

**The California Academy of Mathematics and Science
Building Campaign**

The Case for Support

**California Academy of Mathematics and Science
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Introduction

Each weekday morning, students from a 900-square-mile area begin their day by boarding the buses that will transport them to school. It is a ritual similar to the one repeated in communities around the nation. But for students at the California Academy of Mathematics and Science (CAMS), there is an important difference. Although the school is located in the heart of the urban Los Angeles Basin, some students travel as long as an hour and a half. Most are probably unaware that they are part of a bold, collaborative experiment in education that is transforming the way students learn, teachers teach and schools carry out their mandate. They do not know that CAMS has attracted attention from media, educators and corporations across the nation. What they do know is that their school is a unique place where learning is paramount, where the will to succeed has been institutionalized, and where new experiences and opportunities are so routine, they can take them for granted. It is a place where students from all backgrounds work together in harmony toward a shared goal--getting into college--and all are studying hard to ensure themselves the brightest possible future.

Established in 1990, CAMS is a joint venture of the California State University Chancellor's Office; California State University, Dominguez Hills; the Long Beach Unified School District; and a consortium of 11 Los Angeles-area school districts. It is a highly successful comprehensive public high school dedicated to increasing the pool of students who enter mathematics- and science-related careers, especially women and underrepresented minorities--groups that heretofore have been slow to enter these fields. Because studies have shown that after the turn of the century, 85 percent of new entrants into the work force will come from these groups, CAMS is central to national and regional efforts to ensure American industry the employees it will need to remain competitive in the next century.

Building a Legacy of Achievement

The California Academy of Mathematics and Science was conceived in the late 1980s as an institution that would increase the number of students entering mathematics- and science-related fields. Its strategy was to provide highly motivated young men and women from a broad spectrum of academic and demographic backgrounds with an accelerated curriculum that would engage them intellectually and allow many to enter college with sophomore standing.

Since 1990, when the school opened its doors, CAMS has consistently been realizing that vision. In the brief time it has been in existence, the Academy has already left an extraordinary mark on mathematics and science education, providing diverse students from a consortium of 11 Los Angeles-area school districts with a learning environment that encourages them to achieve their personal and academic best.

Success through Diversity

The CAMS student body, which is 80 percent minority and 52 percent female, reflects the demographics of the Los Angeles Basin. Yet in a region where high school drop-out rates of 50 percent are not unusual, CAMS's attrition rate is under 5 percent, most of it attributable to moving. More than 96 percent of the Academy's graduates go on to four-year colleges and universities; the balance enroll in community colleges. Many of these students are the first in their families to go to college, and there is already evidence that they are having a positive influence on younger siblings.

Academy students have amassed an array of honors, earning local, state, national and international science and mathematics awards and commendations. CAMS alumni are currently enrolled in such prestigious institutions as Brown, Caltech, Carnegie-Mellon, Cornell, Harvard, MIT, Mount Holyoke, New York University, Northwestern, Notre Dame, Pomona, Stanford, the University of California, the University of Chicago, the University of Pennsylvania, USC and Yale. Many of these students entered colleges with sophomore standing; two students entered as juniors. The majority are majoring in math-, science-, technology- and engineering-related fields.

The Academy's last two graduating classes included 13 National Merit semifinalists and eight finalists. In addition, four CAMS students were named semifinalists and three were named finalists in the National Achievement Program for Outstanding Negro Students. One of these students was also a finalist in the Coca Cola National Scholarship program, one of only 150 selected nationwide out of 122,000 applicants. Out of these classes, 11 CAMS students were awarded a total of 16 Regents Scholarships at University of California campuses.

Success without "Creaming"

What makes these accomplishments especially remarkable is that unlike such well-known math-science schools as the Bronx High School of Science and the Illinois and North Carolina Academies of Mathematics and Science, CAMS does not select its students from the top 10 percent but from the top third of their junior high schools in terms of mathematics achievement. Furthermore, discrepancies in the resources and academic achievement of the participating districts make for even greater disparity in the academic preparation of incoming CAMS students. A B+ student from one district, for example, might be equivalent in academic preparation to a C student from another district. As a result, students' readiness varies from excellent to mediocre. CAMS views itself as a talent development school, offering students an enriched four-year program and close personal attention at a formative time in their lives, building their abilities and confidence and enhancing their mathematics and science skills.

The CAMS Formula for Student Success

Many factors have contributed to CAMS's success in preparing such a diverse student body for college. Teams of core teachers at each grade level work together to coordinate curriculum and classroom activities, creating a high degree of accountability for the students and helping students understand the linkages between their studies in different subject areas. Within the

classes themselves, students, too, are required to work in teams, just as they will encounter in the workplace, which creates peer pressure and accountability.

At the same time, with assistance from a National Science Foundation grant, the school has developed an innovative and rigorous science curriculum that integrates themes from English, social studies and mathematics. This curriculum, which emphasizes inquiry and hands-on experience, is ready to be disseminated throughout the nation.

CAMS also provides its students with a number of important enhancements, including a mentor program that matches individual students with industry professionals who are working in the career fields that interest the students most. In addition, the school has a summer internship program that generates up to 90 placements in industry for CAMS students. Many of these internships are paid positions, and many participating corporations have been so impressed with their CAMS interns that they have requested them year after year.

The cornerstone of the school's success in accelerating its students' preparation for college, however, is CAMS's location on the campus of California State University, Dominguez Hills (CSUDH). The Academy is the nation's only four-year, comprehensive math-science high school located on a university campus--an advantage that manifests itself in numerous ways. The school's close ties to CSUDH, for example, mean that CAMS juniors and seniors are eligible to enroll in college courses, which enables them to transfer the credits when they enroll in college full time. On average, CAMS seniors graduate with 22 units of university credit, which accelerates their college education. CAMS students also become acclimated to a university environment, demystifying higher education and increasing the likelihood that they will be successful in college.

The Challenge of Sharing Substandard Facilities

While the school's university location is central to its success, it is a mixed blessing because currently, CAMS shares its facilities with CSUDH--an arrangement that has numerous repercussions that impede the mission of the school. CAMS's present physical plant consists of three inexpensive prefabricated bungalows, designed and built as temporary structures. There are numerous problems with access, size, durability and storage. The electricity, plumbing and climate controls are inadequate for a school with a heavy emphasis on science and technology. Furthermore, because CSUDH uses the buildings in the late afternoon and evening, teachers and students who want to work late on special projects have no place to meet; teachers must simply erase the chalkboards, pack everything up and vacate the classrooms by 4 p.m.

But there is growing evidence that the facilities may soon begin working against the school. As a specialized public school, CAMS must recruit its students and faculty, and the school's physical plant is a key factor in attracting or deterring prospective students and teachers. Currently, CAMS is at a distinct disadvantage in recruiting because its facilities are not even equivalent to those at other public schools, let alone suitable for a specialized math-science high school.

Confronted with the inadequate physical plant at CAMS, many of the area's best teachers are opting to remain in their home high schools. (In stark contrast to CAMS, the Long Beach Unified School District recently spent \$5 million *per high school* to upgrade just the science facilities.) Even CAMS students have begun questioning the quality of the facilities. If CAMS is to continue educating its diverse students and ensuring their success in college is imperative that it obtain permanent, dedicated facilities configured to support its unique approach to math/science education.

Facilities to Educate Tomorrow's Scientific and Technological Leaders

The California law establishing specialized schools like CAMS did not make them eligible to receive tax revenues for facilities. As a result, CAMS must turn to partnerships with the private sector to support its facilities and programs. The enthusiastic response of Southern California's corporations and foundations to date has been a key factor in CAMS's successes. Because the Academy is committed to providing its students with the best possible educational opportunities on an ongoing basis, it has now accepted the responsibility of a capital campaign to raise \$5.3 million to construct its own dedicated building complex. Three major corporations--AlliedSignal, TRW and Hughes Electronics Company--have already committed lead gifts (\$500,000 each) toward the new facilities. In addition, the Ahmanson Foundation has pledged \$800,000 toward the project, and the Weingart Foundation \$250,000. The Lincy Foundation has pledged \$300,000, and the Crail-Johnson Foundation has contributed \$50,000. Katherine B. Loker has made a \$500,000 gift. When the buildings are completed, CAMS will be the only four-year public high school in the nation with facilities financed entirely with private funds.

An Ideal Solution

The project's architects, working with CAMS and CSUDH staff, have drawn up plans for efficient, attractive facilities that consist of five one-story stand-alone buildings grouped around an outdoor courtyard. Four of the structures will be instructional buildings. Heavy-duty movable walls between classrooms will facilitate team teaching, allowing two, three or four classes to meet at one time, if teachers desire. The fifth building will house the school's administrative offices, counseling offices, technology resource laboratory and computer lab. Each building will be wired for CATV, fiberoptics and telephones, and all classrooms will be furnished with state-of-the-art equipment and computers.

The Right Time

There are many reasons why the time is right to move forward on new facilities for CAMS. Foremost among these is the need to capitalize on the high level of good will that exists between CSUDH and CAMS. Recognizing the urgent need for CAMS to acquire its own facilities, the Board of Trustees of the CSU has allocated three acres on campus for the new CAMS complex.

Equally important are the financial considerations. Although the existing bungalows are inadequate, they were not inexpensive, and CAMS currently spends a large percentage of its annual budget on a lease option for the space--a burden that conventional schools do not share.

Finally, without new facilities, CAMS will find it increasingly difficult to maintain the high levels of achievement it has set. If it is to continue attracting committed teachers and motivated students and to remain competitive in mathematics and science, the Academy must have facilities that are at least comparable to those at the local high schools.

Support from the private sector will help CAMS attract additional support from other friends, enabling the Academy to vacate its current substandard, rapidly deteriorating facilities and construct a permanent home that supports the school's innovative, accelerated model curriculum. It will help provide CAMS students with laboratory and classroom facilities that are comparable to or better than those available at traditional public high schools. It will help the Academy recruit the most motivated students and the best teachers possible. Perhaps most significant, it will enable America's corporations to influence substantially the education of their future employees, thus ensuring a steady supply of highly qualified professionals to help the United States remain competitive and meet the challenges of the future.