Boeing Company, which donated money, equipment, trained staff, and mentored students. When Boeing changed its funding priorities, McNiece started anew with Raytheon Company, local museums, and other organizations. “There is an ebb and flow to partnerships because they are based on individuals, connections, and relationships.”

NEM is adjacent to Wichita State University (WSU). NEM high school students attend special science programs at WSU's engineering facility on a regular basis and have access to equipment and software there. Juniors and seniors can attend WSU art classes and exhibit their work in shows at the Wichita Art Museum, Wichita Center for the Arts, and other public and private galleries.

Other partnerships magnet high schools develop are those that are dual-enrollment programs with local universities. Dual-credit courses enable students to accrue college credits while still in high school.¹² At MLC, students can enroll in courses at Capital Community College and St. Joseph College with tuition and fees waived for one course each semester, provided they pass mathematics and English placement exams and have at least an 80 percent grade point average. Two schools have active advisory boards that leverage additional resources, similar to how a board of directors serves a nonprofit organization. The BTWHSPVA advisory board embarked

on a capital campaign of \$55 million to create a new facility on the original school site. As a result of this public-private partnership, the district, through local city bonds, has given \$23 million, and the school has raised almost all of the remaining \$32 million through private funds. The board includes 45 elected members who represent 34 local arts organizations. It also has helped the school develop community partnerships (see fig. 5 on p. 17), providing students with professional-level opportunities, such as performing with the Dallas Symphony Orchestra and taking master classes with renowned dance artists who serve as role models, providing inspiration.

Partnerships with industry to support career-focused magnet programs have kept some of these schools on the cutting edge of innovative education. At Bravo, student research projects with university faculty and researchers connect students to the medical world, and they have the opportunity to pursue a medical certification course, gaining hands-on experience from neighboring medical and research facilities. There are mutual benefits for the school and its partners: Students learn from real-world applications and are exposed to high-level research and professional learning opportunities; hospitals and organizations gain volunteers while investing in the education of future nurses, doctors, researchers, and technicians.

At DASH, all students complete a career design portfolio (see fig. 6 on p. 18) that includes creating a resume as a step towards getting an internship in the community. Linking school course work to real-world experience is a critical component of a DASH student's education. The school's robust internship program provides students with the opportunity to go and work

in top-notch design firms and art galleries; there they can learn what one staff member describes as "things we could never teach them."

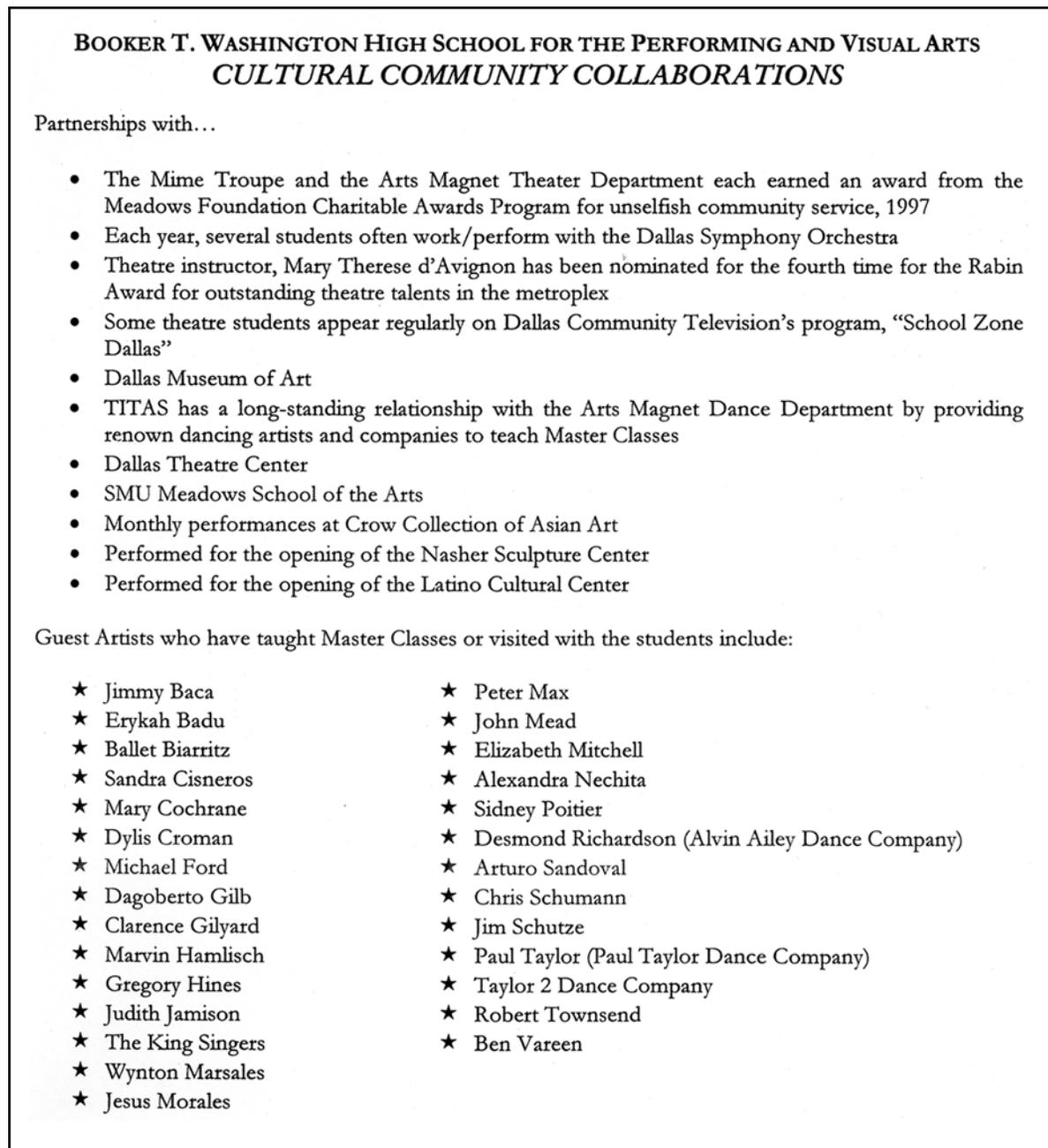
These schools also garner support from various kinds of parent involvement. For example, at BTWHSPVA, each arts cluster has a parent guild. The school's Theatre Guild, for example, has 100 members and, according to its president, "assists students and teachers in the cluster with whatever needs they have," including raising money for costumes and for students to attend performances outside of school. CSAS parents commit to a minimum of 18 volunteer hours and, in 2006, they dedicated more than 28,000 hours within the school.

Designing Rigorous Academic Programs

These schools have a clear vision for their students' postsecondary success beyond high school. They raise the bar for all students so that they will be prepared not only to enter but also to complete college. Their rigorous graduation requirements include portfolios, senior projects, and advanced course curriculum that exceed district and state graduation requirements. Fulfilling them prepares students for admission to selective university programs and professional careers.

Research shows the importance of aligning high school graduation requirements with college admission criteria.¹³ To do so, many schools have increased graduation requirements beyond those of their district or state, requiring students to take not only more credits, but also more rigorous courses.¹⁴ For example, MLC's 25-credit graduation requirement is higher than the

Figure 5. Booker T. Washington High School for the Performing and Visual Arts (Dallas) List of Cultural Community Collaborations and Guest Artists



Source: Booker T. Washington High School for the Performing and Visual Arts. Used with permission.

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Figure 6. Design and Architecture Senior High School (Miami) Career Design Portfolio Flyer

Design and Architecture Senior High

Career Design Portfolio

Portfolio Development

Cover Page (Exterior)
Student's Name
Career/Design Portfolio
Design & Architecture Senior High School

Dividers (Interior) with printed tabs

Table of Contents (Listing)

- ✓ **Part One- The Applicant**
 - Cover Letter
 - Resume
 - Transcript
 - Artist Statement
 - Letters of Recommendation
- ✓ **Part Two- Services**
 - Community Service
- ✓ **Part Three- Recognitions**
 - Awards/Certificates
 - Accomplishments
- ✓ **Part Four- Writing Sample**
 - Artist Statement
- ✓ **Part Five- Samples of Work**
 - Prints/Slides

Timelines

- JANUARY 26, 2007
PORTFOLIO DAY
- FEBRUARY 20 - MARCH 12, 2007
CAREER PORTFOLIO PREPARATION
- March 12 - 15, 2007
CAREER PORTFOLIO REVIEW
- FRIDAY, March 23, 2007
INTERNSHIP FAIR / MOCK INTERVIEWS

SUMMER INTERNSHIP DOCUMENTS

- RESUME
- PICTURE
- SOCIAL SECURITY CARD (COPY) DRIVER LICENSE OR PICTURE ID (REQUIRED)
- SCHOOL ACCIDENT INSURANCE RECEIPT
- STUDENT DATA CARD
- RESIDENT ALIEN CARD OR BIRTH CERTIFICATE OR PASSPORT
- STUDENT AGREEMENT FORM
- EMPLOYER/STUDENT/PARENT/ RESPONSIBILITY

Resume Development

Name and Contact Information

OBJECTIVE

EDUCATION
Date of Graduation
Grade Point Average
Courses
Dual Enrollment

SKILLS AND ABILITIES
Computer Skills
Language
Technical
Experiences
Publications

WORK EXPERIENCE
Internship
Productions/Performances

COMMUNITY SERVICE
Events/Activities
Total hour of services

CLUBS AND AWARDS
Club membership (National, State, Local) (Honors Society) (Office/Position)
Awards - certificates, printed material (posters, programs)
Accomplishments

REFERENCES
Available upon request

Source: Design and Architecture Senior High School. Used with permission.

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22 credits required by the state of Connecticut. MLC requires more credits in mathematics, global studies, and foreign language (see fig. 7 on p. 20). To graduate, students also must complete a senior project. For MLC staff, part of the rationale for the increased requirements is to ensure that students reach higher proficiency levels in subject areas. MLC students begin language study in middle school so they have time to develop proficiency in one of three offered—Spanish, Chinese, or French—and reach the language AP level by the end of high school.

The magnet high schools with thematic strands in engineering or arts programs give students a structured sequence of course requirements and specific electives from which to choose. By taking the recommended progression, they are able to complete all of the requirements by graduation and are on track for college or future careers. For example, at Carver, there is a separate set of requirements for each of its three magnet themes—engineering, applied technology, and visual arts. A sampling of related careers are outlined on course selection guides, linking rigorous curriculum and skill preparation for future interests (see fig. 8 on p. 21).

At Bravo, all students are encouraged to meet the admission standards of the University of California and California State University systems, called “A-G” course work requirements. “One of the key factors here is that even if they didn’t walk in the door wanting to go to college,” says one teacher, “they are going to walk out the door knowing they need to go to college.” As one student explains, “It’s the number one priority of every single administrator, counselor, and teacher to send everybody to college. From the beginning they push us to go, and if

you tell them you are thinking about quitting or dropping out, they’ll push you, set up meetings, and tell you how you can better yourself.” Bravo is well on its way to achieving that goal: Of its 2007 graduating class, 94 percent went on to two- or four-year colleges.

Several research studies link rigorous academics in high school to predictors of success in college and careers. For example, a study by ACT and the Education Trust looking across high-performing, high-poverty, high-minority high schools found that advanced, college-oriented material in core courses is the number one predictor of success in college and work.¹⁵ But studies have found that students from low-income families are less likely to be enrolled in college preparatory courses.¹⁶ Intending to reverse this trend, several of these magnet high schools offer AP courses, and one school offers the International Baccalaureate (IB) Diploma Programme. DASH was recognized by the College Board as the international leader for having the largest number of African-American and Hispanic students earning college credit on the AP studio art exam. Of the 385 exams submitted in 2006 in 14 courses, 80 percent received a score meriting college credit. In 2007, 244 students took 500 AP tests in 16 AP subjects, and 66 percent scored 3 or higher, making them eligible for college credit. And 100 percent of the class of 2007 went on to college, with 87 percent attending four-year colleges and 13 percent attending two-year colleges.

One strategy for addressing low student achievement has been to increase the level of rigor in courses that students are taking in secondary school programs. Increasingly, AP and IB diploma programs have been added to high

Figure 7. Metropolitan Learning Center (Bloomfield, Conn.) Graduation Requirements

Graduation Requirements (Effective with Graduating Class of 2007)		
The graduation requirements for the Metropolitan Learning Center Magnet School reflect the school's magnet theme of global and international studies with a rigorous emphasis on world languages and state of the art technology. The organization of the school, the curriculum, and resulting graduation requirements are based on The New England Association of Schools and Colleges standards on teaching and learning, the pillars articulated in "Breaking Ranks, Changing an American Institution" published by the National Association of Secondary School Principals and the vision of the Connecticut State Department of Education's 21st Century work on Reconceptualizing Connecticut's High Schools.		
	Connecticut General Statutes CGS 10-22(a) (Credit/Credit Equivalents)	MLC Graduation Requirements (Credit/Credit Equivalents)
English	4	4
Math	3	4
Social Studies	3	3
Science	2	2
Arts (Art, Drama, Music and Dance)	1	Essentials: (Art, Music, Technology, Personal Wellness, Exercise Science, International Seminars) 3
Physical Education/Health	1	
Electives	8	4
World Language		3
Senior Project		1
Global & International Studies		1
Total	22	25

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Source: Metropolitan Learning Center. Used with permission.

school curricula to enrich the academic content of teaching. Between 1997 and 2005, the total number of students taking AP examinations more than doubled.¹⁷ Many magnet high schools have opted to implement rigorous curriculum including AP and IB programs, explicitly preparing students for college. At MLC, eight AP courses are offered, and in 2007, 70 percent of the students in these classes came from historically underrepresented racial and ethnic groups. At BTWHSPVA, 19 AP courses are offered, and

the College Board has recognized the school as having the strongest AP Music Theory course in the nation. The high levels of achievement by minority students at these magnet schools further suggests their success in preparing all students for rigorous college programs.

Adelman's landmark study on contributing factors to completion of a bachelor's degree showed that, at the high school level, the key factor linked to college completion is a rigorous

Figure 8. Examples of Careers Related to Magnet Strands at G.W. Carver Magnet High School (Houston)

House of Engineering		Examples of Careers
Electrical Engineering	Students work in digital electronic labs equivalent to university-level programs, and learn about alternating currents, wiring, and circuitry.	Aircraft Electrician, Biomedical Equipment Repair
Architectural Engineering	Students use applications like Computer-aided Design (CAD), Auto Desk Pro, and other software tools to build future cities and design homes.	Architectural Engineer, Civil Engineer, Interior Designer, Landscaper
Applied Technology Engineering Technologies	Students become proficient in programming languages, computer networking, and telecommunications. Projects include multimedia productions, live broadcasts, sound mixing, and video editing.	Computer Programmer, Security Specialist, Systems Analyst, Data Communications Technician
Manufacturing Engineering Technologies	Students train in manufacturing techniques and safety, operating machine tools and mills to create products. Students also design and construct a variety of robotic models.	Mining & Petroleum Technologist, Quality Control & Safety Technologist

Source: G.W. Carver Magnet High School. Used with permission.

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curriculum.¹⁸ The National Center for Education Statistics found that students who completed any advanced mathematics course (64 percent) enrolled in four-year colleges at nearly double the rate of those who only completed mathematics through Algebra II (34 percent).¹⁹ Putting this research into practice, all of these schools have sequenced their mathematics programs so that students will reach such advanced courses as calculus, trigonometry, or statistics by the end of their high school education.

Every student at NEM takes mathematics for all four years of high school. These classes meet daily for 95 minutes all year long, providing more time on task and opportunities for remediation, enrichment, and acceleration. Students are expected to complete Algebra II

or beyond, and science magnet students are required to complete Algebra II and Precalculus/Trigonometry with a C or above. In 2007, 86 percent of students passed the Kansas state mathematics test.

Several of these magnet schools have project graduation requirements. CSAS requires two distinct exhibitions of student mastery to graduate: the Scholar's Journey and the Senior Project. To graduate from CSAS, students must complete the Senior Project (see fig. 9 on p. 22) that includes a 10–12-page research paper, 30 hours of related community service, the creation of a tangible product, and two culminating presentations. Senior Project papers have explored such topics as biodiversity and water quality in a local watershed. Similar to a college-level dissertation

Figure 9. Chattanooga School for the Arts and Sciences 2008 Senior Project Overview

<u>The 2008 Senior Project Overview</u>			
<u>Research Paper</u>	<u>Community Service</u>	<u>Product/Presentation</u>	<u>Portfolio</u>
<ul style="list-style-type: none"> • Topic/Area • Essential Question • Annotated Bibliography (10—12 sources) • 10 —12 page Research Paper plus Works Cited (6—8 Works Cited sources throughout the paper; includes citations from Outside Expert and no more than 2 Internet sources) [minimum paper length is 10 full pages] • easyWriter will be provided • Graded by UTC and Lee University Senior English Majors and Retired Teachers for writing mechanics • Graded by Community Experts for content 	<ul style="list-style-type: none"> • Business Format Letter to agency • Minimum of 30 hours during Senior Project class at designated agency • 2 Agency Evaluations • Thank You Notes 	<ul style="list-style-type: none"> • Product must be tangible • Proof of Product documentation will be ongoing throughout Senior Project class • Product/Presentation will be presented to outside audience prior to April 16th • Product/ Presentation will be presented to School Panel May 5—7; this includes entire Senior Project Process including research paper, product, outside audience and, if applicable, community service 	<ul style="list-style-type: none"> • Due the day of your School Panel presentation and must include the following: documentation of the Senior Project process including photos, Agency evaluations, résumé, Personal Profile, Community Service Documentation, Outside Audience Surveys and copies of Thank You Notes • Reflection Paper due May 12th 9
Copyright © by Chattanooga School for the Arts and Sciences.			
			6

The U.S. Department of Education does not mandate or prescribe particular curricula or lesson plans. The information in the figure to the right was provided by the identified site or program and is included here as an illustration of only one of many resources that educators may find helpful and use at their option. The Department cannot ensure its accuracy. Furthermore, the inclusion of information in this figure does not reflect the relevance, timeliness, or completeness of this information; nor is it intended to endorse any views, approaches, products, or services mentioned in the figure.

Source: Chattanooga School for the Arts and Sciences

process, essential questions, outside experts, and bibliographies for research papers must be approved by Senior Project advisers each step of the way.

To ensure that students are taking rigorous academic programs, these schools provide academic advising so that students receive guidance when making their annual course selections. Academic advising plans include preparing students for the college application process. At BTWHSPVA, the school hosts college representatives for a multiday event where students perform and present their best work. At DASH, the college counselor organized a

trip to New York City to show students college campuses and meet with alumni and college students, creating a bridge to the next step in their education.

Building a Culture of High-quality Teaching

A rigorous curriculum infused with innovative learning opportunities developed by outstanding teaching helps make these schools exceptional. Their leaders, recognizing the critical role of outstanding teachers, attract, hire, and retain educators with the ability to inspire, hold

high expectations for students, share subject matter expertise, and provide support for outstanding academic achievement. As professionals, the teachers have the autonomy and collegial support to be creative and collaborative, resulting in a dynamic learning environment for their students.

These schools have teachers who connect classroom learning to real-world situations and experiences. At MLC, teachers highlight the links between what their students learn and the desired outcomes of a global education, the school's magnet theme. Teachers use a map (see fig. 10 on p. 24) to help students reflect upon and connect their own values, abilities, and knowledge. These are represented adjacent to specific knowledge areas (global history, human culture and values, etc.) that students need to develop to become global citizens. Together, they nurture and connect to the global perspectives identified on the map's circumference.

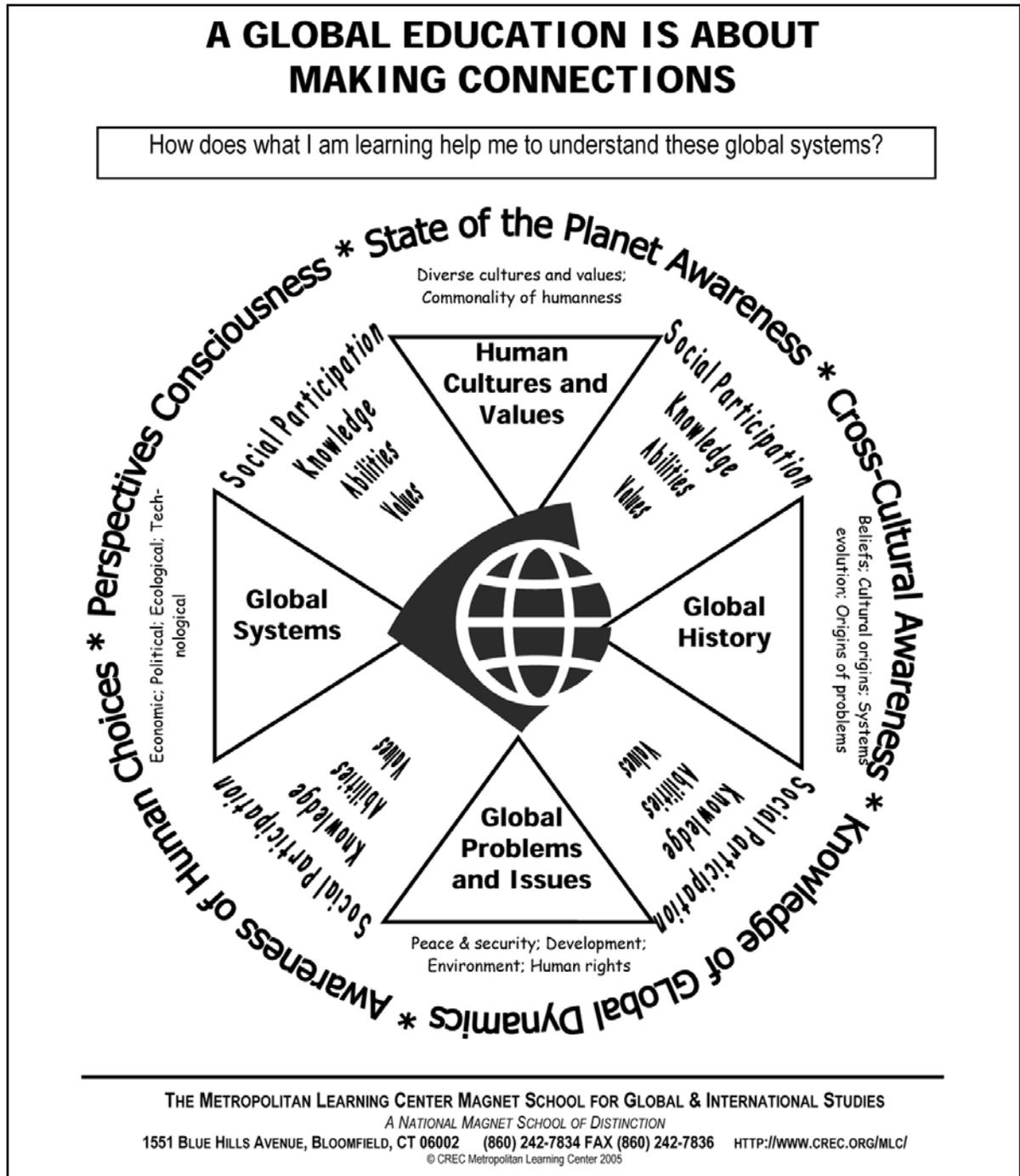
The innovative nature of these magnet high schools appeals to teachers and may make it easier for principals to recruit outstanding staff. Former Superintendent of Hamilton County, Jesse Register, explained that when starting CSAS, over 100 educators applied for the 20 openings, reflecting teachers' overall excitement to experiment with methods of teaching emphasized in the Paideia model. When hiring DASH staff, principal Stacey Mancuso notes, "All of our program teachers are from industry. They are not education majors. The industrial design teacher designed the sunglasses on her head. The architecture teacher is still a registered architect. Florida gives teachers three years to complete their credentials. Tom Pike, the film instructor, did his online in six months." A top-

quality teaching staff makes an enormous difference for advancing student learning.²⁰ The result is a high-caliber program for all students.

To infuse high-quality teaching with cutting-edge practices, these schools engage in a model of continuous improvement through ongoing professional development. At NEM, teachers formed Professional Learning Communities (PLCs) to encourage faculty collaboration. Weekly staff development meetings focus on such topics as using student performance data to improve instruction, cultural proficiency, differentiated instruction, and best practices for improving reading comprehension. Every Wednesday, teachers have a 40-minute block of time that is used to examine student data by grade level and by department. Each PLC group devotes a series of sessions to focus on student learning, effective instruction, and student data analysis. As part of their professional development, teachers learn to use interim assessments to inform their teaching and instruction. The science department, for example (see fig. 11 on p. 25), discussed how material is actually learned and strategized ways to support students further to demonstrate mastery of concepts they missed in the first round of assessments. The school data leader compiles the data and then works with teachers in PLC teams to understand it.

By bringing teachers together to work collaboratively, faculty members say they feel less isolated and compartmentalized by department; instead, they can share strategies for working with students and help each other to prepare curriculum activities and assessments.

Figure 10. Mapping Connections for MLC Students Between Learning and the Real World*



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* The map links the core knowledge areas in the triangles to the global perspective on the outer ring.

Source: Metropolitan Learning Center. Used with permission.

Figure 11. Northeast Magnet High School (Wichita, Kans.) Science Professional Learning Community Notes From Weekly Meeting (Excerpt)

<i>Northeast Magnet High School</i>		
<i>GOAL: Student Learning FOCUS: Effective Instruction PROCESS: Collaboration</i>		
<p><i>Name of PLC: Science Meeting Date: 10/17/2007</i></p> <p><i>Goal(s) for this week: Science – How is material actually learned by students</i></p> <p><i>Members Absent:</i> (List reason for each absence)</p>		
Major Themes	Classroom Check those that apply	Meeting notes
<i>Curriculum/Academic Goals</i>	<ul style="list-style-type: none"> o Assure student instruction supports identified mission o Assure teaching content is based on district standards and pacing guides o Assure student mastery of power standards for all o Provide systematic, explicit, differentiated instruction o Implement strategies supported through staff development o Assures effective delivery of aligned curriculum 	<p>-discussion about DISTRICT curriculum changes and alterations – “pruning” science curriculum</p> <p>-Give students preparation for College is a primary objective</p> <p>-students need to learn how to learn</p>
<i>Monitoring, Data, Analysis and Use</i>	<ul style="list-style-type: none"> o Use data to monitor, analyze and adjust instruction by utilizing district, building and classroom assessments o Adjust instruction based on SIP collaboration process 	<p>Troy attended a workshop that focused on mastery learning</p> <p>- assess frequently</p>
<i>Intervention and Adjustment</i>	<ul style="list-style-type: none"> o Monitor and analyze performance data derived from system, building, and classroom data o Implement literacy and numeracy interventions o Implement identified staff development/intervention strategies o Differentiated classroom instruction based on data dialogue 	<p>-if students do not get major concepts in math, because it is linear, kids are then behind “permanently” tutoring before and after lunch</p> <p>Peer tutoring – including the new tutoring program, implementing training for peer tutoring</p> <p>-discussion of allowing test retakes – pros and cons, shared out different methods of implementing</p>
<i>Rigor and Enrichment</i>	<ul style="list-style-type: none"> o Provide courses, projects, and lessons appropriate to individual student needs o Implement literacy and numeracy extensions o Enhance instruction based on monitoring 	
<i>Goals for the next week:</i>		
<i>Questions/Concerns:</i>		

Source: Northeast Magnet High School. Used with permission.

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Conclusion

In the United States, students who graduate from college are likely to have higher earnings than those who only complete high school.²¹ But research also shows that it is students from affluent families who are more likely to graduate from college.²² Further, students of color and those from low-income families are less likely to be in a college-track curriculum in high school.²³ Given these trends, completing a rigorous high school program can have significant consequences for students from low-income and minority backgrounds.

These magnet high schools present opportunities for students to advance themselves. They show what is possible in public education—that when public high schools provide students from all walks of life with rigorous curricula and high academic expectations, students will rise to the challenge. The measures of successful achievement are clear: These schools are outperforming local districts on state tests (see tables 2 through 9), are getting students into college, and are preparing them for a productive future.



Part II

Profiles of Magnet Schools Highlighted In Part I

Francisco Bravo Medical Magnet High School

G.W. Carver Magnet High School for Engineering,
Applied Technology, and the Arts

Chattanooga School for the Arts and Sciences

Design and Architecture Senior High School

Galileo Magnet High School

Metropolitan Learning Center

Northeast Magnet High School

Booker T. Washington High School for the Performing
and Visual Arts

Francisco Bravo Medical Magnet High School

Los Angeles

Magnet School: Francisco Bravo Medical Magnet		Host District: Los Angeles Unified School District ^b	
Year Established as Magnet	1990	Population Type	Large City
Theme	Medical	Size	710 square miles
Grades	9–12	MSAP ^c Funded	Yes
Enrollment	1,723 students	Enrollment	52,525 magnet out of 653,215 students
Student Ethnicity	66% Hispanic 1.9% African-American 14% White 12% Asian American 5% Filipino	Student Ethnicity ^b	72.8% Hispanic 11.2% African-American 8.9% White 3.7% Asian American
Special Education	1.3%	Special Education ^d	11.2%
Free or Reduced-price Lunch	82.8%	Free or Reduced-price Lunch ^b	73.2%
English Language Learners	4.1%	English Language Learners ^b	37.6%

^a Source: Dataquest, data for school year 2006–07, <http://dq.cde.ca.gov/dataquest>

^b Source: Ed Data district profile fiscal year 2006–07, Los Angeles Unified School District, (LAUSD) <http://www.ed-data.k12.ca.us>

^c U.S. Department of Education’s Magnet Schools Assistance program

^d Source: School Matters, students with disabilities, LAUSD 2005–06, <http://www.schoolmatters.com>

High levels of achievement and motivation are not hard to find along the corridors and in the classrooms at Francisco Bravo Medical Magnet High School (Bravo). Display cases show recent awards: a National Title I Distinguished School plaque (Title I is the section of the *No Child Left Behind Act* that provides resources for districts and schools serving disadvantaged student populations, including low-performing and high-poverty students) hangs next to photos of students, community members, and administrators at a ceremony celebrating Bravo’s 2006 recognition as a National Blue Ribbon School. (Both award programs honor schools for their academic excellence; the former is administered by the National Association of Title I Directors, the latter by the U.S. Department of Education.) Nearby posters, including one titled “Determination of Neurostimulating Electrode Surface Area Using Electrochemical Impedance Spectroscopy,” exhibit students’ academic excellence in the medical field and summarize

their research projects conducted with university faculty and biomedical researchers.

Such accomplishments signal Bravo’s rigorous curriculum. Students are motivated because if they do well, they will qualify for a program that enables them to become certified nursing assistants and find employment as paraprofessionals in a California health-care center. Bravo’s principal Maria Torres-Flores sums up the school’s ambitious aim: “Our belief is that every student that comes through our doors can and will be successful. It’s not just about graduating from high school, but about continuing their education and going on to college.”

Named to honor a local surgeon, business leader, and advocate for the education of Mexican American students, Francisco Bravo Medical Magnet High School was established in 1990 to meet the academic needs of students drawn to health services careers. It began modestly. Opening with a

class of 84 students and three core teachers, the magnet was housed in two bungalows on the campus of Lincoln High School. This small magnet program, Lincoln Medical Magnet, underwent several stages until 1990, when it became a stand-alone magnet, Francisco Bravo Medical Magnet High. With the help of funds from community partners and loans, the school relocated to the current five-floor, single-building facility in the Boyle Heights area of East Los Angeles, adjacent to the Keck School of Medicine of the University of Southern California (USC). Today, Bravo's 74 faculty members serve 1,723 students. Its proximity to a hub of medical schools, hospitals, and research centers that partner with the school, opens the doors for students to learn about the real world of biomedical research, clinical practice, and health care providers. Bravo is an inner-city school in the Los Angeles Unified School District (LAUSD): 40 percent of its students live in the Boyle Heights neighborhood, a community of low-income Latinos, although the school draws the balance of its students from all backgrounds and from various areas of LAUSD.

While Bravo's magnet theme connects students to the real world of health-care providers, biomedical research, and hospitals, and offers them options for pursuing various medical careers, the school's focus has evolved over the years to ensure that even students who do not pursue those professions will be fully prepared for college. Through the Bravo Curricular Pathway, students are encouraged and prepared to meet the admission requirements of the University of California system, the California State University system, or similar institutions. A second option available to students may include a community college, occupational center, technical school, or other postsecondary training programs. Bravo has successfully realized its goal: All students complete California's "A-G" course work for college admission, and of its 2007 graduating class, 94 percent went on to two- or four-year colleges.

Mission and Curriculum

Bravo's motto of "Quality and Integrity" embodies the school's approach to teaching and learning. Teachers constantly look for ways to put fundamental college-preparatory and life skills into everyday classroom practices. Bravo's curriculum is infused with academically enriched material and course offerings that require students to develop organizational and analytical skills they can apply beyond the school walls.

Students are expected to follow a framework for rigorous academics from the first day they enter Bravo. An individualized graduation plan helps students plan courses over the next four years geared to their postsecondary goals. Incoming students attend an introductory orientation course that exposes them to the health professions. Bravo staff also set a goal for each student to enroll in at least one of the 14 Advanced Placement (AP) courses before they graduate. Bravo partnered with East Los Angeles Community College, where students who want to get an early start can enroll in a variety of college-level courses offered at Bravo's campus after the regular school day. Since students attend Bravo from all over Los Angeles, students also may take courses at a community college in their own neighborhood. This dual-enrollment program (90–100 students participate on campus and 25–30 students participate off campus each semester) allows students to receive credits towards graduation from Bravo, as well as college units.

The school offers a diverse curriculum in the fields of science and health science beyond the basic district requirements. Most courses allow students to spend time at health or clinical sites to gain additional experience and training. While their core courses meet the state's minimum college admissions requirements, juniors and seniors can enroll in one of the dozen science and health science electives, which include Dental Assistant, Medical Terminology, and Nursing Assistant. After successful completion of the first term, students

are then required to complete 60 hours of theory and 100 hours of clinical practice in a community health facility. Students are tested at the end of the course—the equivalent to the first semester of nursing school—by taking the state certificate exam administered by the American Red Cross. Successful completion enables students to be employed as nursing assistants in a health-care facility.

Bravo's partnerships with such world-class medical and research facilities as the University of Southern California Health Sciences Campus (USC-HSC) and the Saban Research Institute offer students diverse field experiences, learning enrichment opportunities, and internship possibilities.

Ensuring Student Success

Central to Bravo's focus as a school for the college-bound is the idea that all students, no matter what their ethnicity, socioeconomic status, or incoming GPA, should have the opportunity, academic support, and resources to succeed and pursue a higher education. This means that there are no tests or admissions requirements that students must meet in order to apply; instead, students are selected by lottery. Thus, says assistant principal Felipe Caceres, "We get students from the very high end to the very low end of the educational level as far as their needs."

Though students at Bravo vary in achievement levels, Caceres explains that Bravo's administrators have "challenged the faculty to look at the composition of the more rigorous classes such as AP courses so that the underrepresented minorities are a part of that." Bravo offers an Advancement Via Individual Determination (AVID) program, which provides support to the academically average so that they can be placed in more rigorous classes. It requires a 7:1 student-to-tutor ratio, and teaches students foundational strategies like note taking and organizational skills that help them thrive in all their classes, and even into college.

Bravo students come from all parts of Los Angeles and from diverse backgrounds. Implementing a support system that meets the individual needs of all students is key. One strategy is its Summer Bridge Program, designed for students who struggled during middle school. They are invited to the Bravo campus for one week before the start of the school year to familiarize themselves with the school's environment, mission, and expectations. With their parents, they also can attend a six-Saturday program in which students receive assistance from a core group of faculty, while their parents work with counselors in academic workshops focusing on such topics as building a positive learning environment and how to read a student report card.

During the school day, tutors are scheduled to come into math and AVID classrooms to work with students in small groups. Some of Bravo's qualified paraprofessionals stay after school and tutor students. In addition to after-school support, students identified as below or far below basic on their California Standardized Test (CST) scores are invited to attend Saturday Academic Academies. On average, 150 students in grades 9–11 participate, as well as any seniors who have not passed the California High School Exit Exam (CAHSEE).

Building School Capacity

High-quality teachers are drawn to Bravo because of its reputation, strong professional culture, and the level of classroom autonomy. Its 72 members average 11 years of teaching experience. Five teachers hold doctorate degrees, three received National Board Certification, and many hold master's degrees. Professional development for science program staff is helped through Bravo's partners in the medical world. Teachers and staff from the USC-HSC help develop teacher lesson plans and, through its STAR I Biomedical Research course, educates teachers in how to use computing and communications technology to enhance student learning.

The partnerships Bravo has with its neighboring medical and research institutes have been a crucial part of the school's development and its access to resources and sustainability, beginning with its founding partner, the Los Angeles County and University of Southern California Medical Center. Thanks to the Adopt-A-School agreement, Bravo students can take advantage of the Center's personnel and site resources, and participate in on-site experiences at the medical facilities. A key component of this partnership gives Bravo students a traditional, hands-on approach to learning in a health setting by way of training programs coordinated in conjunction with the school's volunteer requirements. To graduate from Bravo, students must complete 40 hours of community service, and to receive credit, students must volunteer in a hospital setting.

Achievement and Outcomes

Bravo's designation as a Title I school in 1996 enabled it to acquire additional resources to meet the diverse needs of its students.²⁴ Title I funds have been used over the years for such support as hiring extra teachers to reduce class sizes, pro-

viding students with specific assistance through tutoring, counseling services, and extended learning time through Saturday Academies. As a result of the continued dedication of both the staff and students towards achieving success, Bravo has made significant gains in closing the achievement gap, particularly for the Hispanic and economically disadvantaged subgroups. Table 2 shows that the percentages of Bravo 10th- and 11th-graders scoring proficient and above on the 2007 state assessments for reading and mathematics were greater than the overall district achievement rates for those grade levels and, with the exception of grade 10 mathematics, greater than the state achievement rates for those levels.

In 2005, Bravo was recognized as a Title I Distinguished School for having risen above obstacles of poverty and showing exceptional student performance for two or more consecutive years. That same year, Bravo became one of the very few Title I high schools that had surpassed the 800 Academic Performance Index (API) target set by the state of California. (As part of California's *Public School Accountability Act* of 1999, API measures the academic performance and growth of schools.)

Table 2. Percentages of 10th- and 11th-Grade Students Scoring Proficient and Advanced on 2007 California Standards Test in Reading and Mathematics at Francisco Bravo Medical Magnet as Compared to Los Angeles Unified School District and the State

Subject and Grade	Bravo	Los Angeles Unified School District	State of California
Summative High School Mathematics Grade 10	46%	42%	65%
English Language Arts Grade 10	62%	23%	37%
Summative High School Mathematics Grade 11	52%	27%	44%
English Language Arts Grade 11	74%	30%	37%

Source: <http://star.cde.ca.gov/star2007/viewreport.asp>

G.W. Carver Magnet High School for Engineering, Applied Technology, And the Arts

Houston

In the main hallway of Carver High, students warm up for a dress rehearsal of the fall semester musical, an original production that includes a trampoline act, rope climbing, ballet pointe work, tap, and hip-hop routines. Over in the school's engineering wing, a student-led broadcast crew in the TV production lab handles the technical problems of putting on a news show, the daily morning broadcast that is piped through the Internet to all classrooms. Across the hall, students work in groups at computers to design and produce a plastic ruler that accurately measures both in 1/16-inch and one-millimeter increments. Their teacher has challenged them to use the fewest possible steps on the computer-aided design (CAD) software. These examples illustrate the rigor and project-based nature of Carver's innovative curriculum, which features three houses, or magnet strands: Engineering (including Applied Technology), Performing Arts, and Visual Arts.

Located in Acres Homes, a well-established, historically African-American community in northwest

Magnet School: G.W. Carver Magnet High School		Host District: Aldine Independent School District, Houston	
Year Established as Magnet	1995	Population Type ^b	Suburb; Large
Theme	Engineering, performing arts, and visual arts	Size	111 square miles
Grades	9–12	MSAP ^c Funded	FY1995–97; 2001–03
Enrollment	938 students	Enrollment	16,748 magnet out of 58,596 students
Student Ethnicity	37% Hispanic 53% African-American 7% White 2% Asian American	Student Ethnicity (grades K–12)	62% Hispanic 31% African-American 4% White 2% Asian American
Special Education	3%	Special Education	9%
Free or Reduced-price Lunch	58%	Free or Reduced-price Lunch	81%
English Language Learners	< 1%	English Language Learners	28%

^a Source: Texas Education Agency, 2006–07 Campus Performance, Academic Excellence Indicator System, <http://www.tea.state.tx.us>

^b Source: U.S. Department of Education, National Center for Education Statistics' Common Core of Data for the school year 2005–06, <http://www.nces.ed.gov/ccd/districtsearch>

^c U.S. Department of Education's Magnet Schools Assistance program

Houston, Carver is part of the Aldine Independent School District (AISD). Like all of Aldine's magnet schools, Carver has no selective admissions, and students are selected by a random lottery process. Created in response to a mid-1990s court desegregation order, Carver High was one of the first four magnet schools in Aldine. Establishing Carver as the district's pioneer magnet high school signaled a commitment to reducing minority-group isolation. The intent was to attract students from the entire 111-square-mile system while providing the local African-American community with a strong academic school option. Carver's engineering, performing arts, and visual arts magnet strands were favored by the community. For many families, the engineering theme was a way to provide their children with marketable skills for Houston's job market in the oil and gas industries. The performing and visual arts were also popular concepts among families, with two of Aldine's elementary magnet sites adopting this focus as well. Combining the three themes at the high school

level was an intentional strategy for balancing different academic interests and attracting a larger number of applicants to Aldine's west side.

District staff devised a feeder system in which elementary and middle school magnets developed themes and programs aligned with Carver's. Students from the district's feeders are guaranteed placement in the continuing magnet school within the strand as long as they sign intent-to-return letters each year. Carver has gained a local reputation as the most popular, successfully integrated, and high-performing high school in Aldine.

Mission and Curriculum

Carver's mission is to provide students with the rigorous academic foundation and individualized support that enables them to develop their talents and interests in one of the magnet program's three houses or specialty areas. The small-group, intensive, project-based learning that occurs in these specialty areas nurtures a small school atmosphere that helps staff meet Carver's mission. The houses have created strong academic programs that stand alone, but staff at Carver also work across the houses to promote content integration whenever possible.

The House of Engineering is guided by the framework of Project Lead the Way (PLTW), a program sponsored by the Texas Education Agency (TEA). Its hands-on, project-based curriculum requires students to work in teams to solve real-world problems in ways that simulate global industry standards. The tasks and feedback for these assignments are authentic. One team of Carver students took on a public safety issue when Harris County's new light-rail system resulted in numerous incidents of trains hitting pedestrians. The students invented pop-up warning lights for pedestrians, a solution the county's public transit agency known as METRO liked and eventually adopted. Carver's engineering curriculum closely

aligns with state and local standards for mathematics and science, emphasizing physics.

In the House of Performing Arts, students are coached in aspects of problem solving, exploration, and mastery of performance technique so that they may continue training at the college level or join a performing company upon graduation. The program—including vocal, piano, guitar, orchestra, theater, and dance—requires students to gain broad exposure to a variety of genres. For example, a guitar player may pursue a personal interest in rock music, but also must learn to sight-read and play classical guitar. Emphasis is placed on individual growth as measured through frequent performance opportunities. Students receive immediate feedback on their technique, participation, enthusiasm, and ability to work collaboratively.

Students in the House of Visual Arts are guided by master teachers who provide studio experience in areas of design, drawing, painting, printmaking, photography, sculpture, and electronic media. As they rotate through the different areas, students build personal portfolios that reflect qualifying entry work for college-level arts programs. The curriculum is anchored by real-world connections: field trips to museums, galleries, and art schools; opportunities for student work to be exhibited in professional venues; guest artists and speakers from art colleges around the nation.

At Carver, as in most real-world workplaces and colleges, there are no bells signaling the beginning and end of classes. Students travel from class to class listening to classical music through the Visual Bell Alert System that promotes a positive school climate with an air of professionalism and independence.

Ensuring Student Success

A key aspect of Carver's success is the careful planning and support provided by the district's

magnet office. Administrators were forward thinking in developing vertical strands for magnet students to continue their course of study throughout the Aldine system, eventually feeding into Carver High and Eisenhower High (for its International Baccalaureate program). Currently, Carver's ninth-grade class is made up of 249 students, 224 of whom have come up directly through Aldine's feeder middle schools, Drew Academy and Grantham Academy. The vertical strands are working to keep students in integrated and high-performing schools throughout their careers. As Melinda Stapley, Aldine's director of magnet schools, says, "Data show that once they're in [the magnet program], they stay." And in a district with an average mobility rate of 80 percent, the dedicated magnet program is an important strategy for keeping more consistent school communities that are tied to student success.

Carver's principal, Ken Hodgkinson, believes that the school's magnet themes provide the necessary hook that helps staff support students of all backgrounds to meet challenging academic standards. "The kids really love this school," he says. "They love the programs, and so they buy into the education we provide." Carver staff leverage this desire to motivate, engage, and push students to meet success in the classroom: "We make sure that if they want to be here, they are not going to be left behind."

Students are well aware of the don't-pass-don't-perform policy that requires a minimum of 70 in every class. "If some of our members aren't passing, then we can't get on that stage," says one senior. "And for us performers, getting up on stage is what we live for, so then we tell ourselves, 'Okay, we have to get our act together.'" "We have a lot more freedom than students in other schools," says one student. "Students here are treated like adults."

In the classroom, teachers regularly provide tutorials before and after school, and give out their

phone numbers so that students can get help on assignments from home. Resource teachers are used strategically in classrooms to support students with various skill levels to access course content. An individualized, self-paced, computer-assisted credit recovery program also is provided to students who have not mastered course materials. Throughout the school year, students identified as needing additional support are assigned to mandatory after-school tutoring, with a computerized system providing last period teachers with the list of students to remind them to attend the tutoring session. Parents agree that these supports provide a strong safety net for Carver students. As one mother told her daughter, "There is no reason you can't succeed here. You have no excuse not to be successful."

Building School Capacity

Ken Hodgkinson, Carver Magnet's fourth principal, is a product of Aldine's home-grown school leadership program; the district has focused recruitment efforts to attract educators from all over the country and then nurtures school leaders from a talented staff with a broad range of experience. Hodgkinson, who had worked as both an assistant principal and principal at one of Aldine's magnet feeder schools, also spent 13 years managing Fortune 500 companies and brought a wealth of business experience to designing systems for improving staff communication. "I work for everybody," says Hodgkinson, "and I try to challenge everyone to be on the cutting edge. I try to create excitement by holding a vision of where we want to go with the program. And then I try to remove the barriers for staff so that they can actually succeed."

A key ingredient for building a successful staff culture, he believes, is creating an infrastructure for communication across teams and throughout the building. He created an intranet for Carver staff, centralizing important information, such as

a shared academic calendar, discipline referrals, and discussion groups. The idea is to develop a paperless environment where staff can access information online when they need it, streamlining communication and information flow to support more effective actions.

Hodgkinson's goal is to integrate more of the specialized houses' project-based curricula into core courses, where he believes some teachers rely too much on lecture as a method of instruction. He points to the successes with cooperative learning and the emphasis on critical-thinking skills that he sees throughout the school as a way to ensure more consistent application of such practices. A parallel goal is to increase the number of Advanced Placement (AP) courses at Carver, with the hope that by 2010, all students are taking at least one AP course. As the school moves towards increasing the rigor while still holding to a no-admissions requirement policy, the next step naturally is tied to supporting all students to access college-level courses.

Achievement and Outcomes

Today, Aldine is recognized for its exemplary magnet schools program, hosting district leaders from all over the country who are looking to implement or expand similar programs. In 2007, Carver was selected as one of the nation's top high schools by *U.S. News and World Report*, and in 2005, its engineering team won second place in an international competition sponsored by NASA, after beating out teams from highly selective private schools to win the United States championship.

Carver has shown consistently high performance on standardized tests, outperforming average district and state scores while serving similar demographic populations. Table 3 shows that the percentages of 11th-grade Carver students who passed the standard on the 2007 state reading and mathematics assessments were higher than those of students districtwide and statewide.

Table 3. Percentages of 11th-Grade Students Who Passed the 2007 Texas Assessment of Knowledge and Skills Test in Reading and Mathematics at G.W. Carver Magnet High School as Compared to the District and the State

Subject	Carver	Aldine Independent School District	State of Texas
Reading/English Language Arts	96%	93%	91%
Mathematics	91%	85%	81%

Source: Texas Education Agency, 2006–07 Campus Performance, Academic Excellence Indicator System (AEIS), <http://www.tea.state.tx.us>

Chattanooga School for The Arts and Sciences

Hamilton County, Tenn.

Magnet School: Chattanooga School for the Arts and Sciences		Host District: Hamilton County, Tenn.	
Year Established as Magnet	1986	Population Type ^b	Mid-sized City
Theme	Paideia ^c	Size	542 square miles
Grades	K–12	MSAP ^d Funded	FY 1998–2006
Enrollment	1,058 (grades K–12) 470 (grades 9–12)	Enrollment	12,370 magnet out of 40,800 students
Student Ethnicity	2% Hispanic 40% African-American 56% White 3% Asian American	Student Ethnicity ^e	3% Hispanic 34% African-American 60% White 2% Asian American
Special Education	10%	Special Education	16%
Free or Reduced-price Lunch	23%	Free or Reduced-price Lunch ^e	50%
English Language Learners	0%	English Language Learners ^e	1%

^a Source: 2007 CSAS Report Card, Tennessee Department of Education, <http://www.tennessee.gov/education>

^b Source: U.S. Department of Education, National Center for Education Statistics' Common Core of Data for the school year 2005–06, <http://www.nces.ed.gov/ccd/districtsearch>

^c Based on the curriculum ideas of the American philosopher and educator Mortimer J. Adler, the Paideia model combines didactic instruction of factual information, intellectual coaching of skills, and seminar discussion of ideas, concepts, and values. Further information can be found at the National Paideia Center Web site: <http://www.paideia.org>

^d U.S. Department of Education's Magnet Schools Assistance program

^e Source: <http://www.schoolmatters.com>

A Socratic seminar on the “Anatomical Drawings of Leonardo da Vinci” engages students in questions and discussion about six sketches and a written article. The teacher notes who raises topics and who makes specific references to the text that contribute to the discussion. Throughout the 90-minute seminar, students make connections between mechanical principles and the human body, identifying da Vinci’s purpose in producing the sketches and evaluating how well he succeeded. Unlike traditional whole-class discussions where the teacher fields and directs the conversation, students in seminar speak to one another, pose questions, and focus on citing the text to substantiate their opinions as they analyze why anatomical sketches are important to the study of anatomy and physiology. Chattanooga School for The Arts and Sciences (CSAS) was founded to realize the principles of democratic liberal arts education as

developed by the philosopher Mortimer Adler in *The Paideia Proposal (Paideia)*, first published in 1982. A parallel goal was to design an alternative for this community that had a long-standing tradition of racially segregated public schools and private schooling for the affluent. Jack Murrain, president of the Lyndhurst Foundation, a local philanthropy, had read *Paideia* and believed in its philosophy of setting a high standard for children from all backgrounds. He drew together civic leaders, parents, and members of the business community to discuss *Paideia* and eventually lobbied the Chattanooga Public Schools Board of Education to create a new middle school magnet, initially serving grades 5–8, to execute his vision.

CSAS was established as a magnet in 1986, the same year that a desegregation lawsuit from 1960 against the district was dissolved. Ten years later,

CSAS became part of the Hamilton County district when Chattanooga deeded its urban, predominantly African-American schools to the more affluent, white, suburban county. The creation of new magnet schools became a primary tool for reducing minority-group isolation in the county, with a total of 16 more magnet schools developed from 1998 to 2001. As Hamilton County's pioneer magnet, CSAS continues to be one of the most racially integrated schools in the system. CSAS currently serves grades K–12, but remains small, with 470 students in grades 9–12. Recognized nationally as a model Paideia school, and with the vast majority (consistently 95 percent or higher) of its graduates continuing on to postsecondary education, CSAS has demonstrated that a college preparatory, liberal arts education can bring out the highest potential of any student who comes through its doors.

Mission and Curriculum

The Paideia philosophy, the school's magnet theme, articulates a broad goal of making a rigorous curriculum accessible to students from all backgrounds, empowering each to be a lifelong learner. "We don't say only some kids are capable of doing high-level work, and we don't track kids," explains Steve Ball, principal of CSAS.

Academics are clearly the focus, with graduation requirements closely meeting or exceeding the entrance requirements of highly selective colleges. For example, every student takes either French or Spanish starting in kindergarten and continuing through senior year. Advanced science electives in geology, physiology, chemistry, and physics are offered in addition to the four years of mandatory lab science. The program aims to develop well-rounded and intellectually curious students. CSAS offers 20 electives in the visual and performing arts, and the school has well-established band, strings, choir, and theater programs.

CSAS classrooms integrate the three types of instruction that distinguish the Paideia model: didactic (lecture), coaching (skills development in small groups), and seminar (whole group discussion and questioning). Teachers try to make no more than 20 percent of the instruction didactic so that students are actively engaged in their learning through small groups and seminars for at least 80 percent of the time. The third type of instruction, Socratic seminar, is an essential part of what makes CSAS's curriculum distinctive. These seminars are explorations of written texts or products of human art for the purpose of exploring complex issues and ideas.

The CSAS academic year is divided into two block-scheduled terms. Each term, students complete four courses, one of which may be an elective or community service. The high school program also requires two distinct exhibitions of student mastery, known as the Scholar's Journey and the Senior Project. To provide evidence of a student's readiness for promotion to 11th grade, the Scholar's Journey includes a working portfolio documenting ninth- and 10th-grade course work, a final portfolio of revised and exemplary work, and a roundtable presentation of the portfolio that includes a personal essay and reflection on learning. The Senior Project is a chance for students to demonstrate that they are independent learners who have mastered the skills and habits needed for managing work and following academic areas of interest. To graduate, students must complete this exit project, which includes a 10–12-page research paper, documented time spent with an expert in the student's chosen field, 30 hours of related community service, the creation of a tangible product, and two culminating presentations.

Continuous improvement is a large part of the school culture, reflecting a vision of education as a process of ongoing learning. While students are celebrated for achievements and accomplishments, they also receive a consistent message that they can always make

improvements. One senior recalls a French class in which he had a 100 percent average, “and at my conference the teacher told my parents that I could do more, that I could work harder to improve my skills.”

Ensuring Student Success

The same core curriculum is required of all students, though each may move through the progression at his or her own pace. There is no tracking, no class ranking, and no advanced placement classes. Because students are accepted on a first-come, first-serve basis and there are no admissions criteria, emphasis is placed on supporting students to meet high expectations. At CSAS, “we believe that the best education for the best kids is the best education for all,” says principal Steve Ball.

From strategic college counseling to award ceremonies that recognize students who have earned college scholarships, CSAS staff ensure that there are ample reminders and support for all students to think about college. Few college preparatory activities are optional: All juniors are required to participate in a week of college trips; all 10th-graders take PLAN, a preliminary assessment for the ACT college entrance exam; all juniors and most sophomores take the Preliminary Scholastic Aptitude Test (PSAT) along with any freshmen who have completed Algebra I. And the hallways are lined with college banners representing the different postsecondary institutions CSAS graduates have attended. College is a clear and consistent message communicated to students.

In addition to personalized attention that comes from small class sizes (typically 18–23 students) and small group instruction, students can access additional academic support services. CSAS teachers are paid to work with identified students in mandatory before- and after-school sessions, providing homework help and teaching literacy

strategies. On a voluntary basis, students also can receive tutoring through the Academic Coaching department.

Building School Capacity

CSAS boasts an accomplished staff: Of the 47 secondary school faculty and professional staff members, 80 percent hold advanced degrees. The Socratic seminar plays an essential role in adult learning for CSAS’s faculty as it does for student learning. All faculty meet in grade-level teams on Tuesdays to plan for the next day’s Socratic seminar with students. They plan preparation activities, discuss scaffolding strategies to help students access difficult texts, and design assessments. In this way, teachers across the disciplines collaborate on improving seminar instruction. A significant amount of professional development occurs in monthly Quality Circles, where small groups of teachers with common prep periods meet to collaborate and discuss instruction. Staff recently looked at the school’s grading policy to address issues of equity, for example. Through ongoing, small group discussions like these, faculty work to create policies and safety nets that provide for more equitable outcomes for their struggling students.

CSAS has garnered strong community involvement with its service-learning component. To graduate from CSAS, a student must have completed 100 hours of community service, and for the Senior Project, each student must incorporate 30 hours of real-world service. This translates into students working in the community, alongside professionals, conducting expert interviews and volunteering their time in the field.

A team of college counselors engages a number of regional colleges and universities by making frequent contact, helping educate admissions officers regarding the unique attributes of CSAS (e.g., no ranking of students), and preparing students

to make good impressions. According to many of the parents, having an open enrollment process that demands additional family commitment and support for the unique program is critical to the school's success. As part of the application process to all magnets, parents must commit to a minimum of 18 volunteer hours. In 2006, CSAS parents dedicated more than 28,000 hours within the school. Parents also are required to participate in at least two parent-teacher conferences per year. These requirements help create buy-in to the school program.

Achievement and Outcomes

For over 20 years, CSAS has sustained an innovative model of education that has proven successful in terms of integration and student achievement. The success of CSAS as part of the Chattanooga Public Schools led the way for the city system to create five more Paideia schools in the years

following CSAS's opening in 1986. The school currently has a waitlist of 1,100 students (100 at each grade level) and has attracted families from every zone in the county, including families who had previously sent their children to elite private schools. In 2006–07, 97 percent of CSAS students were accepted to two- or four-year colleges, with 81 percent going on to four-year colleges.

CSAS's principal, Steve Ball, recalls hearing from professors of neighboring the University of Tennessee at Chattanooga that they notice right away which of their students are CSAS graduates: "They aren't afraid of hard work, they don't get intimidated by large assignments, and they embrace debate and intellectual disagreement."

As table 4 shows, a greater percentage of grades 9–12 CSAS students scored proficient and advanced on the 2007 state reading and mathematics assessments than did students in the district and state.

Table 4. Percentages of Ninth- through 12th-Grade Students Who Scored Proficient and Advanced on 2007 State Assessments in Reading and Mathematics at Chattanooga School for the Arts and Sciences as Compared To Hamilton County and the State

Subject	CSAS	Hamilton County School District	State of Tennessee
Reading/Language Plus Writing	98%	92%	91%
Mathematics	97%	76%	85%

Source: Tennessee Department of Education Report Card *NCLB (AYP) 2007*, Hamilton County, <http://www.state.tn.us/education>

Design and Architecture Senior High School

Miami

Magnet School: Design and Architecture Senior High School		Host District: Miami-Dade County Public Schools	
Year Established as Magnet	1990	Population Type	Minority/urban
Theme	Visual arts and design: architecture; interior, industrial, and fashion design; entertainment technology; visual communications	Size	2,000 square miles
Grades	9–12	MSAP ^b Funded	1991–2007
Enrollment	479 students	Enrollment ^c	27 magnet high schools out of 77 high schools in district; 13,509 students in magnet high schools out of 108,462 students in grades 9–12 in 2006–07
Student Ethnicity 2006–07	52% Hispanic 16% African-American 28% White 3% Asian American 1.5% Multiracial	Student Ethnicity ^c 2006–07	61% Hispanic 27.9% African-American 9.9% White 1.1% Asian American 1% Multiracial
Special Education	4%	Special Education	12%
Free or Reduced-price Lunch	36%	Free or Reduced-price Lunch	61.2%
English Language Learners	< 1%	English Language Learners	16%

^a Source: DASH 2006–07, <http://www.greatschools.net>

^b U.S. Department of Education's Magnet Schools Assistance program

^c Source: Miami-Dade County School District student demographics 2006, <http://www.schoolmatters.com>

The buzz of excitement is palpable in the industrial design room at Design and Architecture Senior High School (DASH). Students have just received printed glossy cards showing their entries in a chair design contest cosponsored by Dacra Development, a Miami real estate and restoration firm, and the HSBC bank in Switzerland. From their 48 designs, 11 finalists were culled, and five were chosen and manufactured as prototypes. Tomorrow, the winners' prototypes will arrive, just in time for the annual Miami Art Basel Festival. The students' high-caliber work shows how DASH, ranked by *U.S. News and World Report* in 2007 as the nation's eighth best high school, encourages innovation and creativity through interdisciplinary, project-based learning. As DASH

principal Stacey Mancuso says, "There isn't a student here who isn't driven." They discover that "you don't have to be a starving artist to pursue a career in the arts."

DASH was founded in 1990 through Miami-Dade County Public School's Saturn School Initiative, an effort to create leading-edge teaching and learning models throughout the school district. It is an exemplar of a career-focused high school program, the first in the district to focus on design careers in the arts. DASH combines a rigorous academic program with specialized design training. Located on a three-acre campus in the heart of Miami's recently revitalized design neighborhood, DASH serves students from the entire Miami-Dade County area. In the 2007–08 school year, it enrolled 479

students in grades 9–12, more than two-thirds of them from minority backgrounds. According to the College Board, DASH is an international leader in Advanced Placement (AP) exam participation and performance with the largest number of African-American and Hispanic students scoring 3 or higher on the AP Studio Art exam.²⁵

Mission and Curriculum

Founding principal Jacqueline Hinchey-Sipes coined the DASH motto “Education by Design” that is articulated in the faculty handbook: “Our vision is to educate talented students to become confident and critical thinkers through interdisciplinary challenges in the visual arts in preparation for college and a career in the design world.” The school’s curriculum features five strands: Architecture/Interior Design, Fashion Design, Entertainment Technology, Industrial Design, and Visual Communications/Web Design, combined with rigorous liberal arts courses. Admission to DASH is selective. Students must complete an application that includes a portfolio of ten art works, a sketchbook of drawings, and an audition on campus in which they are asked to complete several drawings in charcoal, pencil, and ink, take a short tour of the school, and have an interview with a DASH teacher. The highly coveted spots result in a school with low attrition. Students work hard to get there and even harder to stay.

The college preparatory curriculum exceeds state and district requirements for high school graduation. Students take eight classes, completing 32 credits for graduation, eight more credits than the state requirement for graduation. Academic class periods run for 100 minutes, with classes meeting either Tuesday and Thursday or Monday and Wednesday, as well as every other Friday. The school day is extended by an hour, running from 7:40 a.m. to 3:35 p.m. with eight periods. The school’s curriculum also exceeds state requirements in terms of its content. Both the art design and

college preparatory classes are rigorous. In each of the five design strands, students complete required course work from five curriculum areas: technical skills; fundamentals and historical perspectives; advanced techniques and applications; business essentials in design and marketing; and core studies. The curriculum requires that all juniors and seniors take AP portfolio courses, creating a digital portfolio of their art and design products for college applications, local and national competitions, and college admissions offices. In addition, their rigorous liberal arts requirements include: social studies, world history, American history, government, and economics courses offered at regular, honors, or AP levels. Mathematics courses are aligned to prepare students for college from basic algebra through AP calculus. Technology is integrated into courses with CAD (computer-aided design), multimedia, Web design, digital photography, and basic applications. Three languages (Spanish, French, and German) are offered, and students can take the college requirement of two years, or extend to four years in a language. Every day there are 30 minutes of sustained silent reading in all classrooms simultaneously.

At DASH, teaching strategies are often interdisciplinary and teachers incorporate seminars, studios and workshops, and self-directed study for students. Through courses and projects, students are shown the connections between their class activities and assignments and the jobs and projects that professionals undertake in the design fields. From the outset, students are shown the connections between school learning and real-world applications in art careers.

Students are encouraged to work on community projects. In 2005, when Hurricane Wilma blew down an observatory tower in Everglades National Park, DASH architecture students were invited to design a replacement structure for the observatory tower. Each student drafted plans and submitted them to a local architectural firm for review. In a graphics class, students created a virtual gallery

for a 400-foot-long white corridor at the Miami airport that remained on display for three years. Airport officials have asked DASH students to create a new installation for another concourse.

Internships with practicing artists and designers introduce students to landscape architecture, what it is like to work in a gallery or museum, develop art in public places, and assist in a variety of design businesses. To participate, seniors must have a 3.0 grade point average, parental consent, an excellent school attendance and conduct record, and access to transportation. Often, students work with DASH alumni who are professional artists in the field. In 2007–08, out of 120 seniors, 75 were participating in internships.

Ensuring Student Success

To prepare students to meet their high standards, DASH teachers provide intensive study courses and specialized tutoring in mathematics, reading, and science for students who require additional help. Teachers use annual and interim test results to restructure efforts in the classroom and to analyze which students need additional tutoring and academic support. Online data of interim testing results help teachers to identify specific skills that targeted students need to work on. Teachers also analyze student SAT scores and results from the Florida Comprehensive Assessment Test (FCAT) to identify those areas where they need additional work. For example, if testing shows that students are struggling with graphing, the teachers will create a set of activities to reinforce the fundamental concepts.

Teachers provide lunchtime tutoring, and junior and senior students also will tutor freshmen and sophomores. The school offers a Saturday program for students with low FCAT scores or those who have been recommended by teachers as needing additional support. Grade-level teams of teachers meet on Tuesdays, keeping an eye on particular students who need assistance. “We talk

in a positive manner and try to work to students’ strengths,” says one teacher. “If a student is not doing well, we ask, ‘How do we help? What’s the home situation? How is he doing in your class?’ Someone will take on a mentor role, and often we arrange for parent conferences during our team meeting time.”

DASH helps its diverse student population achieve at high levels so they can continue their education in universities and art schools. The graduation rate typically varies between 98–100 percent. In 2007, 138 DASH students took dual-enrollment courses at local universities, enriching their high school experience and preparing them for college. In 2007, seniors were offered a total of \$9.6 million in merit scholarships. With a diverse faculty and student body representing 37 different countries, including Guatemala, Dominican Republic, Chile, Argentina, Morocco, Cuba, and Pakistan, many students will be the first person in their family to attend college. As principal Mancuso says, “DASH is providing school choice for kids who might not fit in at other schools. They are super artsy and bright and a real mix of kids.”

Building School Capacity

With two administrators, 33 full-time classroom teachers, eight resources specialists, 20 support staff, and seven adjunct teachers, there is constant activity at DASH. Principal Mancuso is also a professional painter and sculptor, and teaches a class at DASH. The school has had its share of growing pains. Currently in her ninth year, Mancuso explained that when she first arrived at DASH, “It was second best. There were many adjunct faculty who were very creative, collaborative, and engaging teachers. But as part-time faculty, they simply weren’t around enough for the students.” So she encouraged strong adjunct faculty members to pursue their teaching credentials and become full-time staff. “All of our program teachers are from industry. They are not education majors.

The industrial design teacher designed the sunglasses on her head. The architecture teacher is still a registered architect. Florida gives teachers three years to complete their credentials. Tom Pike, the film instructor, did his online in six months.” So now, the industrial design instructor has changed from teaching two courses as an adjunct to teaching six courses full-time.

When principal Mancuso arrived at DASH, she made several changes to the program to increase the level of rigor by expanding the AP and honors programs, making AP Studio a mandatory course for all juniors and seniors. She increased the number of class sections required for the architecture strand, expanded the faculty, hired a fifth math teacher to decrease class size in mathematics, lengthened the school day by an hour, and raised the graduation requirements.

As the district and state mandates for accountability have increased, DASH made adjustments accordingly. In 2007, the faculty was composed of certified Miami-Dade County Public School teachers, professional designers, and college instructors, with 36 percent of the teachers having master’s degrees, and 22 percent having specialist or doctoral degrees. More than half of the teachers are trained in the specialized reading instruction Project CRISS (Creating Independence Through Student Owned Strategies).

Achievement and Outcomes

DASH has made adequate yearly progress (AYP) for the past five years in a district that has not. And it has the highest writing scores in the district, outperforming 56 of the 57 district high schools. The school is known for its consistent high performance on testing. DASH qualified for the sixth consecutive year as an “A School” in Florida’s A+ Plan for Education, the state’s school accountability program, which grades each school’s performance according to such factors as student achievement, dropout rates, and college readiness.

The school has received many other accolades and recognition for its arts and academic achievements. In 2007, DASH was honored by the U.S. Department of Education’s National Blue Ribbon School program, designed to recognize schools that demonstrate academic excellence. The class of 2007 exemplifies the school’s high academic achievement: 87 percent enrolled in four-year colleges, 13 percent enrolled in two-year colleges, and 73 percent are majoring in architecture, art, and design programs. As table 5 shows, the percentages of 10th-grade DASH students who scored proficient or above on the 2007 reading, mathematics, and writing assessments exceeded district and state achievement rates.

Table 5. Percentages of 10th-Grade Students Scoring Proficient and Above On 2007 State Assessments at Design and Architecture Senior High (DASH) as Compared to the District and the State

Subject	DASH	Miami-Dade District	State of Florida
Reading	75%	27%	34%
Mathematics	96%	57%	65%
Writing	100%	42%	79%

Source: Florida’s Comprehensive Assessment Test (FCAT), <http://fcats.fldoe.org>

Galileo Magnet High School

Danville, Va.

Magnet School: Galileo Magnet High School		Host District: Danville Public Schools (DPS)	
Year Established as Magnet	2002	Population Type	Mid-size City
Theme	International Baccalaureate Programme, air and space / networking / biotechnology	Size	111 square miles
Grades	9–12	MSAP ^b Funded	Funded: In 2001, DPS received a three-year grant totaling \$8 million for four magnet schools
Enrollment	250 students	Enrollment ^c	Total enrollment is 6,725
Student Ethnicity	2% Hispanic 33% African-American 60% White 2% Asian American	Student Ethnicity (grades K–5)	1.6% Hispanic 68.5% African-American 28.3% White 1% Asian American
Special Education ^d	8.4%	Special Education	4.3%
Free or Reduced-price Lunch ^d	31%	Free or Reduced-price Lunch	65.8%
English Language Learners ^d	2.4%	English Language Learners	1.2%

^a Source: Virginia State Department of Education Reports 2007, Galileo Magnet, <https://p1pe.doe.virginia.gov/reportcard>

^b U.S. Department of Education’s Magnet Schools Assistance program

^c Danville Public Schools does not report magnet enrollment, therefore, only the total enrollment is reported.

^d Source: All data self-reported by school or district for school year 2007–08

A former department store may seem a surprising place to find students learning advanced technology and communication skills through rigorous, real-life applications. But at Galileo Magnet High School (Galileo), advanced academics and cutting-edge technology are the school’s defining qualities. In an Advanced Application of Biotechnology course, a mixed-grade class of 10th- through 12th-graders work in pairs in a state-of-the-art laboratory. They are practicing using an enzyme-linked immunosorbent assay (ELISA) test to detect diseases in blood. The test indicates the presence of antibodies in the bloodstream. Lining the walls of the classroom are posters of student projects on such subjects as “Arboviruses,” “Protein A,” and “*Staphylococcus aureus*.”

Danville, where Galileo is located, is in the midst of an economic redevelopment, and Galileo is actively working with the city to help attract businesses and families to the area. From the 1920s through the 1960s, Danville was known for its textile and tobacco industries. As those local economies declined, many businesses shut down or left the area. In response, education, business, and city leaders began collaborating to figure out how to develop a local workforce that would be skilled for white-collar, not just blue-collar work. They decided on networking, biotechnology, and air and space as three areas of study that a school should focus on to equip students with necessary skills for the future.

Danville Public Schools (DPS), Virginia Tech (VT), and NASA leaders jointly wrote an application

to the federal Magnet Schools Assistance program (MSAP), resulting in \$8 million for four schools, the largest MSAP grant given in the country that year. Galileo received \$2.5 million. As one indicator of its success, the school's rigorous and innovative curriculum design earned Galileo full state accreditation in its first year of operation. The school opened in the fall of 2002 and currently serves 250 ninth- through 12th-grade students.

Mission and Curriculum

Galileo's stated mission is to provide for "all students a balanced, diverse, and challenging educational experience that emphasizes individual responsibility in a global society" and that develops "the skills needed to enter the workforce of the 21st century." The school offers an International Baccalaureate Diploma Programme (IB) and three technology-based strands of study: Air and space, biotechnology, and advanced communications and networking.

The IB offerings include a Middle Years Program for ninth- and 10th-grade students and a Diploma Programme for 10th- and 11th-graders. All ninth- and 10th-graders are automatically placed in the Middle Years Program. Students who choose to advance into the Diploma Programme must meet certain course requirements, carry out community service, and complete a personal project. The assessment of students' work in the IB Diploma Programme is largely external, holding students to a competitive standard. At the end of each class, students take examinations that are assessed by outside examiners affiliated with the IB Programme.

Galileo also offers three technology-focused strands of study. The Biotechnology strand—geared toward students interested in research, medicine, technology, science, and business—offers classes in DNA technology, plant and ani-

mal systems, molecular biology, and forensics. An Air and Space strand is for students interested in becoming scientists, engineers, technologists, and technicians. It offers classes in astronomy, principles of flight, aerodynamics, and systems design. And for students drawn to information technology careers—needed today in professions from education to health care, business and industry, and from aerospace to forensics—an Advanced Communications and Networking strand offers classes in computer technology, computer science, Web-based systems, and networking technologies.

Each strand consists of four courses that students can complete at any point in their Galileo career. Students can complete one strand, multiple strands, or sample classes from each strand. If a student does complete all four courses from a strand, that student receives a commendation on his or her high school diploma. The courses in these three strands, with their emphasis on technology, academic rigor, and hands-on learning, exceed the state's standards for science and mathematics.

Ensuring Student Success

"Technology allows you to take your students other places," says Galileo's former principal, Bill Lawrence. Each classroom has laptops and a wireless network for accessing the Internet. SMART boards (interactive whiteboards) can be found in every classroom. Each morning, school announcements are made using this technological medium that also, in the words of one 10th-grader, "plays a big part in making classes interactive."

The school's IB director has noticed that many students remark on how they entered the school completely focused on one of the three major strands but, because IB requires such varied classes and introduces many perspectives on

knowledge, they have become well rounded. Galileo also expands students' perspectives on life after high school. Teachers and administrators place a high value on going to college. The school's graduation takes place not on campus, but at nearby Averett University, signaling the importance and expectations of college. Many of Galileo's graduates are the first in their families to attend college.

While still in high school, some Galileo students enroll in classes concurrently at a local college or university, giving them a firsthand look at the rigors of college-level work and the culture of a college campus. Galileo students enroll in engineering classes offered through Virginia Tech and its Institute for Advanced Learning and Research.

"The small school size lends itself to success," remarks assistant superintendent Tyrell. "This is more of a personalized institution" where teachers know virtually all of the students by name, and students cannot fall through the cracks. Teachers go the extra mile for students and offer tutorial sessions before and after school. But high expectations remain constant. There are no remedial classes offered at Galileo, and students are expected to take the initiative and get extra tutoring in school if needed, study hard, ask questions, and pass classes.

Building School Capacity

Magnet director Diane Locker calls Galileo "a nontraditional high school in a city that has traditional high schools." Galileo does not offer a comprehensive athletics, music, or arts program, for example. "Getting this school accepted in such a traditional city" was difficult, recalls Locker. But the community has become very supportive as the school has produced excellent results.

The relationship between the host district (DPS) and Galileo is strong and highly collaborative.

Galileo is seen as the flagship school of the district and one of the reasons why many families and companies are moving to the area. DPS helps support the school in many ways—through professional development, funding graduate opportunities for school staff, and supporting outside partnerships. DPS also gives a lot of autonomy to the school as it makes hiring decisions.

The school has several key partnerships that impact its curriculum, improve its instruction, and attract more students and families to the school. One partner is the Virginia Bioinformatics Institute at Virginia Tech University, which provided funding to help develop some of the curriculum in the Biotechnology strand. Another partner is the NASA Langley Research Center, whose staff helped write the original magnet grant proposal and helped develop the curriculum for Galileo's Air and Space strand. Langley has provided Galileo teachers with two-week training programs on how to use and integrate technologies in the classroom and across grade levels.

Achievement and Outcomes

On each of the state's 11 Standards of Learning (SOL) assessments, Galileo has outperformed both the district and the state. The school has made adequate yearly progress (AYP) for the last four years. Galileo boasts a high school graduation rate of 95 percent. For the class of 2007, 57 percent of Galileo's graduates went on to a four-year college, 38 percent to a two-year college, with the remaining 5 percent joining the military.

With such strong results, the school is gaining wide recognition including a citation in the 2007 *U.S. News and World Report* on "America's Best High Schools." The success of Galileo has helped change the climate of the city. When new industries visit Danville to consider locating in the area, city leaders always include a

visit to the school to show off Galileo’s rigorous high-tech program and thriving students. Table 6 compares the percentages of Galileo students who scored proficient pass rates on

the 2007 Standards of Learning (SOLs) state assessments with district and state achievement rates. In all subjects, Galileo exceeded district and state rates.

Table 6. Percentages of Students Scoring Proficient in Reading, Writing, and Mathematics Subjects on 2007 State Assessments at Galileo Magnet High School as Compared to Danville Public Schools and the State

Subject	Galileo	Danville Public Schools	State of Virginia
English: Reading	98%	90%	94%
English: Writing	96%	92%	92%
Algebra I	98%	88%	92%
Geometry	100%	73%	86%
Algebra II	95%	78%	88%

Source: Virginia State Department of Education Reports 2007, Galileo Magnet, <https://p1pe.doe.virginia.gov/reportcard>

Metropolitan Learning Center

Bloomfield, Conn.

Magnet School: Metropolitan Learning Center		Host District: Capitol Region Education Council (CREC), interdistrict magnet	
Year Established as Magnet	1998	Population Type	Urban and Suburban
Theme	Global international education	Size	543 square miles (greater Hartford communities)
Grades	6–12	MSAP ^b Funded	Funded: 1998 (1.2M over three years)
Enrollment	681 students	Enrollment ^c	1,117 magnet out of 1,313 grades 9–12 students (2007)
Student Ethnicity	9.8% Hispanic 61.5% African-American 24.7% White 3.8% Asian American	Student Ethnicity (grades 9–12) ^c	14.5% Hispanic 30% African-American 52.5% White 3% Asian American
Special Education	7%	Special Education ^c	10.8%
Free or Reduced-price Lunch	35%	Free or Reduced-price Lunch ^c	22.9%
English Language Learners	< 1%	English Language Learners ^c	3.4%

^a Source: 2006–07 school profile, <http://www.csde.state.ct.us/public/der/ssp/sch0607/school.htm>

^b U.S. Department of Education’s Magnet Schools Assistance program

^c Source: Data self-reported by school or district for school year 2007–08

In 2003, at the outset of the Iraq war, a class of 17 sophomores at Metropolitan Learning Center (MLC) in Bloomfield, Conn., participated in videoconference exchanges with a group of 21 students nearly 6,000 miles away in Baghdad. During two exchanges, these students spoke about the war’s impact on their lives. MLC staff believe such cross-cultural experiences are crucial to preparing students to participate and achieve in the global economy of the 21st century.

MLC is an interdistrict grades sixth through 12th magnet whose interdisciplinary theme emphasizes global understandings. MLC teachers help inner-city students increase their awareness of international issues through rigorous academic study and a wide range of firsthand and virtual overseas experiences. As the school’s handbook notes: “We expect that each child will travel and study in another country, take an Advanced Placement course, host an international visitor, take classes online, participate in a live teleconference, achieve academic success at high levels,

and contribute to our community.” Last year, as part of their education, 109 students made overseas trips to such countries as Finland, Senegal, Brazil, Canada, Spain, Ecuador, and Chile.

Founded in 1998, MLC was launched in response to the 1996 Connecticut Supreme Court case, *Sheff v. O’Neill*. In this case, the court ruled that racially and socioeconomically isolated students in Hartford public schools were receiving inferior and inadequate educational opportunities and mandated desegregation efforts for the urban school system. The challenge of desegregating Hartford area schools was complicated by the area’s existing housing patterns and demographics. To mix students from different backgrounds, the community proposed an interdistrict solution. This led to the establishment of eight interdistrict magnet schools. MLC serves students from the 543-square-mile capitol region of Hartford—the third largest city in Connecticut and one of the poorest cities in the U.S., with a poverty level of 42 percent. In 1998, MLC received a three-year

\$1.2 million grant from the U.S. Department of Education's Magnet Schools Assistance program (MSAP) and opened with 94 sixth-graders from six towns. Adding a grade each year, MLC now serves grades 6–12 and sends 98–100 percent of its graduates to college.

Mission and Curriculum

At MLC, the mission of global education is taken seriously. As social studies department chair Caryn Stedman says, the future for our students is “going to be international and globally connected, so they need to leave with awareness of the state of the planet, knowledge of global dynamics, and be conscious of human choices and the various world perspectives. So, for example, you do math and excel in it; but you also understand that math has real, live applications that can solve global issues—everything from immigration projections to space exploration and environmental issues require mathematics; so that you are not just taking math so you can pass the test.”

Interwoven across the curriculum, MLC's international theme features intensive study of world languages (Chinese, French, and Spanish) and extensive student use of technology. In addition to languages, integrated curricular topics include global economics and environment, world cultures and societies, and world geography. At the high school level, the schedule is arranged by 90-minute classes, with a Wednesday morning block to meet with their advisers. Every grade level has a service-learning requirement. In a cross-age, peer-tutored mentoring program, for example, seniors provide academic assistance to middle school students. Students select projects that will benefit the community without monetary gain. They document their hours, write reflections, and include an annotated bibliography of newspaper and magazine articles they have read relating to their project, which is graded according to a rubric.

Ensuring Student Success

At MLC, teaching is tailored to meet students' individual needs. For example, a sixth-grade special education student, taking a high school-level geometry class, works alongside high school students to create posters of proofs demonstrating the chain of reasoning for solving a math problem. From January through March, morning classes at the Saturday Academy provide struggling students with additional support. MLC has two guidance counselors who work with students on the college application process and facilitate an early intervention process for students with academic or behavioral concerns.

Principal Anne McKernan and the school leadership team ensure that the state learning standards are embedded in the curriculum plan and course content. As principal McKernan explained, “We look at state, national, and international standards to identify the most valuable skills and concepts. Then we ask, how do we assess it? It is about giving our teachers time to work with the information, to embed the skills into curriculum and have a common way of assessing the outcomes through rubrics.” Teachers created schoolwide student learning goals that include proficiency in a second language, demonstrating understanding of global connections, as well as expectations that students will demonstrate proficiency in effective communication, problem solving, and use of technology.

Technology is used to assist learning and meaningful cultural exchanges at MLC. Teachers use interactive whiteboards and every student has a laptop. Students are expected to e-mail writing assignments to teachers and use the laptop for researching. They also use advanced technology to participate in the International Education and Resources Network (iEARN) where students interact with peers overseas through teleconferencing.

MLC offers eight Advanced Placement (AP) courses. For the 2006–07 school year, 60 percent

of the seniors and 35 percent of the juniors enrolled in an AP course; 70 percent of the students in AP classes came from historically underrepresented racial and ethnic groups. Students also can enroll in courses at local community colleges with tuition and fees waived for one course each semester, if they have taken and passed the placement exam in math and English, and have at least an 80 percent grade point average. In senior year, students complete a culminating project designed to reflect in-depth learning. Students choose a topic, write a proposal, and conduct extensive research, and publicly present their findings to a panel of faculty, members of the public, students, and parents.

Building School Capacity

As an interdistrict magnet, MLC draws its students from a mix of rural, suburban, and inner-city communities. Each town that sends students to MLC contributes funding for them. Funding from the State Department of Education Interdistrict Cooperative Grant Program and Connecticut Commission on the Arts provides \$6,250 per seat, while the boards of education from the towns of Windsor, Windsor Locks, East Windsor, Enfield, Hartford, and Bloomfield provide \$2,000 per seat. The school has significant autonomy in defining budget priorities and allocating resources.

In the high school, a myriad of cocurricular activities help promote a positive school climate. After-school activities are held Mondays and Wednesdays from 3–5 p.m., and students are encouraged to form new clubs. One of them, such as the group, Student Abolitionists Stopping Slavery, was started by three students dedicated to stopping modern-day slavery around the world. To honor diversity, MLC held a “names conference” in November 2007—Names Can Really Hurt Us, a schoolwide program in partnership with the Connecticut Anti-Defamation League to promote a safe learning environment. In multiage groups,

students engaged in activities about violence prevention and listened to a panel of MLC students share their personal experiences.

Achievement and Outcomes

Serving a diverse student body, MLC is closing achievement gaps. A higher percentage of MLC African-American and free or reduced-price lunch 10th-graders demonstrate proficiency on the state CAPT math, science, reading, and writing tests than the same subgroups’ statewide average (see table 7 on p. 52).

Each year, more students are taking AP courses and demonstrating high levels of achievement. In 2006–07, 46 percent of seniors and 35 percent of juniors were enrolled in an AP course and took 119 exams; 45 percent scored a 3 or higher, making them eligible for college credit. MLC students are scoring above the state proficiency average and above Hartford Public Schools’ (HPS) proficiency percentages in state testing on writing, math, and reading.

In 2004, MLC won the Goldman-Sachs Award for Excellence in International Education. Magnet Schools of America named it as a Magnet School of Excellence for 2008 and a Magnet School of Distinction in 2002 as well for each year from 2004–06. It has been recognized by the Connecticut Coalition for Achievement Now (CONNCAN) as one of the top 10 performers for African-American student achievement on both the Connecticut Academic Performance Test (CAPT) and Connecticut Mastery Test (CMT); and in 2004, the National Association of Multi-Cultural Educators (NAMES) recognized MLC as one of the schools of the year.

Table 7 on p. 52 shows that the percentages of 10th-grade MLC students who scored proficient on the 2007 mathematics, reading, and writing assessments were higher than the CREC interdistrict rates and, with the exception of mathematics, higher than state achievement rates.

Table 7. Percentages of 10th-Grade Students Scoring Proficient and Above on 2007 State Assessments at Metropolitan Learning Center as Compared to the Capitol Region Education Council (CREC) and the State

Subject	MLC	CREC	State of Connecticut
Mathematics	74.4%	68.0%	77.2%
Reading	87.3%	75.0%	79.7%
Writing	96.2%	85.7%	82.2%

Source: <http://www.schoolmatters.com/schools.aspx/q/page=sl/sid=99124/midx=Grade10>

MLC students and faculty have participated in the Bezos Aspen Scholar program, which brings together 12 of the country's top high school juniors to meet one another and engage in seminars and informal meetings with international leaders as well as creative artists who participate in the annual Aspen Ideas Festival. MLC is the nation's only school whose students have won scholarships to the program and festival, selected for each of the three years of the program's

existence at the Aspen Institute, an international nonprofit founded in 1950 to foster enlightened leadership. A 2008 scholarship recipient created the MLC Global Humanitarian Ideas Festival at the school with a week full of learning activities, speakers, films, and presentations, which focused attention on three issues: genocide in Darfur, human trafficking, and health problems in Africa and Haiti.

Northeast Magnet High School

Wichita, Kans.

Magnet School: Northeast Magnet High School		Host District: USD 259, Wichita, Kans.	
Year Established as Magnet	1990	Population Type	Small City
Theme	Science, law, and visual arts	Size	152 square miles
Grades	9–12	MSAP ^b Funded	No
Enrollment	538 students	Enrollment	575 magnet high school students out of 13,538 grade 9–12 students (as of 9-20-07)
Student Ethnicity	13.2% Hispanic 25.7% African-American 47.4% White 9% Asian American 1% Native American 4% Multiracial	Student Ethnicity (grades 9–12)	20% Hispanic 23.5% African-American 45% White 6% Asian American 3% Native American 4% Multiracial
Special Education	0%	Special Education ^c	19%
Free or Reduced-price Lunch	44% (2006)	Free or Reduced-price Lunch ^c	55.7%
English Language Learners	< 1%	English Language Learners ^c	4.86%

^a Source: Kansas State Department of Education Report Card for school year 2006–07, <http://online.ksde.org/rcard>

^b U.S. Department of Education's Magnet Schools Assistance program

^c Source: Data self-reported by school or district for 2007–08 school year

In a science class at Northeast Magnet High School (NEM), students are researching DNA transformation as part of the Pass the Salt Project sponsored by the biology department of Wichita State University. The program provides sophisticated lab equipment and graduate students in genetics to mentor the students who also will conduct anti-microbial research and gel-electrophoresis experiments. Many students are drawn to NEM because it offers three magnet programs in science, law, and visual arts; others like how these are integrated into a rigorous, college-preparatory curriculum and because it is the smallest high school in the district with a strong academic track record.

Located in a residential, predominantly African-American neighborhood, NEM is one block from Wichita State University, providing easy access for collaboration and opportunities for college preparation. In the 2006–07 school year, approximately 25 percent of the seniors took local university classes. NEM's long-standing partnerships

with the university and local cultural and civic institutions bring students to the university campus and local art museums to engage in research, projects, and special events. Founded in 1990 as a science and arts magnet, NEM modeled high school reform innovations that were new to the host district, which is Wichita Public School District (USD 259), including block scheduling, smaller learning communities, an interdisciplinary humanities program, and projects using technology. In 1996, as a result of budget constraints and changing state standards, the district merged Northeast Magnet High School with the Downtown Law Magnet program, moving the program from its location at city hall to the NEM school site. In a district with seven comprehensive high schools, three alternative high schools, 19 magnet elementary schools, and four magnet middle schools, 26 percent of students in the district attend magnet schools. NEM is the district's only high school that has made adequate yearly progress (AYP) for the past six years.

Mission and Curriculum

NEM's mission is to provide a four-year program of studies for students who want to focus their education in science, law, or visual arts. These three magnet areas, embedded in a college preparation program, offer a rigorous interdisciplinary curriculum, integrated with technology and annual projects to produce a focused, well-rounded education. The school's vision statement captures NEM's achievement-driven ethos:

“Students and teachers are here because they want to be.

Students and teachers think what they are doing is important.

Students and teachers share high standards and a commitment to excellence.

Northeast Magnet has clear goals and everyone knows what they are.

At NEM, risk taking is not only allowed, but encouraged.”

Forty-four percent of NEM students are in the science program, which has two major strands—one that focuses on engineering and the other in biological sciences. Students engage in lab research, applied technology, and problem solving, and math and science courses are integrated and taught with a project-based focus. Students have the opportunity to earn dual credit for Wichita State University in advanced course work. All freshmen take honors physical science and introduction to engineering design. Students can focus on aerospace engineering, biotechnology, or biomedical classes. In every science class, they are engaged in hands-on, project-based learning and lab activities, and are often using computers for simulations. Students built and tested gliders using a wind tunnel, worked with flight simulators with the Federal Aviation Administration, created prototypes of a child car seat alarm, a redesign of an auto seatbelt, and built a solar collector sun shade for hybrid cars.

Other students worked with glow-in-the-dark bacteria in a genetic engineering project, built models of the human heart, and developed a model for an artificial prosthetic joint replacement.

The law and public service program introduces students to legal and judicial issues, forensic science, crime scene investigations, and public policy. Students learn about the role of court officers, how to write a legal brief, opinions, and contracts. Every student completes a magnet project each year that includes research, a written paper, and both oral and visual presentations. All students are expected to complete a minimum of 100 hours of community service by the end of their senior year. Freshmen take the Law 101 class; sophomores take practical law and have opportunities to participate in mock trial competitions; and juniors and seniors select such classes as forensic science, government, economics, and mentorship. Seniors also participate in a mentorship program involving internships with the Wichita Bar Association, fire department, police department, the Sedgwick County sheriff's department, district court judge, and other community agencies in the legal and social work fields. The internships, as one teacher explains, mean that students have “seen fights in courtrooms, jumped on ladders with firemen, and had a wide range of experiences.”

Students in the art magnet program are required to complete at least 7 credit units, including an art survey, drawing, and painting classes. In addition, students can earn college credit in studio arts courses at Wichita State University. Electives are offered in drawing, painting, ceramics, digital imaging, computer graphics, creating computer games, sculpture, AP Studio Art, senior art projects, fiber arts, and special art production classes. The school is equipped with a ceramics lab with pottery wheels and kilns, and a computer lab with 25 PCs for digital imaging, computer art and design.

Art students regularly exhibit their work in shows hosted by the Wichita Art Museum, Wichita Center

for the Arts, CityArts, Wichita State University, and Friends University as well as other private and public galleries. Each of the teachers in the program are professional artists themselves.

Ensuring Student Success

To support student learning, teachers provide math, science, and English tutoring during lunch and after school for any student. Every student receives a weekly progress report each Wednesday showing the student's current grades, and comments from his or her teachers. Students take an advocacy class, one 40-minute period each week where they meet in smaller groups with a teacher to work on a range of projects. Freshmen learn study skills and habits to acclimate to high school; juniors and seniors are preparing for the Preliminary Scholastic Aptitude Test (PSAT) and building portfolios in preparation for applying to college, conducting scholarship searches, and preparing resumes. Part of the class involves creating an advocacy folder that holds testing scores, goals, and an individualized high school plan with questions about "where you are now and what you need to do to get to college."

If a student is struggling academically, typically, the advocacy teacher will talk with the student, make parent contact, and try different interventions, including tutoring or involving another teacher if they are having trouble motivating the student. Every student takes four years of high school math. Students are expected to complete Algebra II or beyond, and science magnet students are required to complete Algebra II and Pre-calculus/Trigonometry with a C or above. Math classes at NEM meet daily for 95 minutes all year long, providing more time on task and opportunities for both remediation, enrichment, and acceleration.

Historically, the NEM building was an African-American junior high school. Today, the school provides bus transportation for white students from

outside the predominantly African-American neighborhood who attend. As principal Joel Hudson explains, "The African-American community sees this as their school. So there is community buy-in even though students come from all over the city. In reality, white students are being bused in and parents have no problem with students coming to this neighborhood. If this were a comprehensive school and students were being bused from the outskirts, parents would have a problem with that. But because it is a magnet, they want them here."

"We don't fight here at Northeast," says one student. "Sometimes it takes ninth-graders a little while to figure out that this school is different and this environment won't foster conflict. But they catch on fast."

Building School Capacity

"The school has been extremely successful," says principal Hudson, "and we have always made AYP [adequate yearly progress] and for the most part have made the [Kansas] standard of excellence in reading or math." Still, Hudson acknowledges that the school has work to do in closing the achievement gap among its subgroups. "It is a challenge for me to get the staff to really look at the data and say, 'If we don't really start talking about the kids that we need to help improve, we may not make AYP next year.' Now teachers are actually talking about what strategies could ... bring those scores up. We have been on this quest of coming to grips with the fact that we are going to have subgroups, and if we don't do something to help their skill level we are not going to progress this school."

In Professional Learning Community (PLC) meetings, teachers meet weekly to collaborate by department and magnet theme area. At weekly staff development meetings, faculty discuss such topics as lesson sharing, best practices for improving reading comprehension, and using data to increase the rigor and relevance of instruction.

Every Wednesday, teachers have a 40-minute block of time to look at student data by grade level and by department.

As part of their professional development, teachers work in small groups where they learn to use interim assessments to inform their teaching and instruction. With the increased focus on data and testing from the district and state, the school hired a data manager who oversees such testing as the PSAT and district common assessments, and works closely with teachers on using data to improve teaching and instruction. Faculty collaboration is a core element of NEM's success. Teachers are actively involved in decision-making at the school, through their departments and PLC groups.

Since its inception, NEM has actively cultivated partnerships with community businesses, organizations, and universities, including Friends University, Newman University, Wichita State University, the Wichita Art Museum, the city's Fair Housing department, the Boeing Company, the United Way, and the Salvation Army. The partnerships have yielded a mentorship program, research opportunities, and exhibitions for the school's art students. Principal Hudson takes an active role in developing them, whether by writing grants to bring programs into the school or serving on a district committee.

NEM's proximity to and partnership with the University of Wichita provide a strong resource for

students: They can use equipment and software at the university's engineering facility for their projects. Graduate students in the physicians' assistant program at the College of Health Professions come to NEM and tutor students in biology, chemistry, and the biotechnology engineering program. "We are getting college role models in our building," says Hudson. One biology professor wrote a grant that helped NEM get over \$10,000 dollars' worth of lab equipment.

Achievement and Outcomes

NEM reflects the district's ethnic diversity, but shows higher levels of academic proficiency on state testing and other academic measures. It has made AYP for the past six years, while the district, with 14,155 students in grades 9–12 in 2007–08, has failed to make AYP for the past five years. NEM has a 96.4 percent graduation rate compared to the district's rate of 76.9 percent.

The school has been recognized by the state of Kansas for reaching the "Standard of Excellence" in mathematics as well as the state's Challenge Award for exceeding assessment expectations for all students. Table 8 shows that the percentages of 11th-grade NEM students meeting or exceeding standards on the 2007 state reading and mathematics assessments were greater than district and state achievement rates.

Table 8. Percentages of 11th-Grade Students Meeting or Exceeding Standards On 2007 State Assessments at Northeast Magnet High School as Compared To the District and the State

Subject	Northeast Magnet High School	Wichita District 259	State of Kansas
Reading	78.7%	59.8%	77.0%
Mathematics	84.0%	54.6%	71.3%

Source: Kansas State Department of Education Report Card for school year 2006–07, <http://online.ksde.org/rcard>

Booker T. Washington High School for The Performing And Visual Arts

Dallas

Magnet School: Booker T. Washington High School		Host District: Dallas Independent School District	
Year Established as Magnet	1976	Population Type	Urban, Large
Theme	Performing and visual arts	Size	384 square miles
Grades	9–12	MSAP ^b Funded	Received two or three cycles of funding in the late 1980s and early-mid 1990s
Enrollment	696 students	Enrollment	9,018 magnet enrolled students / 159,752 total student enrollment
Student Ethnicity	26% Hispanic 42% White 3% Asian American 1% Native American	Student Ethnicity (grades K–12)	64% Hispanic 29% African-American 5% White <1% Asian American
Special Education	3%	Special Education ^c	10%
Free or Reduced-price Lunch	27%	Free or Reduced-price Lunch ^c	83.9%
English Language Learners	<1%	English Language Learners ^c	31.2%

^a Source: Texas Education Agency, 2006–07 Campus Performance, Academic Excellence Indicator System, <http://www.tea.state.tx.us>

^b U.S. Department of Education’s Magnet Schools Assistance program

^c For grades 9–12

A girl perfecting her folklorico movements, a group of students rehearsing a mime performance, a boy practicing the cello—these are but a few snippets of daily life for young artists at Booker T. Washington High School for the Performing and Visual Arts (BTWHSPVA). Students playing instruments, rehearsing, or displaying paintings are not unusual sights at most high schools. But what sets BTWHSPVA apart is the markedly high caliber of its students’ accomplishments in both arts and academics.

Distinguished alumni—including Norah Jones, Erykah Badu, and Roy Hargrove—collectively have won 22 Grammy awards. High-quality, professional-caliber works of art—all created by students—line the hallways and fill displays throughout the school. A gallery showcases visual arts created by the school’s seniors.

Serving 705 ninth- through 12th-grade students in the Dallas Independent School District (DISD), BTWHSPVA is the school of choice for students with special talents and the commitment to develop their potential. BTWHSPVA’s mission is to provide intensive training in both arts and academics. The school’s track record in both areas has earned it a reputation as one of the premier arts high schools in the country.

BTWHSPVA began in a facility built in 1922 to house the first African-American high school in Dallas. In 1955, that school had expanded and become a vocational and technical school. Then, in 1976, when the Texas Supreme Court ordered the district to desegregate its schools, DISD created a magnet program and established BTWHSPVA as an “arts magnet” to help attract a more diverse student population. In 2003, the court lifted the order, finding that DISD had successfully integrated its schools.

Mission and Curriculum

BTWHSPVA is a school for the arts—both performing and visual. The school’s program is divided into four arts clusters, and each prospective student applies to one: Dance, Music, Theatre, or Visual Arts. Each cluster offers a set of classes that include training in the performance, technical, production, and theoretical aspects of the cluster’s particular art form. In addition, students take academic courses to meet Texas graduation requirements. As one parent explains, “This is really two parallel high schools—a conservatory running parallel with an academic structure.”

BTWHSPVA’s rigorous academic offerings include 19 Advanced Placement (AP) courses—a large number for such a small student population. The College Board commended BTWHSPVA for its rigorous academic curriculum and recognized BTWHSPVA as having the strongest AP Music Theory course in the nation. The commitment to academics is also evident in BTWHSPVA’s no-pass-no-play rule—students must be in good academic standing in their classes in order to be allowed to participate in any of the school’s art performances.

Teachers spend a lot of effort and time ensuring that their academic curriculum covers required standards and content and that classes harness the creativity of BTWHSPVA’s students. Master teachers, like Sidney Poitier, the late Gregory Hines, and Marvin Hamlisch, have come to talk to students about being a professional artist, earning an adequate living, auditioning for jobs, and finding a unique voice. Artists within the community often visit to help prepare students for interviews. Professional artists show students how to interact with adults, put together a portfolio, and converse through a mock interview. Students frequently attend professional arts performances and have opportunities to go backstage to see what happens behind the scenes.

Ensuring Student Success

Admission to the school is highly competitive. There are, on average, 500 applicants for 190 open spots for incoming freshmen. The district requires students to have a minimum level of academic achievement to be eligible for magnet schools, but BTWHSPVA considers another factor—all prospective students must audition or submit a portfolio of their artwork. If an applicant’s audition or portfolio is strong enough, the BTWHSPVA selection committee can choose to waive the district’s academic requirements.

Because of this admissions process, the school brings in many students who need help academically, so the school and community provide a variety of supports. The staff have created a remedial Reading Improvement class for incoming freshmen. Teachers offer tutoring before and after school each day. Some teachers offer tutorials on Sundays to accommodate students who have practices and rehearsals during the week. Each cluster also has a coordinator who personally follows up with any student whom teachers identify as being in danger of failing a class.

Throughout the school, there is an emphasis on college preparation. In a college preparatory course called “Portfolio,” working artists talk about life as an artist, giving students a realistic view of art as a profession. All BTWHSPVA students create a portfolio for themselves, and every year the school participates in National Portfolio Day, when representatives of visual arts colleges and art institutes travel to high schools across the country and seniors show their portfolios.

The school also hosts a “Senior Showcase” for college representatives. During this multiday event, students from each cluster perform and present their best work. Prior to the showcase, students have to take headshots, create resumes, and sometimes film their work and create a DVD. Each cluster then creates a booklet, complete

with resumes, headshots, and a brief background about that particular arts cluster, which is given to each college representative. The Julliard School and the University of Minnesota/Guthrie Theater program are just a few of the prestigious post-secondary institutions that attend.

With the commitment to arts and academics, the school day and week are much longer for students at BTWHSPVA compared to those at traditional public schools. The long hours and small student population foster close working relationships between adults and students. The extended school community also supports students. Adult mentors meet weekly with juniors and seniors who need extra guidance to prepare them for applying to colleges. The Advisory Board stages mock interviews for students at the junior grade level. Board members help them navigate their way through practice interviews and then give feedback to cluster coordinators, who use that information to better prepare students and to improve upon targeted areas.

Building School Capacity

BTWHSPVA's Advisory Board plays a large role in the school's success. Designated a 501-(c)(3) nonprofit, the board is comprised mainly of volunteers, including the school principal, plus two paid positions, including an executive director. Most of its 45 members are representatives of local arts organizations. It has raised and distributed funds for teachers to undertake collaborative projects. An endowment fund started in 1988 currently holds \$1.3 million, earmarked solely for supporting students. It helps students participate in extracurricular and summer arts programs and provides graduation caps and gowns for seniors who cannot afford these items.

The Advisory Board was instrumental in a recent capital campaign to raise \$55 million to build a new facility. A pivotal factor in the campaign's

success turned out to be the 2003 Grammy show, when Norah Jones, a BTWHSPVA alumnus, won eight awards, drawing local attention to the school. Soon afterward, the board secured a \$500,000 donation, which in turn garnered more trust from the local community. When asked what was the key to securing large donations, the assistant campaign director points out that "all of the big donors have visited the school." The school clearly sells itself.

DISD, a large urban district that oversees 28 magnet schools, supported BTWHSPVA's capital campaign. It passed a \$1 billion bond that was dedicated to capital improvements throughout the district, and DISD has given \$23 million to BTWHSPVA's campaign. The campaign is the district's first public-private partnership.

All of BTWHSPVA's teachers—whether focused on academics or arts—must have an arts background to join the staff. As a result, students are able to go to any teacher in the building to be mentored and to learn from professional artists. Parents also play a large role in BTWHSPVA's success through their membership in the Parent-Teacher-Student Association (PTSA). Each arts cluster has a parent guild, which one teacher describes as being "like an individual PTA." One of them, the Theatre Guild, has 100 members and has raised money for costumes, to cover the costs of students' headshots, and for students to attend performances outside of school.

Achievement and Outcomes

BTWHSPVA is "more of a community than just a school," says one parent, noting that the sense of community is due mainly to the long hours that both staff and students keep. The school's assistant principal says he felt he "died and went to heaven" when he joined the BTWHSPVA staff because students are so cooperative and their interactions with adults are so respectful and positive.

Over 90 percent of BTWHSPVA graduates attend postsecondary institutions, garnering scholarships in excess of \$5 million, while the other graduates generally enter an arts profession immediately or join the military. The school's awards are numerous. The National Foundation for the Advancement of the Arts named BTWHSPVA as one of the "Top 5 Arts High Schools" in the country. It was the first school in the district to receive a National Blue Ribbon Award for Exemplary Education from the U.S. Department of Education. BTWHSPVA also shares the honor, with one other school, of producing more Presidential Scholars

in the arts (the Presidential Scholars Program is a national recognition program administered by the U.S. Department of Education for excellence in academics and the arts) than any other school in the southwestern United States.

Table 9 compares the percentages of 10th- and 11th-grade students scoring proficient and above on 2007 TAKS (Texas Assessment of Knowledge and Skills) English language arts and mathematics assessments with district and state achievement rates. The comparison indicates that BTWHSPVA percentages exceeded those of the district and state.

Table 9. Percentages of 10th- and 11th-Grade Students Who Scored Proficient And Above on 2007 State Assessments at Booker T. Washington High School For the Performing and Visual Arts as Compared to the District and the State

Grade and Subject	BTWHSPVA	Dallas Independent School District	State of Texas
Grade 10 English Language Arts	99%	77%	85%
Grade 10 Mathematics	87%	52%	65%
Grade 11 English Language Arts	98%	86%	91%
Grade 11 Mathematics	96%	73%	81%

Source: Texas Education Agency, 2006–07 Campus Performance, Academic Excellence Indicator System, <http://www.tea.state.tx.us>



APPENDIX A

Research Methodology

The research approach used to develop this guide is a combination of case study methodology and benchmarking of best practices. Used in businesses worldwide as they seek to continuously improve their operations, benchmarking has more recently been applied to education. Benchmarking is a structured, efficient process that targets key operations and identifies the following: promising practices in relationship to traditional practice, previous practice at the selected sites (lessons learned), and local outcome data. The methodology used here is further explained in a background document,²⁶ which lays out the justification for identifying promising practices based on four sources of rigor in the approach:

- Theory and research base;
- Expert review;
- Site evidence of effectiveness; and
- Systematic field research and cross-site analysis.

The steps of the research process were: defining a study scope, seeking input from experts to refine the scope and inform site selection criteria, screening potential sites, selecting sites to study, conducting site visits, collecting and analyzing data to write case reports, and writing a user-friendly guide.

Study Framework and Data Collection

A conceptual framework was developed to guide the study of the selected sites. While there is a lot of daily activity at any school, each case study needed to focus on those practices most likely to contribute to a school's success and sustainability. The framework for this study was an adaptation of that used in a previous guide, *Creating and Sustaining Successful K–8 Magnet Schools*, published in 2008, derived from the research literature on magnet schools, organizational effectiveness, and sustainability of school reform. Components were added from the research literature on secondary school reform. The dimensions of the conceptual framework were *academic excellence through a theme-based program*, *commitment to equity and diversity*, *building school capacity*, and *strategic partnerships*. A site visit was conducted at each school to gather the information for this guide, each visit lasting for two days and including informal observations throughout the school, attendance at events, and interviews. The primary source of data was interviews with a variety of key groups, including parents, teachers, administrators, district leaders, and school partners. An interview protocol was developed based on the study framework and adapted to each role group. Interviews were digitally recorded with

key interviews and later transcribed for more detailed analysis.

Documents from each school served as an additional source of information. Collected during the site visit, these documents included such items as school schedules, sample assessments, curriculum plans, newsletters, application forms, brochures, and report cards. Principals and district magnet office staff also completed a standard form to facilitate consistent compiling of school demographic and outcome information.

Site Selection Process

Consideration for this guide, a school had to be a dedicated magnet, not a school-within-a-school program, although some had a school-wide theme and others had more than one strand within the same school. Each school had to show evidence of strong academic achievement as well as success in reducing minority-group isolation. Each had to have graduated at least one class of students.

Strong academic achievement meant that student proficiency rates were above 50 percent in reading and math on state standardized tests. All schools in this guide made adequate yearly progress (AYP) for at least three years. Reducing minority-group isolation was measured in reference to the demographic characteristics of the district as a whole, and selected schools closely mirrored the district composition or further reduced minority-group isolation.

The process of identifying sites began with a broad scan of possible sites. A list of 52 districts with strong magnet programs had been

developed for the earlier guide, and this was one starting point. Additionally, researchers drew from the abstracts of 1998 and 2002 Magnet Schools Assistance program (MSAP) grantees, lists of current and former Magnet Schools of America award winners (MSA Schools of Excellence and Schools of Distinction), and individual nominations by the magnet school researchers, practitioners, and board members of the Magnet Schools of America who served as the guide's external advisory group.

Based on screening of schools' achievement data and minority-group isolation data (see "Reducing Minority-group Isolation Criteria" below), the initial list of 84 schools was narrowed down to 12 schools. Additional information about specific program features and updated data were collected using phone interviews with school administrators to fill gaps in information.

From this group of 12 schools, eight schools were ultimately chosen as case study sites, based on the compiled information and criteria ratings on a screening matrix. Demographic variation, a range of promising practices, geographic location, and achievement data were all considered in the final site selection.

Selection Criteria

A cross-section of schools were selected to highlight magnet high schools successfully meeting the integration and achievement needs of their particular districts. Considerations included districts with a high number of traditionally underserved populations (e.g., low income, special education, African-American, and Latino students); variation in academic programming and magnet themes;

both schoolwide and multiple-strand programs; inclusion of interdistrict and feeder-pattern arrangements; and a range of geographic locations. All schools met the following criteria, prioritized by the advisory group as key issues for consideration.

Achievement Criteria

Schools selected met AYP targets for at least three consecutive years, including the most recent year for which data were available. Researchers looked for schools that scored at least at the 50th percentile in math or reading on state standardized tests with demonstrated evidence of continued improvement over several years, or for schools that were consistently high achieving in the 90th-percentile range annually. Data from state departments of education Web sites and the Web site SchoolMatters.com provided achievement information. Researchers looked for additional evidence that the schools were demonstrating higher achievement for low-income, minority, or students receiving special education services in comparison with a similar population of students in its local district public schools.

Reducing Minority-group Isolation Criteria

Compared to district demographics or interdistrict targets, these schools are maintaining representative student populations with regard to race, ethnicity, and socioeconomic background, or are demonstrating more pronounced reduction in minority-group isolation.

Analysis and Reporting

A case report was written about each site, and reviewed by site administrators for accuracy. From these case reports, artifacts, and transcripts of interviews, the project team identified common themes that contributed to success across the sites. This cross-site analysis was built using both the research literature as reflected in the study scope as well as emerging patterns in the data.

This descriptive research process suggests promising practices, including ways to do things that other educators have found helpful and lessons they have learned, as well as practical “how-to” guidance. This is not the kind of experimental research that can yield valid causal claims about what works. Readers should judge for themselves the merits of these practices. Also, readers should understand that these descriptions do not constitute an endorsement of specific practices or products.

Using the Guide

Ultimately, readers of this guide will need to select, adapt, and implement practices that meet their individual needs and contexts. Schools and districts coming together in learning communities may continue to study, using the ideas and practices from these sites as a springboard for their own action research. In this way, a pool of promising practices will grow, and educators can support each other in implementation and learning.



APPENDIX B

Resources

The resources listed below are intended to provide readers with ready access to further information about magnet schools. This is not a complete list, and there may be other useful resources on the topic. Selection was based on the criteria that resources be relevant to the topic and themes of this guide, current and up-to-date, from nationally recognized organizations, including but not limited to federal or federally funded sources, and that they offer materials free of charge. This listing offers a range of research, practical tools, policy information, and other resources.

Magnet Schools of America is a membership organization that promotes goals of desegregation, equity, and excellence through the expansion and improvement of magnet schools. The Web site includes information on upcoming conferences and other resources.

<http://www.magnet.edu>

The **U.S. Department of Education** disseminates practices and tools from successful school choice programs, which create options for parents within the public school system across the country through such resources as its **Building Choice** Web site.

<http://www.buildingchoice.org>

The **Education Commission of the States** includes magnet and other specialized schools as an issue topic on its Web site. The site also includes references and links to other Web resources.

<http://www.ecs.org>

The **Policy and Program Studies Service**, part of the **U.S. Department of Education's Office of Planning, Evaluation and Policy Development**, conducted an evaluation of the Magnet Schools Assistance program 1998 grantees. Their final report published in 2003 includes both a cross-site report and case studies of eight districts.

<http://www.ed.gov/about/offices/list/oeped/ppss/reports.html>

The **Office of Innovation and Improvement** in the **U.S. Department of Education** runs the Magnet Schools Assistance program to support the implementation of magnet schools under court-ordered or federally approved voluntary desegregation plans. The program's Web site details the grant competition as well as abstracts of sample programs.

<http://www.ed.gov/programs/magnet/index.html>

The **National Center for Education Statistics (NCES)**, part of the **U.S. Department of Education's Institute of Education Sciences**, collects and analyzes data related to education, including districts' use of school choice.

<http://nces.ed.gov>

The federally funded **National High School Center** provides information on high school improvement challenges for states, districts, and regional comprehensive centers. Research on high school improvement is available from this site as well as a map of regional comprehensive centers and contact information for technical assistance liaisons.

<http://www.betterhighschools.org>

The above information is provided for the reader's convenience. The U.S. Department of Education is not responsible for controlling or guaranteeing the accuracy, relevance, timeliness, or completeness of this outside information. Further, the inclusion of these resources does not reflect their importance, nor is it intended to endorse any views expressed, or products or services offered.



Notes

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