

- Project STEP: *Student and Teacher Excellence Program* of Newport News Public Schools,  
*W. D. Lett, Superintendent, and T. Woods, Director*

Articles reporting on the first three of these programs appeared in Volume 4 No 2. This issue a new regular “Programs That Work” section is initiated, and a report on CHROME appears here. The remainder of the 2001 programs and the programs recognized in 2002 will be reported on in this section in future issues.

## **CHROME: A PRE-COLLEGE PROGRAM FOR SCIENCE, MATHEMATICS, ENGINEERING, AND TECHNOLOGY**

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### **Program Description**

The Cooperating Hampton Roads Organizations for Minorities in Engineering (CHROME) is a pre-college outreach program for science, mathematics, engineering, and technology that serves Hampton Roads, Virginia. With the goal of promoting minorities' preparation for careers in engineering and other high-technology fields, representatives from business, industry, government, institutions of secondary and higher education, and other community organizations created CHROME. Today, our eighteen-year effort represents a highly effective partnership of over seventy organizations.

Concerns regarding the trend of students' declining interest and preparedness in science-related careers and, in particular, the lack of participation in these fields on the part of minorities and females dating to the early 1980s, have been validated by the present shortage of a technical work force in America. While the rapidly expanding job market demands many more workers with these skills, the number of undergraduates earning computer science, engineering, and other technical degrees has diminished despite a national concern for our future work force. Moreover, demographic trends indicate that women and minorities will continue to comprise an increasing proportion of new workers. Increased participation in the fields of science, engineering, and

mathematics is necessary, therefore, not only for economic equity, but also for the economic survival of our nation.

CHROME's ultimate goal is to increase the number of minorities and females who continue their education after high school and who major in scientific or other related disciplines. We serve thirteen school districts in Hampton Roads through a range of proven and effective pre-collegiate programs that include: CHROME clubs, regional programs, Saturday and summer academies, leadership workshops for students, teacher-training institutes, internships, scholarships, and family programs.

The CHROME model centers on school clubs that have mathematics, science, and engineering as their focus and on the teachers who serve as club sponsors. One of the major advantages of the club structure is that it provides a continuous nurturing process for students from elementary school through high school. At the elementary school level, the emphasis is on identifying and nurturing students who have an interest in mathematics and science. Students participate in age-appropriate activities designed to encourage interest, as well as lessen fear, of those subjects. At the middle school level, students are provided with enriching experiences in math and science, and are encouraged to begin course selection in these subjects so they will be prepared for more advanced classes in high school. By high school, students have had sufficient positive, meaningful experiences in math and science to help them narrow their career choices. Adrienne Godette, of Crestwood Middle School/Chesapeake, Virginia, wrote, "The reason why I joined the CHROME club at my school was because I have always been interested in the way math and science interact with each other. The CHROME club is an excellent place to learn about science and math and I have learned a lot from the program. I feel that everything we see and use today involves math and science."

Crucial to the success of the CHROME model are the teachers who sponsor school clubs. Ideally, each club has a team of sponsors: a mathematics teacher, a science teacher, and a guidance counselor. As official advisors for the CHROME club, these educators act as liaisons between school administration officials and the CHROME organization, as well as plan activities for club meetings. Some member school systems provide stipends for their club sponsors, while other teachers work on a voluntary basis. We do encourage school administrators to grant release time for training activities and to provide funds for substitute teachers.

Sponsors enjoy outside academic opportunities as a result of their participation in CHROME: many teachers have served as summer program coordinators, have worked on various committees for the CHROME Board of Directors, and have participated in research projects. For example, teacher-sponsors serve as mentors to pre-service teachers at Norfolk State University as part of a grant project funded by NASA. We also honor a “Sponsor of the Year,” an award that carries with it \$1,000 from the Engineers Club of Hampton Roads.

Meetings with school administrators and teachers are held throughout the year in order to recruit new school clubs and teacher-sponsors. Once a school signs on, CHROME staff members make follow-up visits to coordinate training in club procedures, as well as in programs for the classroom and for club meetings. After that, teachers join in yearly training events, including Sponsor Launch and Sponsor Appreciation Day. Also, each school is provided with a *CHROME Procedures Manual* and a *CHROME Resource Directory*. The *Directory* helps guide participants to resources within the organization. Teacher-sponsors, school clubs, and CHROME member organizations are all linked through our newsletter, *Bits and Pieces*, and via the website at [www.chrome.org](http://www.chrome.org).

As a component of the model, CHROME collaborates with academic institutions, businesses, technical associations, museums, and community organizations to offer regional programs that complement club activities. Each member organization designates an official representative who serves as the primary liaison between their office and CHROME. These liaisons reflect the diversity of CHROME’s partners, who range from CEOs to practicing engineers and from public school administrators to university faculty.

Representatives often have been the prime movers for new program ideas and new collaborations. For instance, Sandy Bottom Nature Park implemented a new summer program in 1998 for elementary CHROME students called the Junior Rangers Program. This study of environmental science has now become an annual program that attracts 75-100 children. In another partnership activity, three clubs are involved in a NASA research project in collaboration with an Old Dominion University Department of Engineering faculty member.

### **CHROME Staffing Structure**

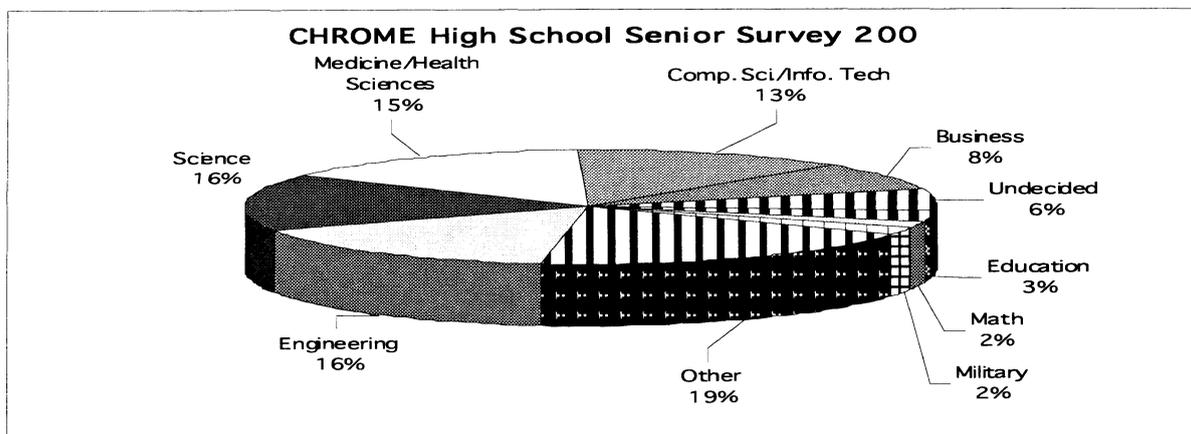
The Board of Directors is elected by the membership and is responsible for developing policies, as well as governing the organization. Overall responsibility for the day-to-day

operation of CHROME is handled by the executive director, currently Eleanor Wilson. She keeps the Board apprised of programming activities, acts as principal fundraiser and public relations person, and serves as the point person for establishing relationships with officials from businesses, colleges, universities, and community organizations.

A resource manager assists Ms. Wilson with recruiting teacher-sponsors, counselors, and students for participation in programs and events; with training for teachers; and, with coordinating all area-wide student programs, which are run in concert with our affiliated organizations. Within each member school system, an administrator serves as the CHROME representative. Three systems also have created the position of CHROME Club Coordinator to facilitate and oversee club development and activity.

### Our Success Story

CHROME currently has over 130 clubs in elementary, middle, and high schools in the Hampton Roads area. More than 3,000 students and 300 teachers participate annually. Since the program's inception, an estimated 17,000 students have participated in the clubs and we have followed over 4,000 of our alumni into college. Typically, 90% of CHROME seniors go on to college, with more than 60% majoring in science, mathematics, engineering, or related fields.



### An Adaptable Model

The CHROME model has proven to be adaptable to a wide variety of scholastic settings: it works for small and large school systems, in rural and urban settings, and for community clubs.

For example, the Newport News School System, a large, urban district of 42 schools, received funding from the National Science Foundation to establish a CHROME club in every school. The Rural Outreach Project, a collaborative initiative of CHROME, Norfolk State University, and NASA, piloted the club model in the rural communities of western Tidewater in 1997. Within three years, the project boasted success with more than 400 students participating from middle and high schools in the City of Franklin and Southampton County.

The first community club was formed in 1989 by Susie Keele, a retired teacher interested in promoting CHROME at the elementary level in the city of Portsmouth. This club provided the impetus for expanding the elementary model to Hampton. And, CHROME became an international model in 1996 when we hosted a visit from representatives of the University of Stellenbosch, in Capetown, South Africa, who saw our program as a potential prototype for their country's educational reform effort.

A long-term commitment to CHROME's mission is evidenced by the fact that many of the organizations currently represented in the CHROME consortium are charter members. Our organization is governed by a board of directors that includes: leaders from Hampton Roads businesses, such as Ford Motor Company, Newport News Shipbuilding, Dominion Virginia Power, and Verizon; representatives from governmental agencies, such as NASA Langley Research Center; and, educators from local school systems, as well as area colleges. This consortium offers a tapestry of resources that may be drawn on for CHROME club meetings, and for summer and regional programs.

CHROME has received statewide, as well as national, recognition for innovative and effective programs. These awards include: 1) *Programs That Work* (2001), Virginia Mathematics and Science Coalition; 2) *Exemplary Partnership in Math, Science, Engineering, and Technology* (2001), Quality Education for Minorities in Engineering (QEM); 3) *Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring* (1997), National Science Foundation; 4) *Best Grassroots Effort in Support of Education* (1994, 1995, 1996), USA Today; 5) *Best Community-Wide Educational Partnership in Virginia* (1994), Virginia Governor's Community Award; and, 6) *A Model Program for Increasing the Academic Pool of Minority Students for Higher Education* (1992), Commonwealth of Virginia.

## **Budget and Funding**

CHROME was created in 1983 under the auspices of the Planning Council of Norfolk, Virginia. Incorporation occurred in 1985, and CHROME was made independent of the Planning Council in 1987; we now operate as a non-profit organization. In 1993, the CHROME Board of Directors invited proposals from member institutions of higher education in the Hampton Roads area to support the expanded growth of the program. Old Dominion University offered the most comprehensive package, which provides office space, personnel, and operating expenses. As a result, CHROME is housed in the College of Engineering and Technology at the University. We also maintain an affiliation agreement with Norfolk State University, the former home of CHROME.

In general, our program is supported by contributions and grants from private corporations, academic institutions, and annual membership fees. CHROME also receives a substantial amount of services and materials donated by member organizations. Since our founding, NASA has provided our primary financial support, with grant awards totaling more than one million dollars. These grants, sponsored in collaboration with Norfolk State University, have underwritten the development and expansion of the CHROME club model and regional activities. Additional funding has been received from the National Science Foundation and the State Council of Higher Education in Virginia. Recently, the Development Committee was established by the Board of Directors to support expanded grant activity and to increase membership contributions.

Over the years, we have found that extensive effort is needed each year to maintain existing club programs. Year to year, many teachers and counselors transfer to different schools, have additional responsibilities added to already full plates, or leave the school system entirely. Administrators, too, frequently change job positions; with such changes, we can never be sure of consistent support. As we embark on new efforts to expand CHROME programs, as well as respond to requests for the creation of new clubs, additional funding and administrative support are needed to keep pace with the growth. It is often impossible to predict new levels of funding, let alone maintain current support, due to the economic dynamics of government and business.

Even with the difficulties of keeping up with staffing changes and raising funds, CHROME programs have a proven record. Our success is documented by an extensive, tested

tracking mechanism and database of students who participate in CHROME activities. The database is updated continually and used to assess program effectiveness, track student progression through the academic pipeline, and maintain regular communication with students, parents, and teachers. The basis for all CHROME programs involves the use of data collected throughout our participants' pre-college years. Upon graduation, students are entered into the alumni database, by which their progression through college and graduate school may be monitored. An alumni survey of those now in the work force is currently underway to provide additional information on participants' careers.

The ongoing assessment of programs has been crucial in identifying effective educational techniques: building upon these successful approaches has enabled CHROME to become a powerful, as well as an efficient, program that has had a positive effect on increasing the number of underrepresented minorities and females studying mathematics, science, engineering, and/or technology.

### **New Opportunities for CHROME**

Although significant progress has been made by CHROME in Hampton Roads, much remains to be done. While well on our way to achieving the goal of serving each middle and high school in the region, adding over 170 elementary schools will be a considerable challenge: currently, we serve 45 elementary clubs. Major efforts on behalf of the CHROME central office, in cooperation with area school systems, will be needed to support new growth, as well as extend existing programs. The Board has been engaged in a strategic planning process to address the expansion of CHROME. We recognize that growth requires a new infrastructure and are currently evaluating the financial and programmatic ramifications of any increased activity.

One of our goals is to support educational policies consistent with the CHROME mission in the areas of science, mathematics, engineering, and technology. With the adoption of the Standards of Learning in 1995 by the Commonwealth of Virginia, we seek to align our programs with both state and national guidelines [1].

In recent years, our program has become a statewide, as well as national, leader in the conception and implementation of pre-college programs for minorities and females in math, science, engineering, and technology. CHROME is an outstanding example of what can be done to help pre-college students envision and realize their career aspirations.

Candy Johnson, a parent, believes that, “Every child, every parent, every teacher, every benefactor—everyone involved with CHROME taps into an almost limitless network of ideas, resources, and people working together to create bigger and brighter tomorrows (and today’s) for us all.” Our success story is one of ambition, collaboration, and achievement, and speaks to the excellent, resolute work of many individuals and groups: *having a dream* for our students, *supporting the dream* for our associates, and *living the dream* for our young professionals. ■

## References

- [1] *Standards of Learning for Virginia Public Schools*, Board of Education, Commonwealth of Virginia, Richmond, VA, 1995.

## INTERVIEW WITH ELEANOR WILSON

**Q: What career path did you follow to reach your present position? Is this what you originally aimed for, or were there twists that brought you here?**

**A:** If you were to trace my career, one might think that I had the perfect plan in place to reach my current position of Executive Director of CHROME. In fact, I began my college career as a Communication Arts/Journalism major with the hopes of landing a writing position with a nationally recognized magazine. Although I never pursued a communications career, my degree positioned me for diverse positions that required good communications skills. I later returned for a master's degree in education with a human resource development focus.

From my first job in an education center, to a career in human resources in private industry, to a ten-year university tenure in cooperative education, and now to director of a non-profit pre-collegiate program—all of these jobs centered on academic and career management programs. Moreover, they all involve linkages between the academic and business communities.

**Q: Have you been involved in similar programs? Was there a particular moment or stimulus that caused you to begin this project?**

**A:** Yes, as Assistant Director of Cooperative Education at Virginia Commonwealth University, I coordinated two pre-collegiate programs, namely the Adopt-A-School Program and the Going for the Goal Project. Both programs targeted minority students and assisted them with academic and career preparation. In the previous ten years of my employment, I was working with newly funded programs in which I helped design the programs.

Now, as Executive Director of CHROME, I have primary responsibility for sustaining an organization that has been in existence since 1983. I must give credit to the founders of CHROME. Since I began my tenure in 1997, I have been impressed with the ingenuity, creative energy and continuous support for a “program that works!”

**Q: Have there been any unique or unexpected consequences for you resulting from your project?**

**A:** CHROME is now entering a new life cycle in its history. In the past seven years, participation in CHROME doubled. The challenge has been to keep funding at the same pace as the growth of the organization.

**Q: Are you able to identify the greatest lesson you have learned and the rewards you have gained through working on CHROME? What is the greatest benefit you see coming to students—and teachers—through their engagement with this project?**

**A:** Each day in CHROME is rewarding. CHROME has created new possibilities and opportunities for the many students, teachers, and parents we serve. The youth inspire you with their excitement for learning and our community partners motivate you with their continuous support. In my career, I have the opportunity to work with aspiring professionals of all ages. The greatest reward is in helping youth to bring their dreams to fruition and working with the many volunteers who are committed to this program.