FY 1997

Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring Program

" Mentoring For the 21st Century Workforce: A Symposium"

Awardee Highlights and Nominator Comments

Executive Office of the President of the United States.....

.....National Science Foundation

ITT Sheraton Luxury Collection Hotel
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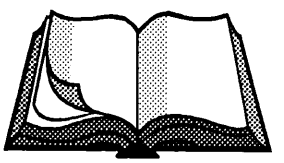


Castillo-Chavez, Carlos
Cornell University

Dr. Castillo-Chavez is a Professor of Biometrics and Chair of the Biometrics Unit at Cornell University. He is recognized as a researcher, dedicated teacher and mentor. Dr. Castillo-Chavez has amassed an outstanding record of achievement over ten year period including the following:

Strong letters of support attesting to his success in helping students succeed.

Seeking and receiving substantial grant support for mentoring programs.

Internationally known researcher, who serves as a role model for aspiring Latin scientists.

Numerous honors and awards, both National and International for his work in science.

Serving on the Boards of Directors , Society for the Advancement of Chicanos and Native Americans in Science and the Society for Mathematical Biology.

Involving many students in research at the undergraduate and graduate level.

Nominator Comments

"In 1996, Dr. Castillo-Chavez created the Mathematical and Theoretical Biology Institute. He developed a summer institute in which undergraduates can work with faculty members whose desire is to interest them in scholarship and ultimately in careers in teaching and research. The first phase of the program served Hispanic scholars primarily. The program designed for 1997 has been expanded to include other groups deemed to be currently underserved by academe. Dr. Castillo-Chavez not only advances in his own scholarship and career but consistently provides opportunities for success for others. He truly has made "mentorship" a part of his personal agenda and has remained faithful to that goal while attending to his own career in biometrics."

Ingrum, Cora
University of Pennsylvania

Ms. Ingrum is Assistant to the Dean and Director of Minority Programs in the School of Engineering and Applied Science at the University of Pennsylvania. In her role as liaison, she has 25 years of experience, mentoring engineering students. Over 350 undergraduates have successfully received scholarships, including the first African American woman to receive a bachelors degree in mechanical engineering at the university of Pennsylvania. Her sustained record of achievements include:

Direction and management of minority student affairs at the university.

Developed, organized and implemented numerous programs for the School of Engineering, including young scholars programs, research programs and peer coaching and mentoring programs. These programs help make Penn one of the top universities awarding engineering Ph.D. to minority students.

Advisor to the local chapter of the Society of Black Engineers and the Society of Hispanic and Professional Engineers.

Impressive support letters from a variety of individuals.

Maintaining ties to former students, encouraging them to mentor others.

A life committed to positively impacting students, having a "track record" of success in mentoring beyond the university.

Nominator Comments

"Cora Ingrum is truly outstanding in guiding this effort. By the mid-to-late 1970's the University of Pennsylvania Engineering College had achieved a minority enrollment of nearly 20 percent of the undergraduates with a retention rate approaching 100 percent. She worked closely with Dr. Joseph Bordogna, the Assistant Dean for Undergraduate Affairs at that time, to design the highly successful PRIME recruitment program. PRIME was the first such integrated effort to acquaint Philadelphia high school minority students with careers in engineering."

Ferguson, David
SUNY, Stony Brook

Dr. David Ferguson received his Ph.D. in Mathematics and Science Education from the University of California-Berkeley in 1980. Currently he is a Professor in the Department of Technology and Society at the State University of New York at Stony Brook. Dr. Ferguson has been a major force behind the emergence of Stony Brook's most successful programs for minority students. In addition to recruiting other faculty colleagues to increase the minority participation in their programs, Dr. Ferguson has accomplished the following:

Took initiative and coordinated The Alliance for Minority Participation Program for the SUNY system. His efforts have impacted the entire state.

Raised several million dollars in addition to the above to support mentoring programs from high school to graduate school.

Provides leadership throughout the state in offering advanced opportunities for minority students.

Impressive mentoring of undergraduate students. These efforts give students research experience, sustained academic support and strategies leading to successful matriculation and degree completion in science and engineering fields.

Impressive support letters noting his commitment, enthusiasm and untiring efforts to recruit and retain underrepresented groups in science, engineering and mathematics.

Nominator Comments

"I have know personally hundreds of students for whom Dave was the driving force and support system throughout their Stony Brook experience. And they have been successful! In the Collegiate Science and Technology Program and the Research Careers for Minority Scholars, to name but two, his personal contact with almost all the students in those programs, more than one thousand over time, has been critical to the students' retention at and graduation from the University. Moreover, the critical success of the projects is in no small part due to his presence and personal involvement."

Jones, Johnnye
Hampton University

Dr. Jones is Dean of the School of Science and Professor of Biology at Hampton university. Her distinguished career as a scientist and educator spans eighteen years. Her most competitive status is highlighted by the following:

Impressive impact on mentees, as documented in letters of support.

Volunteer activities within the community and institution served to catalyze the efforts to bridge the gap between high school students knowledge and participation in undergraduate science programs at the university.

Direction of major grant efforts from federal and private sectors to develop and enhance science programs for underrepresented groups.

Creative work with middle school and high school science fairs in addition to her other responsibilities.

Numerous awards for teaching and leadership.

Significant community activity, including tutoring and Girl Scout Board membership.

Nominator Comments

"Upon her appointment in 1979, she began very early in developing and implementing programs that would impact the student's motivation to seek graduate and/or professional degrees. Dr. Jones became an immediate role model and motivator for undergraduates. She has also been pivotal in our efforts to address the pipeline issues for science, mathematics and engineering. In this regard, Dr. Jones has been instrumental in instituting numerous programs in a variety of areas: (1) the MARC (Minority Access to Research Careers) Undergraduate Research Training Program, (2) the Howard Hughes Medical Institute Program for Undergraduates and High School Students, (3) the Sloan Foundation Program to increase the number of Ph.D.'s in the sciences, (4) the Sharp Plus Summer Science Research Program for High School Students, (5) mathematics and science Saturday academies for middle school students, and (6) other creative projects and programs that promote student success in the science areas at the K-14 levels. As a result of her hard work, many high school program participants have gone on to pursue undergraduate degrees. Likewise, many Hampton University baccalaureate degree graduates have gone on to complete graduate degrees at both the Master's and Ph.D. levels."

Megginson, Robert
University of Michigan

Dr. Megginson is an Associate Professor of Mathematics at the University of Michigan. He hold numerous positions with professional national organizations and institutions. He has mentored numerous students at all academic levels, across the country. Dr. Megginson's achievements in mentoring include the following:

Single-handedly developed, directed and taught in mentoring programs geared to students at various educational levels, as well as to parents and teachers, primarily for Native Americans at the Turtle Mountain Chippewa Indian Reservation in North Dakota.

Far - reaching systemic impact on the national level for his work with mathematics curriculum development. His work with the Mathematics Association of America and with Native American Scientists and Engineers Society has been instrumental in changing the ways in which mathematics is taught to students of color throughout the United States.

He has developed mentoring partnerships between the University of Michigan and the tribal college at Turtle Mountain Indian reservation.

Impressive letters of support from a variety of sources.

An advocate and role model as a teacher and researcher for his students.

Nominator Comments

"Within the Mathematics Department itself, in addition to being a superb classroom teacher, he directs the mathematics tutoring that serves over 20,000 students each year. He has been especially effectively at recruiting minority students to serve as tutors (and role models for other students) in the center. Dr. Megginson is Principal Investigator for a project to establish an Alumni Advisory Board for Graduate Student Retention that would consist of minority and women Ph.D. graduates of the University of Michigan's Department of Mathematics. This board is to help our department retain graduate students from underrepresented groups, and its members will be put in direct contact with students."

Richmond, Geraldine
University of Oregon

Beginning her career as the only female tenure track chemist in the physical sciences, Dr. Richmond began and has sustained over 15 years of mentoring undergraduate women and minorities into Ph.D. or MD careers. This most competitive nominee for the presidential mentoring award has managed to balance a "cutting edge" research program and an active family life with two young children in addition to the following achievements:

Director of the University of Oregon's Chemical Physics Institute.

Recipient of the 1996 Garvan Medal from the American Chemical Society.

Developer and director of summer research programs for students from non-research institutions.

Numerous awards for teaching excellence.

High visibility as a role model.

No graduate student has left her lab without an MS or Ph.D.

Impressive letters from students who have become peers in "high power" laboratories or industries across the country.

Nominator Comments

"In addition, she developed a summer undergraduate research program in chemical physics funded primarily by NSF, and has directed that program for the past ten years. This program brings in ten undergraduates each summer, from predominantly small colleges around the country, who are interested in pursuing research in chemical physics. Approximately 50% of these undergraduates have been women and nearly all of these have gone on to graduate school, an unusually high number when one considers that the number of women Ph.D.'s in chemical physics is less than 10%. Over the years she has successfully mentored women students into a wide range of scientific careers in academics, industry, government laboratories and science policy positions."

Thompson, Charles
University of Massachusetts

Dr. Thompson is a professor of electrical engineering at the University of Massachusetts-Lowell. He has established himself firmly as a role model and mentor for a diverse set of students in the Center for Advanced Computations and Telecommunications. He has demonstrated significant leadership in implementing substantive corporate programs targeted toward the success of underrepresented groups in the engineering professions. Nominated by AT&T Labs, his accomplishments include:

Sustained mentoring and career counselling for 50+ undergraduate and graduate students in addition to 24 doctoral candidates.

Co-Director: Center for Advanced Computation and Telecommunications.

Creating substantive changes in many institutions, increasing the success rates of persons from underrepresented groups in attaining engineering professional and advanced degrees.

Impressive support letters from mentored students who have attained success across the country.

Strong support from industry concerning mentoring program.

Nominator Comments

"Since 1991, Dr. Thompson has served as academic advisor to the Cooperative Research Fellowship Program (CRFP) and AT&T Labs newly constituted Fellowship Program (ALFP) programs. These programs are designed to identify and develop scientific and engineering research ability among underrepresented minority groups. A distinctive feature of the programs is the opportunity for fellowship holders to gain firsthand research and development experience through summer internships at Bell Labs or AT&T Labs where they work with a research scientist/engineer who is their mentor throughout their graduate study. During his tenure as advisor to these programs, Dr. Thompson has personally advised, counseled and cajoled the students in the programs towards receiving their doctorates."

Velez, William Y
University of Arizona

Dr. Valez received his Ph.D. in Mathematics from the University of Arizona. Currently he is a Professor of Mathematics at the University of Arizona. He has been nominated for this award by a colleague who tracks Hispanic, educational and scientific issues as part of his duties. The strengths of the nominee include:

> A positive impact on the development of hundreds of minority students in mathematics and engineering at the University of Arizona.
>
> Implementing team mentoring strategies resulting in strong minority attainment of degrees in mathematics and engineering.
>
> A national impact via his presidency of the Society for the Advancement of Chicanos and Native Americans in Science (SACNAS). During his tenure, he succeeded in changing the focus of the national conference to include a focus on graduate school application workshops.

Serving as mentor to students across the country, working with high school students interested in a broad spectrum of scientific disciplines.

Nominator Comments

"Professor Velez's impact on the profession can best be measured by the number of students who have chosen to major in mathematics at his home institution through the Calculus advisee strategies, and the number of students who have gone on to graduate work in programs across the country because of his support through programs such as SACNAS. He is an indefatigable ally and champion of not only his own students but also of students from other institution, referred to him by his colleagues. Former-students continue to seek his advice as they prepare to embark on their academic careers, and he responds by being their strong advocate, both, in academia and industry. Dr. William Yslas Velez's performance certainly demonstrates excellence in science, mathematics and engineering mentoring."

Warner, Isiah
Louisiana State University

Dr. Walker received his Ph.D. in Fluid Mechanics from Cornell University in 1970. Currently he is a Professor of Mechanical and Industrial Engineering at the University of Illinois at Champaign-Urbana. During his career, he has also served as the Assistant Dean of Engineering. His competitive nomination is highlighted by the following achievements:

- An impressive research record. Much of his work includes his mentees.
- Sustained mentoring relationships with students, insuring their success in engineering. According to the documentation he "fosters a very safe, supportive, accepting environment where his students thrive."
- Impressive production of graduate students over a 27 year period.
- Numerous teaching and research awards.

Nominator Comments

"Professor Warner has been an excellent mentor to students of all backgrounds. He is very proud that through his group, many students who would never have known each other have become lifelong colleagues and friends. However, his own experiences have increased his sensitivity to and awareness of the issues facing minority students in science and he has made a special effort to encourage and support those students. He has accomplished this while maintaining very high standards for student performance and setting an outstanding example of personal achievement. At least five of Professor Warner's Ph.D. students and two former post-doctoral students have been members of ethnic minorities. In addition to the laboratory experience he has made available, he has been an instructor for several summer science programs targeting minority students. Through his role as undergraduate advisor, and informally, by virtue of his accessibility, he has been a mentor and support to minority students in all disciplines at Emory and Louisiana State Universities. In recognition of his commitment, the student chapter of the National Organization of Black Chemists and Chemical Engineers at LSU awarded him a special commendation for his support of their educational efforts on the occasion of his 50^{th} birthday."

Watson, Karan
Texas A&M University

Dr. Watson received her Ph.D. in Electrical Engineering from Texas Tech. University in 1982. Currently she is a Professor of Electrical Engineering and Associate Dean of Engineering at Texas A & M University. Dr. Watson has directly mentored several hundred women and minority students during her career. Particular achievements of Dr. Watson include:

"Mentoring and Institution and its faculty." Her work at Texas A & M in implementing the institutionalization of practices which insure participation by women and minorities.

Directing the Texas Alliance for Minority Participation Program (AMP).

Establishing the Ph.D. pipeline, a collaborative between an HBCU and Texas A & M to provide a Ph.D. "pathway" for interested minority students.

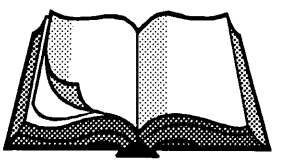
Receiving over $15 million from state, federal and private organizations to fund programs for mentoring women and minorities, supporting the retention of pre-college, undergraduate and graduate efforts.

Receiving numerous awards from academic and industrial organizations for her teaching, mentoring and achieving diversity in engineering and science pathways.

Nominator Comments

"Dr. Watson has directly mentored several hundred African Americans, Hispanics, and women at the undergraduate and graduate level. The academic and career path of students mentored by Professor Watson shows a clear pattern of success and accomplishment: pre-college students entering engineering majors; undergraduates entering graduate programs and industry; and graduate students entering the professorate and industry research. Her mentoring has transformed the culture of engineering at Texas A&M University in several remarkable ways, including her recruitment of 225 engineering faculty as research mentors to African Americans, Hispanics, and women."

Highlights/Nominator's Comments
of
Institutional Awardees



American Indian Science and Engineering Society (AISES)
Norbert Hill

American Indian Science and Engineering Society (AISES) has mentored and offered support to students since 1979 through its first student chapter. As the proposal indicates, the number of student chapters has grown to 147. The proposal indicates that AISES has empowered students with leadership skills, and information to better prepare students in science and engineering fields. In addition, AISES has provided scholarships to enable students to continue their education and attend AISES conferences by offering opportunities for students to connect with each other and with faculty who are role models at conferences. By offering information through the Internet students are easily able to connect with each other and with the organization. AISES also conducts precollege activities such as Science Fairs and precollege math and science camps. Through these activities, AISES has created an environment that nurtures and encourages precollege and college students to pursue the sciences. According to the proposal, there is a 65% college retention rate for AISES members. Materials such as the unique *Winds of Change, and American Indian College Guide* have empowered students' education, contacts, and career. The strengths of the nominee include:

- Prepares students for careers in science both intellectually and culturally.
- Provides scholarships and leadership training.
- Participants give back to the community.
- Precollege program including science camps.
- Growing network of professional scientists and engineers serve as role models for the Indian youth.
- Publication of "Winds of Change" is a major outreach mechanism; another way to engage students and role models.
- Internship program with the Department of Transportation.
- Web page idea is good.
- Replications in Canada and New Zealand are underway.

In summary, AISES has demonstrated that it is a unique organization with connections to open doors in many schools and colleges. For all that is stated in the nomination including its impressive graduation numbers in the sciences, it can be said that AISES has an outstanding record in mentoring Native American youth in the sciences.

Association for Women in Science (AWIS)
Catherine Didion

The main force of the Association for Women in Science (AWIS) Mentoring Project model stems from its ability to be replicated nationwide. With AWIS presentations made throughout the United States, at a UN Conference on Women in Beijing, China (1995), in the former Soviet Union, South Africa, and throughout Europe, this mentoring model has realized international influence and distinction. The program has reached across disciplines with diverse organizations participating such as Americorps, Association for Women in Mathematics, U.S. Department of Energy, Iowa Department of Transportation, and the U.S. Forest Service; corporations such as Bell Atlantic Foundation or The Scripps Research Institute; and institutions such as Edmunds Community College, Iowa State University, and Stanford University. The strengths of the nominee include:

- Have created a national model for attracting female students into science.
- Model strategy has been adapted in many institutions.
- The multi-strength nature of the program.
- The program has mentored over 6,000 female students since 1990.

In summary, this nomination for the Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring is an excellent one. The program has produced numerous written materials that other institutions/organizations have used to implement successful mentoring models of their own. Through its large scale of operation and influence, the AWIS mentoring project is significantly increasing the number of women scientists who can in turn be mentors for others just beginning their training.

Nominator Comments

"The AWIS Mentoring Project has set in motion an ongoing process whereby women who are mentored remain in science and , in turn, become mentors as they advance through the stages of their careers. The result is a new generation of scientists who view mentoring as an essential part of a scientific career. This stronger, more diverse scientific community will make a greater contribution to society as a whole."

Cooperating Hampton Roads Organizations for Minorities in Engineering (CHROME)

Karen Kuhla

Cooperating Hampton Roads Organizations for Minorities in Engineering (CHROME) network of community organizations, founded in 1983, impacts students in elementary, middle and high school. This proposal does a fine job of outlining how CHROME meets each criteria while specifically highlighting CHROME activities and successes. As a result of it clubs throughout the K-12 school system, this program is able to "follow through" with youngsters and offer a variety of support and activities. As a result, CHROME claims "virtually all students who remain" in the program graduate high school. CHROME claims 95% of its club members go to college and 80% major in SME or related fields proven by conducting a follow-up survey with alumni and maintaining a database. CHROME's ability to track students demonstrates how the program has made a difference in students graduating, going to college and choosing majors in SMET fields. While this program mostly benefits African American students, there are a number of other minorities who participate in the program including Hispanic, Asian/Filipino, and Native American students. The strengths of the nominee include:

- Sixty community organizations working together providing outstanding programs for youth and students.
- Constant communication to keep individuals informed by providing information online.
- Provides training for teachers and counselors to be effective leaders of local clubs through a variety of summer training programs.
- Excellent outreach structure.
- Provides internships through its business members, holds educational forums, funds scholarships, and tracks participants.

In summary, CHROME is a comprehensive community networking effort that goes beyond establishing mentoring relationships between senior and junior individuals. The program's activities sustain encouragement for SMET disciplines from elementary school through high school. It trains teachers and counselors to encourage students to pursue careers in technical fields, establishes and sustains partnerships among businesses corporations, higher education institutions, and government agencies plus supports community educational improvements in science, mathematics, and engineering areas. It even brings parents into the picture by offering them workshops with themes such as "How to Rear an Engineer" or "Preparing for College."

Nominator Comments

"CHROME currently has about 135 student clubs in elementary, middle, and high school with over 3200 students and over 400 participating teachers and counselors. The growth and development of CHROME has been phenomenal with the number of clubs and students increasig by a factor to 4 to 5 over the last five years. Since its inception in 1983, CHROME has provided a nurturing and supportive network that has touched over 10,000 young stuents and has tracked more than 2000 CHROME club students that attend college. Typically 95% or more of CHROME club members go on to college, with 80% or more majoring in the science, mathematics, engineering, or related fields."

Disabilities, Opportunities, Internetworking, and Technology (DO-IT)
Sheryl Burgstahler

With communication technology and the use of mentors, the Disabilities, Opportunities, Inter-networking, and Technology (DO-IT) program builds a communication network for disabled high school students who would otherwise remain isolated and segregated. The network opens these students to new possibilities in science, mathematics, and engineering and helps sustain them through their high school and college academic experiences. Another strength is the program's emphasis on developing college faculty awareness of how the barriers and challenges for the disabled can be overcome, contributing to a more positive and diverse learning environment. DO-IT has positively altered the educational infrastructure by creating a self-sustaining community, free from spatial constraints and creatively links new isolated populations such as the Seattle Children's Hospital to its communication network. The strengths of the nominee include:

- Innovative, strong and working.
- 90% of the participants have graduated from high school and are pursuing post-secondary degrees.
- Showcased in President's Summit for America's Future.

In summary, this nomination for the Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring is outstanding. The program is innovative and timely. The total number of participants is not large but the level of quality is high.

Nominator Comments

"The DO-IT flagship program, DO-IT Scholars, currently serves 88 students with disabilities (vision, hearing, mobility, and health impairments; and learning disabilities) from diverse ethnic, socio-economic, and geographic backgrounds. Scholars interact with volunteer Mentors - over 50 practicing engineers, scientists, mathematicians, college students, and others. Most Mentors, including myself, have a disability. They communicate primarily by electronic mail, and, in-person when possible."

Oglala Lakota College "SKILL Program"
Phillip J. Huebner

The Scientific Knowledge for Indian Learning and Leadership (SKILL) Program at Oglala Lakota College was established in 1989. This pre college program addresses academic support and career guidance for a large number of students at the elementary, middle and high school levels. The program indicates an excellent record of influencing transition into post-secondary institutions. The high school graduation rate among participants is 100%. Complementing this record is an ACT performance average which exceeds the national average. SKILL's participants have also received several local and national awards. There is evidence that the SKILL's model for academic reinforcement and support has attracted the attention of other academic institutions.

SKILL has reached a relatively large number of American Indian students (3,000), fostering their interest in math and science. The program shows good success in student retention and transition to college from high school. Twenty of the 24 original first year students graduated from the SKILL program in 1996 and all applied for admission to a university and identified a major in science or engineering. The strengths of the nominee include:

- Continuity of focus on Native Americans is clear and very distinctive.
- Early and sustained intervention.
- Demonstrated staff dedication and leadership.
- Holistic approach to supplemental learning that covers elementary through high school students.
- Large number of experiments flown on space shuttle missions.
- Promotion of dual course enrollment.
- Summer residential activity for eligible high school students.

In summary, this is a holistic approach to supplemental learning. The program intervenes at key grade levels at which pre-college students encounter difficulty in science and mathematics. This latter activity has the potential of influencing systemic change.

Nominator Comments

"...There are a multitude of successes for which SKILL is credited with. One of the most notable is the retention rate of students within the four year high school program. This program has a graduation rate of 100% with every student applying for college and identifying a course of study in science, math or engineering. Students of the SKILL program have consistently received more awards than any other contingency from South Dakota at the American Indian Science and Engineering National Science Fair and a number of students have had their research published. Students within the program have shown an increase in their GPA's and I recently learned that the latest information SKILL is compiling on ACT scores shows no student receiving a score less than 17..."

Program for the Retention of Engineering Students (PRES)
Charles Watkins

The City College of New York's Program for the Retention of Engineering Students (PRES), begun in 1987, was established to increase the number of underrepresented minorities in the engineering field. PRES concentration is on freshman. Data indicate that half of engineering students drop out during the first two years of school. PRES services are focused on improving academic performance and providing career information. Among the services listed, are, 1) pre-freshman and pre-transfer summer enrichment programs; 2) mathematics and science workshops; 3) frequent academic monitoring and advisement; 4) career orientation and professional development sessions, and 5) cooperative education and summer job placement. Comparison data provided indicate that student retention rates are impacted with 90% of the students staying in engineering versus 50% for those students not in the program. Another highlight of the proposal is the program's impressive impact on graduation rates and matriculation into graduate programs. In addition, the proposal indicates PRES will continue to grow through the support it receives from its eighteen member advisory board composed of corporate and foundation representatives. The strengths of the nominee include:

- Largest enrollment of engineering students in New York state (50% of the State's engineering students).
- Pre-freshman enrichment, personal counseling, block registration, tutoring by peers and upper classman, required non-credit course in problem solving, math and science workshops, frequent academic monitoring and advisement, career orientation and professional development services, summer job placement.
- Significant impact on student retention, graduation, academic performance.
- 90% of the students remain in engineering.
- PRES student graduation rates are twice as high as other minority engineering students
- Foundation and corporate support.
- Innovative and replicable.

In summary, PRES is a sophisticated and comprehensive student support system. The population of assisted students overwhelmingly satisfies the NSF criteria for diversity and underrepresented populations. The program offered the unique component of involving transfer students in the support process even before transfer from the feeder school.

Nominator Comments

"The PRES program has one of the largest populations of underrepresented minorities in a formal retention program in the country and is viewed as a model for retention programming by other institutions...PRES's success is striking: nearly 90 per cent of the students who participate remain on track in their engineering studies as compared with a retention rate of about 50 per cent for non participants. Results from the most recent academic year showed that PRES participants continued to significantly outperform the non-PRES cohort in mathematics and science pass rates, overall grade point average and retention...PRES students have achieved a

graduation rate which is more than twice as high as the graduation rate for other minority engineering students at City College. In the past two years, 56% of PRES graduates have matriculated into graduate programs within the City University of New York and at other major universities."

San Antonio Prefreshman Engineering Program
Manuel Berriozabal

The San Antonio Pre-Freshman Engineering Program (PREP) is based within the College of Science and Engineering at the University of Texas at San Antonio (UTSA). The program was established in 1979 at UTSA and has now been extended to eight community and senior college campuses in San Antonio and to several other campuses in Texas. Through support from the Hispanic Association of Colleges and Universities, PREP will soon be used as a model at seven institutions outside of Texas. Involvement in PREP is achieved with minimal cost to participants.

The program focuses on developing the academic potential of middle and high school students through summer activities (course work, engineering projects, and career seminars). PREP appears to have influenced the introduction of Algebra 1 to 7th and 8th grade students and increased Calculus and Physics offerings at the high school level within the San Antonio school system. PREP is also involved with the city's Urban Systemic Initiative.

Since its inception, PREP has served more than 6,600 students though one or more summer sessions. Minority and women involvement has been substantive. The program's summer impact has grown from 50 students in the 1979 to 1,154 participants in 1996. The strengths of the nominee include:

- The high percentage of participants who complete high school (99.9%).
- The large number of high school graduates who opt for science or engineering majors and complete the curricula (55%).
- The expansion of the program to other Texas sites and its recognition as a model for sites outside Texas.

In summary, PREP excels at quality academic preparation of high school students in science, mathematics, and engineering and provides access for all students. Its success is shown in the replication of the program throughout Texas and soon to other national locations with Hispanic populations. The program has impacted large numbers of minority and female students. Materials show good student success rates. In addition, the San Antonio PREP and the Texas PREP have received several citations and awards that demonstrate organizational program distinction in the advancement of student career development in science and engineering.

Nominator Comments

"The following examples of educational achievements reflect San Antonio PREP's impact on the San Antonio community: Engineering programs at The University of Texas at San Antonio were established in the early 1980's; all San Antonio area school districts now offer Algebra I to their middle school seventh and eighth grade students; most high schools now offer Advanced Placement Calculus and Physics courses; several school dis ricts have started or are planning to start magnet schools; and San Antonio has been designated an NSF/USI community with PREP as a partner..."

SECME, Inc.
Ronnie G. Vickers

SECME Inc., formerly the Southeastern Consortium for Minorities in Engineering, has been in existence since 1975 and is structured to impact the educational pursuits of K-12 students and influence their selection of science, engineering and mathematics careers. SECME programs are now established in twelve states. The organization provides year-long support for a large number of K-12 students. Since 1980, more than 49,000 SECME participants have graduated from high school. The partnership brings together students, teachers and administrators and influences SEM career selection through a variety of institutes, workshops, conferences and competitions. In addition to educational support from more than 65 corporations and/or government agencies. This program appears to be an excellent feeder toward SEM careers. The strengths of the nominee include:

- Since 1980, SECME has coordinated programs which have mentored an impressive number (49,475) of K-12 students, who have enrolled in post-secondary institutions.
- Documentation indicates that more than 50% of the SECME alumni have enrolled in SEM
- Data indicate that a large number of SECME students enroll in college. Currently, five SECME alumni are pursuing the Ph.D. degree.
- SECME has imparted the educational exposure of minorities by influencing enhancement of both teaching and learning at the K-12 level.
- In 1996, SECME received the National Action Council for Minorities in Engineering (NACME) Reginald H. Jones Award for its influence on the education of minority groups.
- As a model SECME involves students, teachers, faculty and administrators through a team approach.
- Linkages with several K-16 systems have already been established.
- The SECME network demonstrates collaboration among business, governmental agencies, foundations, universities, school systems, students and parents.
- SECME's impact on the K-12 system has been documented and is significant.
- SECME, as an enhancement program, has the potential for improving K-16 education and impacting the SEM careers.

In summary, this nomination for the Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring is a great one. The organization has been in existence since 1975 and has reached over 50,000 students. The impact on enhancing the number of students pursuing science careers has been excellent. The organization has had steady success with its impact on students.

Nominator Comments

"SECME is a national precollege engineering program, for the 1997 Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring. For 21 years, SECME's mission has been to increase the number of African-American, Hispanic and Native American students prepared to enter and complete studies in science, mathematics, engineering, and technology (SMET). SECME has a unique mentoring model approach that partners with 65 business, governmental agencies and foundations; 37 engineering universities; 77 school systems; 2500 teachers; and parents of the 25,000 minority students involved in the program. This program leverages all of its human and financial resources to impact K-12 students who continue to advanced mathematics and sciences courses. Founded in 1975 by seven engineering deans in the Southeast, SECME is now active in 12 states, and collaborates with other pre-college organizations to increase the scientific pipeline with qualified individuals."

Women in Engineering Mentoring Program at Purdue University

Emily M. Wadsworth

Purdue's Women in Engineering Mentoring Program (WIEMP) was created in 1992 to expand the number of women engineering students. A networking model was chosen as a way for students to provide support to each other in personal and professional advancement. Mentors are experienced students and alumni who are working in engineering fields. The components of the mentoring model focus on: undergraduates in the first and third year undergraduates in the second and fourth year; and graduates pursuing masters and doctorates. As a consequence, the mentoring programs provide constant support to women in the program. There is ongoing assessment of the women in the program as well as a summative evaluation. Results indicate that retention is 19% higher for women in the program. Purdue has already institutionalized Undergraduate Mentoring Programs of WIEMP in their Women in Engineering Programs. The success of the program has been cited in professional publications, and presentations. In addition, information has been distributed internally as well as to 35 higher education institutions throughout the country. A thorough proposal demonstrates changes the university has made to affect the enrollment of women in their engineering program. The strengths of the nominee include:

- Excellent continuity in its mentoring program whereby former mentees become mentors.
- Number of institutions acknowledging the success of the program indicates possible replication.
- Undergraduate programs introduced are being institutionalized.
- Active involvement is clearly seen as a bonus.
- High rate of success.
- Linking graduate students with Ph.D. alumni is great for continuity.
- Mentoring is mostly independent of faculty.
- Recruitment of women in engineering is excellent.

In summary, WIEMP offers outstanding mentoring continuity for female engineering students that stems from their first year as freshmen to after graduation when they can serve as alumni mentors for graduate students. Throughout the program process, evaluation is undertaken to ensure student satisfaction with the mentoring support and strategies. The retention and graduation data indicate a very high success rate. Linking graduate student participants with Ph.D. alumni changes the traditional educational system in a positive way by bringing the world of work closer to the students' university experience.

Nominator Comments

"...The Mentoring Programs have had a positive effect on the retention of women students i bouth undergraduate and graduate engineering curricula. In fact, retention of program participants was as much as 19% higher than for women engineering students who did not participate in the

mentoring program. In 1996, not one participant in the Graduate Mentoring Program, at either the M.S. or Ph.D. level, left her academic program of study in engineering. Also, these programs have attracted a greater diversity of African American, Hispanic, and International women than any of the other Women in Engineering program activities..."