



DIMENSION 5



California Academy of
Mathematics and Science
A National Blue Ribbon School

CAMS ADOPTS COMPREHENSIVE PRE-ENGINEERING PROGRAM

Fifteen years ago, CAMS students who were interested in engineering had a single option: a popular elective in computer-aided design, taught by Joseph Carpenter, an industry professional from TRW (now Northrop Grumman). In fall 2001, concerned about the limited number of graduates declaring engineering majors, CAMS made engineering coursework mandatory, rolling out a new introductory engineering course as part of the freshman core and becoming the only

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CAMS HELM CHANGES HANDS

NEW PRINCIPAL IS AN OLD FRIEND

Assistant principal Janice Filer had already taken part in nine CAMS graduations since joining the school in fall 1997. But her tenth, on June 6, 2007, was as much of a landmark for her as it was for the 145 students of the graduating class: On that occasion, retiring principal Dr. Kathleen Clark announced Dr. Filer's appointment as CAMS's new principal. In a way, it was a moment she had been preparing for all her life.

"I always wanted to be a teacher," she says. "I never wanted to do anything else."

Growing up in Los Angeles, Dr. Filer attended Centennial High School in Compton and went on to college at California Lutheran University, where she majored in English and minored in education. She earned a master's degree in early childhood education from CSU Long Beach while working at her first teaching job, then was hired by the Compton Unified

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Dr. Janice Filer Moves into
the Principal's Office

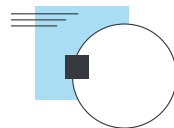
CAMS Expands Commitment
to Engineering Curriculum

Captivated by Robotics

Launching Service Learning

Social Studies Teacher
Wins National Awards

Dr. Kathleen Clark Retires
after 17 Years



California Academy of Mathematics and Science

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ACADEMY PERSPECTIVE

Mildred García, Ed.D.

PRESIDENT

California State University, Dominguez Hills

As the new President at California State University, Dominguez Hills, I am excited and honored to be here. I am also thrilled to have the California Academy of Mathematics and Science (CAMS) located on our campus, offering the students who attend CAMS many opportunities that they would not have at a traditional high school.

Our institutions have a lot in common. CAMS and the University both have small, friendly campuses and an academic experience that is ethnically and culturally rich. We are both committed to providing a diverse student body with an excellent education which will open many doors and ensure them a bright future.

The partnership between CSU Dominguez Hills and CAMS provides a number of benefits to CAMS students, such as the opportunity to take college-level courses at the University, access

to the University Library and the use of many facilities on campus.

While we understand that students at CAMS have many choices when it comes to where they go to college, we encourage them to strongly consider attending our University. Together we will take full advantage of our partnership and the wonderful resources that the University has to offer. ■



CAMS HELM CHANGES HANDS

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School District and, within two years, Long Beach Unified. She worked as a reading specialist at Hamilton Middle School for seven years, simultaneously earning a high school credential, and then went on to teach at Jordan High School and Long Beach City College.

In late 1980s, Dr. Filer enrolled in USC's Rossier School of Education, where she earned an Ed.D. in educational leadership and personnel in 1993. A variety of jobs in education followed, including stints as an assistant principal in the Inglewood Unified School District and a program facilitator in Long Beach Unified. She also taught part time at CSU Long Beach.

From time to time, Dr. Filer would run into Kathleen Clark, CAMS's founding principal, who encouraged her to apply to the school. In 1997, she finally did, joining the English faculty in the fall. Two and a half years later, in spring 2000, she was promoted to assistant principal. She assumed her new job, as CAMS's principal, on July 1, 2007.

As only the second principal in the school's 17-year history, Dr. Filer has inherited a small, close-knit learning community with a distinguished national profile and strong relationships among students, faculty and administrators.

"Kathy Clark was a true pioneer who built a culture of collaboration—within CAMS and across our larger community—long before the idea was mainstream in education," she says. "I'm thrilled to be in a position to extend her legacy."

Dr. Filer's priorities for CAMS include maintaining its outstanding reputation while strengthening its collaboration with CSU Dominguez Hills (where she has taught since 1998). She also plans to focus on some newer initiatives: building the CAMS engineering program, expanding service learning and introducing student teachers. But, she emphasizes, there is much about CAMS that should remain exactly as it is. She particularly appreciates its small size, its diversity and the multiple perspectives inherent in a student body hailing from all over the LA Basin.

"The only negative of CAMS is that there aren't more schools like it," she says. "Students who graduate from here leave with something special."

With her exceptional credentials, Dr. Filer will be ensuring that those special qualities continue to set CAMS apart for many years to come. ■



ACHIEVEMENTS, ACTIVITIES & ACCOLADES

First CAMS was named a California Distinguished School. Then it was recognized as a **National Blue Ribbon School**. Now, in its December 10, 2007 issue, *U.S. News & World Report* has named CAMS one of the nation's top 100 schools, ranking it 21st in the country, based on standardized test scores. "This is a wonderful honor," says principal Janice Filer. "Because of our unique structure, CAMS sometimes slips between the cracks when it comes to traditional rankings. It's extremely gratifying to have our students' achievements recognized in this way."

The Class of 2007 set a new standard for accomplishment, even for a high-achieving school like CAMS. In addition to nine National Merit finalists, it boasted a **Coca Cola Scholar**. **Autumn Williams**, student body president and a **National Achievement Scholarship** finalist, won the prestigious award, which is presented annually to only 250 students nationwide. Ms. Williams is now attending Stanford University, where she plans to major in engineering and economics.

For teacher **Juliette (Prince) King**, it must have been a dream come true. Not only did the CAMS girls' tennis team she coaches win the **2006 league and CIF championships in Division V**—the school's first-ever league and CIF titles of any kind—but the *Long Beach Press-Telegram* named her a **Dream Team Coach** of the year—an award that honors the top coach in each sport from the area the paper serves.

Practice, the old joke goes, is the way to **Carnegie Hall**, but for nine members of the **CAMS Chorus** last spring, it took that

LEARNING IN SERVICE TO OTHERS

STUDENTS LEARN, THEN TEACH IN INNOVATIVE SERVICE-LEARNING PROJECT

In 2003, the Long Beach Unified School District Board of Education unanimously passed a new graduation requirement. Starting with the Class of 2007, all students must complete 40 hours of service learning before they receive their diplomas, applying what they learn in the classroom to benefit the community.

In complying with the mandate, CAMS, predictably, added an innovative twist. Eager to enhance the substance of the school's annual Multicultural Fair, last year the social studies department received a \$7500 CiviConnections grant from the National Council for Social Studies to develop and implement a novel service-learning program for students in grades 10 through 12. Teachers Greg Fisher, Michael Denman and Gene Almeida traveled to Minneapolis to attend a workshop that guided them through the process of designing a service-learning project.

What emerged was a program focused on the theme of discrimination that forced students to think about issues that were important to them and the community. Working in teams, CAMS sophomores, juniors and seniors undertook a massive amount of research into different aspects of discrimination. The project culminated in a schoolwide teach-in immediately prior to the Multicultural Fair, in which all CAMS students either made a presentation or learned about discrimination as part of the audience. Representatives from such agencies as the Anti-Defamation League, NAACP, Simon Wiesenthal Center and Lambda attended as speakers and observers.

"What the project did was elevate the significance, influence and meaning of the Multicultural Fair," says Mr. Fisher. "There was a different atmosphere and vibe on the campus. There was a shared humanity that results when you take time out to look at what you have in common as opposed to your differences. That's really what we were trying to go for, to say that everyone has got some issue, and everyone has a past that's filled with some degree of suffering. When it comes to discrimination, no one is immune." ■



Robotics and Rocketry Competitions Capture Students' Imagination

CAMS TEAMS TEST THEIR METTLE ON LAND, IN THE AIR AND UNDERWATER

CAMS students have always been a competitive lot, but nothing can match the fervor for robotics that has been sweeping the campus. The catalyst is the FIRST (For Inspiration and Recognition of Science and Technology) Robotics Competition, an annual series of contests involving 1500 high school teams and more than 37,000 students from the United States, Canada, Latin America, Israel, Europe and Britain. Each year, student teams have six weeks to design and build robots from a common kit of parts, adhering to a common set of rules. They then pit their robots against one another in performing specified tasks in 41 regional events, culminating in a championship meet in April.

CAMS entered its first robotics competition nearly a decade ago, and students' enthusiasm has only grown in the intervening years. Currently, about 15% of the student body participates in robotics, making it the most popular extracurricular activity on campus. A freshman elective introduces students to robotics basics and prepares them to enter the FIRST VEX Challenge, a

competition that uses smaller, less expensive robots. Once they become sophomores, they can join the CAMS robotics team, officially Team 687 but nicknamed the Nerd Herd, and that's when the real commitment begins. Although the six-week build season starts in January, many team members work on robotics year round, finding sponsors, raising funds, honing their skills and studying previous years' robots to learn from the past.

"It takes a lot of time," admits senior Daniel Hwang of Torrance, chairman of this year's team. "We meet eight hours a week. You have to be really dedicated."

The CAMS team, which won the Kleiner Perkins Caufield & Byers Entrepreneurship Award at last year's Los Angeles regional meet and the Web Site and Johnson & Johnson Sportsmanship awards at the San Diego regional competition, is well into the current design and build season, with plans to excel at both the Los Angeles and Phoenix regionals.

"I love building things, but the competitions are the best part—the feeling of the blood rushing through you," says Vanessa Lopez, a sophomore from Compton. "I love the competitions even if we lose."

CAMS students are so eager to compete that in 2004, at the instigation of a group of freshmen, they began to enter the Team America Rocketry Challenge, sponsored by the Aerospace Industries Association and the National Association of Rocketry. Teams must design, build and fly a model rocket that reaches a specific altitude and duration, determined by a set of rules that are developed each year. After taking part in local qualifying flights, the top

100 teams from across the country converge on Washington, D.C. for the finals. CAMS teams have made the finals every year they have entered.

In 2007, CAMS added yet another competition to its schedule: the MATE ROV (Marine Advanced Technology Education's Remotely Operated Vehicle) competition. The CAMS team designed and built an underwater robot, placing first in the regionals and advancing to the international competition in Newfoundland. There, out of 41 teams representing six different countries, CAMS placed eighth.

With the competitions proving such a powerful motivator for students, CAMS plans to expand the rocketry and aeronautics components of the robotics program in coming years—a development that is expected to increase participation even more. The reason is compelling. As Daniel Hwang observes, “You get to do what you want to do when you grow up.” ■



CAMS Students Mentor Younger Students in Robotics

Robotics may already be the most popular extracurricular activity at CAMS, but last summer, students, alumni and faculty launched a program to expand the program beyond the campus, kindling enthusiasm for robotics among students at area middle schools at the same time they raised funds for the CAMS robotics team. Twenty-five middle school students from Carson, Long Beach, Torrance, Gardena and Lomita attended one of two weeklong sessions in August, taught by CAMS alumni Sheila Muriel and Chiheng Huor, who were assisted by current CAMS students. Six middle school students from Carson received scholarships to attend the workshop, through a \$10,000 grant from Northrop Grumman Mission Systems.

In September, the FIRST Tech Challenge competition was announced, and CAMS students mentored five middle school teams, including four from Carson and one from Long Beach. On November 10, CAMS hosted the qualifying tournament for the regionals—the CAMS/CSUDH Invitational—and the five mentored teams were among the 30 competitors.

“All the kids had a lot of fun,” says Ted Harder, the CAMS robotics faculty sponsor, but he insists the experience was just the beginning of a larger program. “Over the long term, we’re hoping to continue building our relationship with these middle schools and others.”

That effort will advance quickly, thanks to a recent \$94,000 grant from the State Farm Youth Advisory Board to start a full-fledged middle school robotics league. As a service-learning project, CAMS students will continue to mentor the students, who in a few years may become part of the CAMS Nerd Herd themselves. ■

and more. When **Dr. Joanna Nachef**, chorus director, was invited to bring 75 singers from the seven groups she directs to New York for a concert at Carnegie Hall in March, she left it up to the CAMS chorus to select the CAMS students who would go. **Monica Aguilar, Lizeth Benitez, Rodessa Bunagan, Jennifer Cloud, Nykeah Parham, Suraj Teppara, Brandon Kerr, James Recalde and Tiara Johnson** were the lucky nine, and the chorus as a whole raised funds to provide each of them with a partial scholarship to help offset the \$1500 cost. As members of the larger choir, which Nachef dubbed Ambassadors of Harmony, they had ten weeks to prepare for the concert, rehearsing weekly for three hours and memorizing all their music. The concert, which featured music ranging from Mozart to multicultural to gospel, elicited a standing ovation from the nearly 2,000 people in the audience. The 2007 concert was the second time that CAMS students performed at Carnegie Hall. In May 2005, three CAMS chorus members were part of a 240-voice chorus that Dr. Nachef conducted in a performance of Schubert's “Mass in G” with the New England Symphonic Ensemble.

Nearly 30 CAMS students sampled the working world last summer, through internships that placed them in a variety of industry settings, including **Northrop Grumman, Boeing, CVS Pharmacy and BP.**

DEVELOPMENT NOTES

CAMS has received a **state matching grant of \$228,000** to help equip its **new engineering laboratories**. To receive the moneys, the school had to submit a competitive application describing the pre-engineering program, explaining what equipment it needed and providing evidence of matching



END OF AN ERA

FOUNDING PRINCIPAL KATHLEEN CLARK RETIRES AFTER 17 YEARS

On May 15, 2007, the CAMS community officially bade farewell to Kathleen Clark, CAMS's principal since the school's inception 17 years earlier. The event—a dinner attended by 150 people, including faculty, staff and volunteers from CAMS's earliest days—was marked by an outpouring of goodwill, tributes, memories and wistfulness. Emceed by former CAMS teacher Gene Almeida, the program featured comments by an array of colleagues from Dr. Clark's career, past and present; commendations from prominent government officials; screening of a video; and presentation of a gift. For many in attendance, social studies teacher Michael Denman's witty but heartfelt remarks captured her contributions best:



"Winston Churchill once said, 'We make a living by what we get, but we make a life by what we give.' Under this definition...you've lived a remarkable life so far, with more amazing things to come. The building of our school, the staff, everyone assembled here—they're only the physical symbols of what you've created. The reality is that your greatest professional accomplishment is nothing you can see here today. It's the students who have left CAMS, the kids who have gone on to bigger and better things in the world—who are diagnosing and helping patients, who are building bridges, or even doing something really important like teaching U.S. history. That is your greatest and most enduring legacy...."





TEACHER GREG FISHER RECEIVES NATIONAL AWARDS

Readers who opened *USA Today* on October 18 last year were greeted by a face that's well-known at CAMS: 12th-grade social studies teacher Greg Fisher, who was named a member of the paper's "All-USA Teacher Team." One of 20 teachers from across the country who were recognized for their ability to engage, motivate and educate their students, Mr. Fisher received a cash award on behalf of the school, which he shared with the other members of the 12th-grade team.

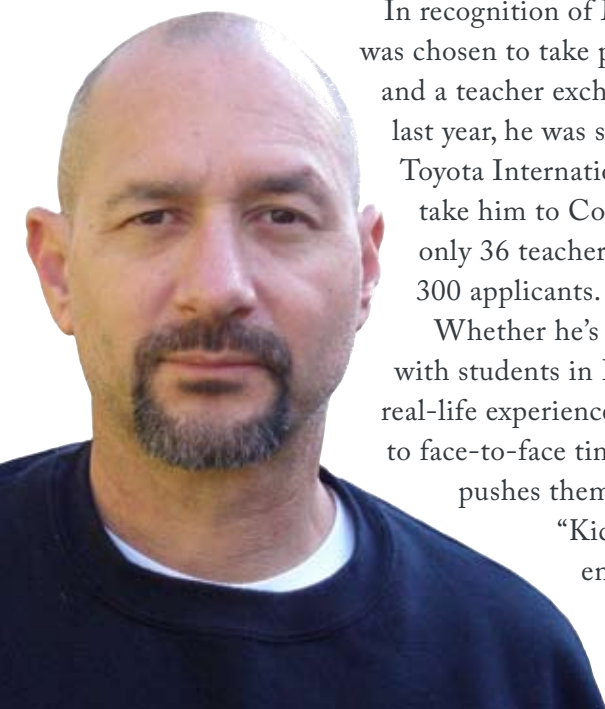
The award was only the latest in a series of honors that Mr. Fisher has amassed since joining CAMS in 1997. Last year he also won the "Entrepreneurship 101 Award" from the Consortium of Entrepreneurship, and in 2006, he received the Leavey Award for Excellence in Private Enterprise Education from the Freedoms Foundation at Valley Forge.

Mr. Fisher first landed in the national spotlight in 2006, when he was named High School Teacher of the Year by the Global Association of Teachers of Economics (GATE) as part of their John Morton Excellence in Teaching Economics Awards Program. He has repeatedly been honored by the California Council on Economic Education, most recently when he was named the Economics Teacher of the Year in California in 2005 and Economics Teacher of the Year in Los Angeles County the following year. And that's just for starters.

In recognition of Mr. Fisher's superb teaching, he was chosen to take part in a study tour of Lithuania and a teacher exchange program in Ukraine. Late last year, he was selected to participate in the Toyota International Teacher Program, which will take him to Costa Rica in 2008. He was one of only 36 teachers chosen from among more than 300 applicants.

Whether he's having his students correspond with students in Eastern Europe or giving them real-life experience as entrepreneurs—right down to face-to-face time with venture capitalists—he pushes them to explore possibilities.

"Kids have natural innovative, creative energy," he says. "I'm just channeling it and seeing if they can use it for a commercial purpose that also has some social value." ■



funds. Competing against many other schools in its region, CAMS tied for the top score.

Northrop Grumman, which in 2003 contributed \$400,000 toward construction of CAMS's new Northrop Grumman Technology Building, has continued to invest generously in the school. In addition to \$5,000 for the robotics program and \$7,800 for equipment to support the pre-engineering curriculum, competitions and extracurricular activities, both from the company's Space Technology division, Northrop Grumman's Mission Systems division gave \$10,000 to the summer robotics camp for middle school students (see article, page 5).

Edison International has committed \$75,000 to equip the computer lab in CAMS's new Northrop Grumman Technology Building.

The Kenneth T. and Eileen L. Norris Foundation, a steadfast supporter of numerous initiatives at CAMS for over a decade, has given \$30,000 to enhance the school's competitive edge in the robotics, rocketry and MATE ROV competitions. Since 2002, the Norris Foundation has contributed \$180,000 toward the CAMS engineering program.

A \$94,000 grant from the State Farm Youth Advisory Board will underwrite the cost of establishing a middle school robotics league and inaugurate a new service-learning program for CAMS students (see article, page 5).

Longtime supporter Chevron has contributed \$8,000 to CAMS for general operating support.

CAMS robotics has received a major boost from the Boeing Company's employee community fund, which contributed \$5,000 to the team.

California Academy of Mathematics and Science

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NEW FACES

CAMS welcomed five new faculty and staff members last fall.



Loretta Clary
Counselor



Julie Dickson
Teacher
*10th-Grade
World History*



Barbara Gilmore
Assistant Principal



Nancy Brown
Teacher
*Introduction to
Engineering Design*



Charise Williams
Teacher
Principles of Engineering

CAMS ADOPTS COMPREHENSIVE PRE-ENGINEERING PROGRAM *continued from page 1*

high school in Southern California to require its students to take engineering. The course spawned additional electives, and soon CAMS was graduating more students committed to careers as engineers.

Now CAMS students have a burgeoning number of opportunities to explore the field. Starting this year, the school has adopted a four-year pre-engineering curriculum developed by Project Lead the Way (PLTW), a nonprofit organization that promotes pre-engineering courses for middle and high school students. Its programs, which articulate with institutions of higher education across the country, are offered in over 1,300 schools in 45 states and Washington, D.C.

Under the direction of Ted Harder, career technical education department chair, CAMS began to phase in the five-course PLTW curriculum last year. The first course, an elective in digital electronics, was introduced in 2006–07. This year, all freshmen are taking PLTW’s Introduction to Engineering Design as a required core course, and all sophomores are taking Principles of Engineering. Digital Electronics and Engineering Design and Development are being offered as electives for juniors and seniors, and Computer-Integrated Manufacturing will debut as an elective in 2008–09.

To accommodate the expanded course schedule, CAMS hired two new teachers. All courses are being offered for college credit, thanks to a partnership with El Camino College.

“We really wanted students to get college credit for these courses, so the teachers had to qualify as instructors for El Camino College,” Mr. Harder explains. “The partnership agreement is allowing us to offer a wider range of courses and superior facilities and equipment. Most important, the students love the program.”

To house the pre-engineering program, CAMS is putting the finishing touches on a new building, partly funded by a gift from Northrop Grumman, which will include two engineering labs and a computer lab, in addition to language classrooms, an art classroom, dance studio and food dispensary. A much-needed addition to the campus, the labs are concrete evidence of CAMS’s commitment to providing its students with both a state-of-the-art pre-engineering curriculum and the facilities to support it. ■