

talk CAMP

Vol. 1, No. 3, 1995

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Dana Webster tries out the virtual reality equipment at the University of Washington's Human Interface Technology Laboratory as part of the University of Washington's Technology Summer Camp.

RIMSA excites middle school minds by Jacques P. Bordeaux

The Southern California Science and Engineering Career ACCESS Center of California State University, Los Angeles (CSLA) sponsored its first Residential Intensive Math and Science Academy (RIMSA). Made possible through a generous grant from the National Science Foundation, RIMSA was held from March 6 to June 24, 1995. Fifty seventh and eighth grade minority and economically disadvantaged students from nine year-round middle schools in Los Angeles, lived on the CSLA campus for the first four "residential" weeks of the academy.

The goal of RIMSA is to reverse the disturbing statistics of college entry among low-income and minority students by stimulating and encouraging them to take control and excel in their formal education. RIMSA seeks to prepare these students for college by providing a strong foundation for entering high school. As an early intervention program, RIMSA enhances and supplements regular

classroom experiences.

Through RIMSA, the students participated in an alternative-calendar, university-based academy that provided them with challenging, hands-on math and science experience. The academy was designed to stimulate, encourage, and involve young learners in their formal education. Daily classes were created to allow the students to explore math and science as well as computer science and creative writing by participating in interactive experiences related to these subjects. Each day ended with rap sessions, recreation, entertainment and study hall time. RIMSA students learned not only academic lessons, they also learned proper study habits, including how to work in teams.

A typical week in the academy included hands-on learning environments in math and science each morning. The math curriculum included The Algebra Project, which consists of a five-step process that moves students from concrete, familiar

experiences to abstract mathematical concepts. Science classes include projects such as constructing volcanoes, which erupted by using chemical compounds, and rocket building, which RIMSA students launched successfully. Students also created their own ecosystem environment using Bottle Biology curriculum.

In the afternoons, students participated in creative writing and oral communication skills classes that produced journals designed to help them express their daily observations and opinions. Students also attended classes in computer laboratories to develop both basic and advanced computer skills. They used word processing, database, graphing, and spreadsheet applications. In the CSLA computer NeXTlab, students were provided with the opportunity to explore astronomy, physics and biology on programs that displayed diagrams and performed functions relating to these subjects.

Twice a week, students

interacted with guest lecturers such as CSLA professors, minority speakers from science/engineering/math (SEM) careers and a local TV morning weatherperson. Health, nutrition and careers related to SEM were some of the topics covered.

Field trips emphasizing the many ways that math and science interact to support, promote and advance the needs and goals of our society completed each week. These trips included visits to local science museums, local industries, and a science harbor cruise.

Additionally, a college orientation was held for students to learn how to apply to colleges. Students received information on financial aid and other aspects of college entrance requirements.

The residential portion of the academy was followed by eight Saturday Science sessions lasting until the end of June. During the Saturday science sessions, students dissected fetal pigs and "surfed" the Internet. Parents were engaged in workshops during these sessions to provide them with information and support on topics such as "Parenting a Scholar" and "Improving Your School."

Through the RIMSA program, participating students recognized the possibility of attending college, many for the first time. The program also provided students with an opportunity to experience their potential and understand the importance of succeeding in their current courses in order to pursue a higher education degree. The RIMSA program made this possible by engaging students through a stimulating and otherwise unavailable university experience.

Program Director
The ACCESS Center
California State University, Los Angeles



RIMSA students dissecting a fetal pig during one of the biology sessions.

MU-SEMP catches the waves: DNA, CBLs, and much more!

by Dr. Iris DeLoach Johnson

The 1995 Summer Science Camp sponsored by Miami University's Science-Engineering-Mathematics Project (MU-SEMP) was packed with surprises for its second-year participants. Students had hands-on experiences with aquatic studies, belaying and wall-climbing, Computer Based Learning (CBL™) Systems and graphing calculators, Internet and World Wide Web, paper science, robotics, rocketry, technical writing, and Math Counts™ problem-solving. Students also spent a very eye-opening night in the Cincinnati Zoo. You don't KNOW the animals until you've been with them at night!

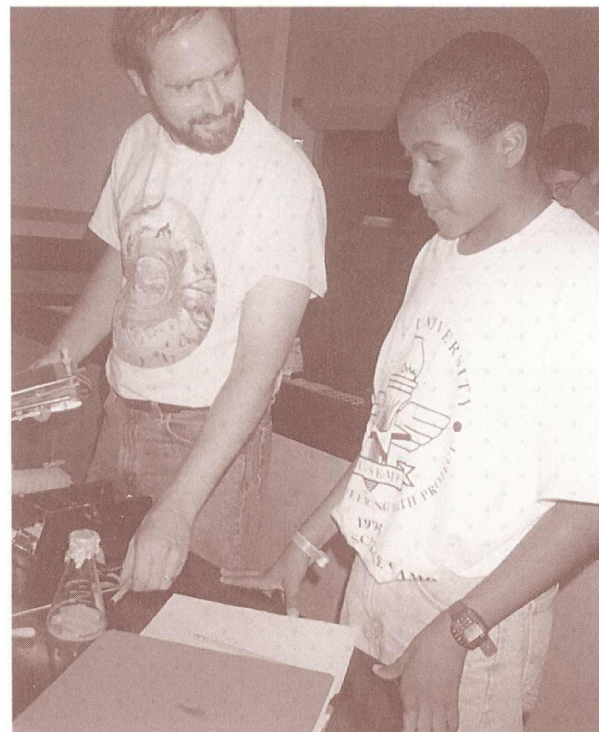
The second-year students participated in experiments rarely done at the middle school level. Working in pairs, students planted seeds in potting soil, gel soil, and sand at four different

pH levels. They investigated the action of plant growth in response to stimuli from the environment, and also observed the effects of two important phytohormones (auxin and ethylene). Using an interdisciplinary approach, the mathematics class helped track the plant growth using the TI-82 graphing calculator as the students investigated patterns in nature.

There's much, much more, but the highlight was the work of four students who were selected from the 52 participants this year to investigate recombinant DNA technology. One of these students, Willis Stamps II, the son of Willis J. and Robin E. Stamps of Cincinnati, Ohio, really showed tremendous scientific promise while attending a National Science Foundation Teacher Enhancement workshop directed by Dr. J. K. Bhattacharjee of Miami University.

Working in the DNA laboratory along with the 20 high school biology teachers who were selected to attend the workshop, Willis was assigned to Mr. Bill Fox of Germantown, Ohio, as a lab partner. During the workshop the students gained considerable scientific knowledge about gene engineering and some degree of proficiency in molecular biology and recombinant DNA technology. The hands-on experience gained while performing experiments involving recombinant DNA techniques and cloned genes of E. Coli and yeast will never be forgotten by Willis or the other three students (Deanna Brown, Esperanza Gallon, and Bethany Hargrove), who attended afternoon laboratory sessions in the workshop.

Miami University's Science-Engineering-Mathematics Project



Willis Stamps II helps Bill Fox, his lab partner, put away electrophoretic equipment after a DNA lab exercise

S.E.E.D. sprouts at Delaware Valley College

While preparations moved forward for another four-week summer camp in Delaware Valley College's National Science Foundation-sponsored Summer Environmental Explorations and Discoveries (S.E.E.D.) Program, Project Director John C. Mertz reported that follow-up activities involving participants in the previous summers' camps have kept him busy. Mertz has been serving as project advisor for several students at two of the Philadelphia middle schools serviced by S.E.E.D. as they prepare to display their science projects in their school science fairs. He has also been drafted to help judge parts of the fairs at the schools. He reports that some of the projects are continuing outgrowths of concepts the students first explored in camp as long as two years ago, so the spark remains alive.

One of the particularly rewarding offshoots of these efforts has been the opportunity to appear in a program, "Children First," recently aired on Philadelphia network television (WPVI, Channel 6). The program, hosted by local news personality Lisa Thomas-Laurie, focused on programs in Philadelphia that are having a positive impact on science education in inner-city schools. Several of the S.E.E.D. "graduates" were featured in the half-hour, prime-time segment in addition to Mertz, who had the opportunity to encourage youngsters to explore in the sciences and to grow with the opportunities the sciences can open for them.

Mertz also expressed gratitude for another opportunity being made available to a number of S.E.E.D. participants: Delaware Valley College and PRIME, Incorporated, a network of minority scientists and engineers who donate their time and expertise to help minority youngsters succeed in the schools, have jointly entered into a venture sponsored by the U.S. Department of Education, the Legacy Program, that offers mentoring and counseling support services to students in a number of Philadelphia schools. Three of the schools from which Mertz draws participants in the S.E.E.D. Program have also been designated by Legacy Director Stacy E. Holland as schools to be served by the Legacy Program and a number of the S.E.E.D. "graduates" are already enrolled to receive the services Legacy offers.

"The Legacy Program will provide these young people with personalized follow-up and assistance on a scale we could not have hoped to realize otherwise, services that will stay with them for the rest of their time in the school system," Mertz pointed out. "This is the kind of long-term encouragement NSF is so anxious to see built into or grow out of enrichment programs like our summer camp. We're delighted to be part of this more systemic effort."

Delaware Valley College

Technology Summer Camp introduces students to virtual reality and more

The room was quiet except for the giggles every time Dana Webster spoke. “Ooh, I’m at the drawbridge. Oooh,” she said to the giggles of the students gathered around her. Webster was navigating through a medieval castle in her first experience with virtual reality at the Human Interface Technology Laboratory at the University of Washington. The students were giggling because Webster, her head encased in a heavy helmet that covered her eyes, could see where she was going in the virtual environment, but not in the room.

Webster gained the virtual reality experience as part of the Technology Summer Camp (Tech Camp), a four-week residential program funded by a National Science Foundation grant and cosponsored by the College of Engineering at the University of Washington through the ECSEL Coalition (Engineering Coalition of Schools for Excellence in Leadership and Education), and the Washington State Mathematics, Engineering, Science Achieve-

ment (MESA) program.

In addition to their experience with virtual reality, the four-week camp focused on a different environment each week: one week was devoted to the urban environment, the forest environment, the marine environment, and the global environment. In the week focusing on urban environment, the students studied motion and built self-powered vehicles out of Lego. They participated in a simulation of flying to the moon in the Museum of Flight Challenger Mission Simulator. The week focusing on forest environment had them learning how to build and use probes for measuring light, heat, and temperature, which Professor Tom Hinckley of the UW’s Forestry department helped them test on camping trips to Mount Rainier and Mt. St. Helens. In the week focusing on the marine environment, the students watched whales on the San Juan Islands, and studied pollution and wild animals. In the week on global environment, the students visited the medicinal herb

garden, learned about paper recycling and paper making, and designed a solar house.

Tech Camp focuses on students entering ninth grade in the fall of 1995 who are interested in science and engineering and who are underrepresented minorities (African American, Hispanic, and American Indian).

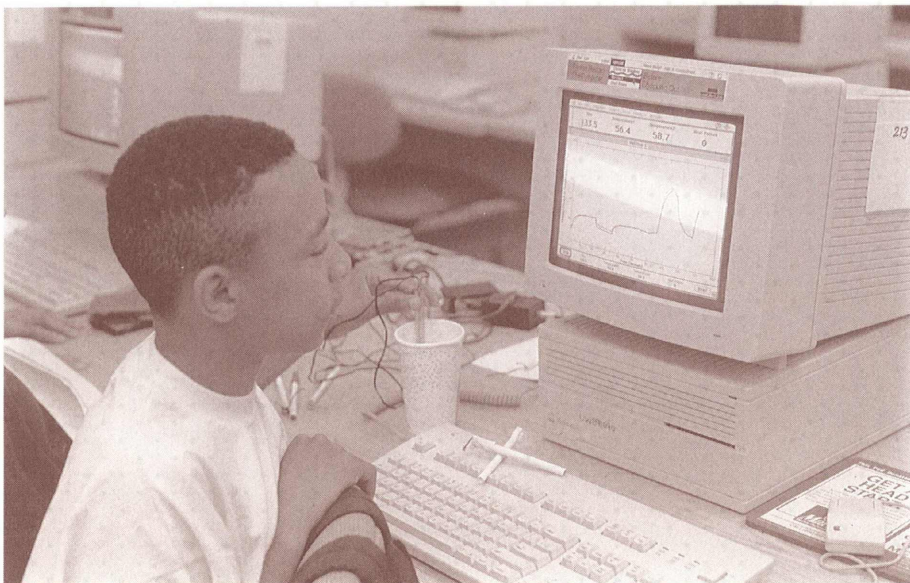
This was the fourth year for the camp, but some faces at the camp were familiar. “One of the neat things about Tech Camp is how we staff it,” said Robin Adams, the coordinator of the camp. Teacher Bruce Seiger, who has taught at the camp since the first year, was joined by seven former students who returned as counselors this year for one week each. One of those students, Reggie Brulotte, was a student in the first camp and has returned as a counselor each year since. “It’s really fun to come back and be able to help them understand what’s going on,” Brulotte said. “It’s neat to see when the kids understand.” Brulotte said that she was interested in science before she attended the camp, but she hopes that the Tech Camp will inspire this year’s class to pursue science and technology, “Hopefully we can get some of the kids here heading in that direction,” she said. Martez Johnson, a student last year, also returned as a counselor this year and was one of three counselors videotaping the camp for an end of the camp program. Johnson said that he came back to help because he feels the students appreciate having a peer to help them. “When you’re a kid you want someone your age to help,” he said.

For the first time the Tech Camp was divided into two classes—one taught by Seiger

and the other taught by Janet Burks. According to Adams, dividing the camp into two classes worked well because it allowed for a more personal interaction with the students, and created an environment that was more conducive to building bonds of trust and respect, which is especially important because Tech Camp is a residential camp. It also helped create a “true group feeling” among all the participants—both students and staff. “It’s nice to be able to work with a smaller group of kids,” said Brulotte.

The Tech Camp staff continues this “group feeling” by keeping in close contact with the participants through numerous newsletters, reunions and quarterly design projects. The staff believes that by keeping all (both past and present) students together they form an easier bridge to high school graduation and college. In fact, many of their first and second year students are currently in college pursuing science or engineering related careers.

The camp was concluded with a Career Fair, where the students had the opportunity to see some real world engineering and science applications, as well as meet with people from the UW Career Center and some of the national organizations for people of color (for example, the National Society of Black Engineers and the American Indian Science and Engineering Society). Students had a chance to see what kind of future opportunities are available—the students most frequently asked what salaries engineers make, what kinds of scholarships are available, and what should one do to pursue engineering as a



A student uses the computer to test a temperature probe.

Continued on page 5

SWAT (Science with a Twist!) by Howard K. Hardin

The SWAT (Science With a Twist) Teams in Jefferson County Public Schools, in Louisville, Kentucky, conducted the 1995 summer camps, which are funded by The National Science Foundation. Each camp offered new and exciting adventures for students.

Where better to discuss Karst topography and cave explorations than three-fourths of a mile below the surface of the earth while nestled in a large chamber in the back of a wild, muddy cave in Southern Indiana?

This is exactly how Bruce Key and Ernest Smith introduced these topics to students last summer at Iroquois Middle School. While visiting additional cave sites, students investigated how quickly ground water can become polluted. Through these observations, students explored the many ways in which humans contribute to the destruction of our water supply.

Another exciting adventure for students at Iroquois involved a map reading activity held in a local park. Students used problem-solving methods to find a certain designation by looking for indicators as they ventured through the park. Students loved these real life experiences and problem-solving; they wanted the camp activities to continue!

Southern Middle School's camp also had its share of adventures. The main focus of this camp was environmentally based. For the study of aquatic life, students of Pat Trittle and Cynthia Moxley designed and constructed a working pond in their classroom. The pond, fully equipped with a waterfall and plants, involved students in lab work to study life in the pond water. Using microscopes and pollution kits, students also studied the quality of water and air in the community to develop an understanding of the causes and effects of acid rain. Students also completed a nature study at Jefferson Memorial Forest and took several trips to the Louisville Science Center.

The students at the SWAT camp at Western Middle School solved mysteries and then learned to fly! First, someone took the pet class hamster and left a ransom note. For the next two weeks the team, under the leadership of Sharon Major and Liane Datillo, learned lab techniques to solve the crimes. Students analyzed hair and various "mock" illegal drugs, took fingerprints, and used chromatography to locate the pen that was used to write the ransom note. Through analysis, students discovered that the "criminal" was another teacher and, thankfully, the hamster was rescued!



A student exploring a cave.

During a mini-unit on forensic science, students visited the county medical examiner to see the techniques that are used in investigations. A United States attorney and several narcotics officers discussed evidence and data collection. The officers brought along a K-9 unit to demonstrate their effectiveness.

Also during the second week of the two-week camp, the students studied space travel and aeronautics. Activities included making model planes and a visit to the aviation magnet at Shawnee High School. All

students flew in a small plane; some turned a little "green," but all survived! The culminating event for this week arrived via the blue skies - when a STAT helicopter landed in the school yard. Students were blown away! The medics gave a very enthusiastic talk about their careers. An overnight trip to the space camp at Huntsville, Alabama, was thoroughly enjoyed by everyone!

Little wonder that students from Iroquois, Southern, and Western Middle Schools were eager to join the 1995 camp! VanHoose Education Center

Technology camp, continued

Continued from page 4

career. There were also demonstrations: UW bioengineering presented a demonstration where the students were able to electronically chart a magnet as it passed through the presenter's intestines; Zymogenetics presented a demonstration where

students did a hands-on experiment on blood clotting; a multimedia demonstration from CISO at UW allowed students to use the latest in technological tools for video capture and image reproduction; and two demonstrations from Boeing, compliments of Project Commute (a community based

science program for minorities) showed some of the applications of virtual reality and computer programming.

The camp introduced the students to a wide variety of science and technological concepts and tools, but they enjoyed it. "I've liked it so far," said Webster during the camp.

"We've done some interesting stuff." When asked what she had enjoyed the most about the camp, Webster said she liked climbing Mt. Rainier and Mt. St. Helens and using the probes they had designed. "I know I complained about it, but it was actually pretty fun," she said. University of Washington

CERSSC studies urban land use and its impact on water

by Lynnette Smith

For four weeks during the summer of 1995 the School District of Philadelphia conducted the Central East Regional Science Camp (CERSSC) at Edison High School for 50 minority middle school students, which will be held again in 1996.

CERSSC, which was funded by The National Science Foundation, pools students from nine middle schools in the Central East Region of the School District. CERSSC was designed to encourage minority students, who may have questioned their ability to "do" science or questioned the relevance of science in their daily lives, to understand how science relates to them, that careers in science are open to them, and that staying in school and continuing their science education is the best path to these careers.

Participants, who began

This year, 50 sixth grade students from the Central East Region of the School District of Philadelphia embarked on a journey into technology and environmental research during July. There were two goals for the four-week program:

- That students would be provided with opportunities to use a variety of cutting edge technologies to enhance visual, tactile, and kinesthetic hands-on activities to construct knowledge and to develop skills related to the geographical significance of the Delaware Estuary Watershed.
- That students would be provided with opportunities to research urban land use along the Delaware River and to develop strategies for personal involvement towards remediating the consequences of human and industrial land usage and its impacts on the quality of water that flows through this watershed.

The objectives for the project were that by the end of the camp the students would know how to do the following:

- Investigate local industrial sites and their impact on water and health.
- Investigate the water quality of various creeks and points along the Delaware estuary.
- Analyze data collected from regional environmental sites to ascertain their impact on the preservation of the waters along the Delaware estuary.
- Analyze data collected from northern points along the Delaware estuary where water enters a treatment facility and southern points where water reenters the Delaware River.
- Use spreadsheets, graphing, and geographical information system (GIS) software and equipment to graph, analyze,

and interpret water quality data as well as develop and generate site maps and illustrate organisms associated with each site.

- Develop and present orally a research paper on a topic of their choice.

The components of the camp were environmental awareness, laboratory activities, research, technology, field trips, and a final project.

The design of the environmental awareness component was based on the Conceptual Learning Model. In this component, the students were engaged in activities designed to allow them to develop a time line to track water pollution and to develop an awareness of the importance of water to their lives and their communities. Students also developed strategies for problem-solving and for their personal involvement in issues related to water. Some of the activities included studying water in our culture and language.

In the laboratory activities component the students used state-of-the-art equipment to perform various water quality parameters that included dissolved oxygen, dispersion of non-point pollutants, and parts per million.

In the research component, the students used electronic files, CD-ROMs, and other electronic information systems to collect data about local water environment issues.

The technology component saw students using computer graphics, spreadsheet, and GIS software to collect, analyze, and interpret data collected from various water sites. Students used GIS software and land location coordinate equipment to develop and generate maps about each site visited.

Students also used Hyperstudio to develop and present their final research projects.

The students also went on field trips that simulated various careers. The students had the opportunity to be assigned one or more of the following careers: researcher, photographer, cartographer, materials manager, and reader/recorder.

The students also prepared a final project, which they had to identify by the end of the second week. The students presented their research orally using multimedia presentation technology.

Each student received a certificate of completion and a stipend for the completion of their tasks.

But the research won't stop with the summer science camp. The students will continue their research during the school year. The culminating event of the summer science camp will be the George Washington Carver Science Fair in March 1996. To complete this task, the students will work with mentor science teachers at their home-based schools to get feedback on their projects and to complete the application process for the Carver Fair. During the school year students will also participate with their parents in the school year Saturday Science Programs held by the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers to learn about careers in science, mathematics, and engineering and to participate in problem-solving, hands-on activities in mathematics and science.

School District of Philadelphia

■ *CERSSC was designed to encourage minority students, who may have questioned their ability to "do" science or questioned the relevance of science in their daily lives.*

the project as upcoming seventh grade students, worked with their peers and the project staff during the summer to complete problem-based research topics related to the environment. Project staff conducted activities in four major areas—research, laboratory work, problem-solving, and technology skills—to help students develop their research projects, and also took students on field trips to environmental sites in the Philadelphia area.

Watch out Mars, we're here to stay!

On July 27, 1995, Boston area students participating in the MassPEP, Camp Tech program rolled up their sleeves to construct a Martian habitat at Wentworth Institute of Technology, Boston, MA. "Marsville: The Cosmic Village" had students constructing inflatable Martian habitats supporting life systems such as communication, recycling, recreation, air, water, food, and waste management.

Marsville, produced by Challenger Center for Space Science Education, is a space mission simulation designed to address the challenges of problem-solving in a multicultural setting. Students focused on academic content, team build-

ing, and responsible decision making.

"Marsville is a unique opportunity for students of different ages, abilities, and schools to work side by side in solving real environmental and technological problems," said Dick Methia, Vice President of Educational Programs for Challenger Center, which is headquartered in Alexandria, Virginia.

Camp Tech is a six-week summer science and technology program for students in grades 3 to 9. The National Science Foundation's Summer Science Camp program supported the 7th to 9th grade component of Camp Tech 1995. Camp Tech

presented an integrated math and science curriculum through hands-on projects in different areas such as Aviation, Lego/Robotics, Multimedia, MAGLEV/Solar Cars, and the Marsville/Cosmic Village. Since 1991 Camp Tech has collaborated with Boston area public school districts, the Boston Housing Authority, area corporations, and universities to bring urban and suburban students together for summer science and technology.

MassPEP programs, using engineering as a theme, encourage teamwork, problem solving and decision making, and are designed to inspire students in math, science, and technology.

MassPEP



Tamisha Watson, Vantrice Taylor, Jason Cain Chaton, and Ariella Salzberg test a virtual reality device as part of the recreation system for the Marsville habitat.

Rensselaer summer science enrichment program by Mark Smith

Rensselaer Polytechnic Institute is in its second year of a three-year grant from the National Science Foundation to support a five-week residential summer science camp for students entering grades 7 to 9. Participants are selected from Albany, Schenectady, and Rensselaer counties located in the Capital District Region of New York State.

The Rensselaer Summer Science Enrichment Program completed its first year with 53 residential participants selected from 81 applicants. This year's program, which began on July 10, enrolled 70 participants selected from over 160 applicants. Thirty students returned from last year. We were surprised by the increase in the number of applicants this year. We were to accommodate the 20 additional students through a one-year supplemental funding

grant from the NYNEX Foundation. Of this year's participants, 65 percent were African American and 35 percent Hispanic, 47 percent were male and 53 percent female, and 27 percent were entering the seventh grade, 40 percent the eighth, and 33 percent the ninth grades of the 24 schools represented.

This year participants attended four instructional units—physics of motion and machines, chemical mysteries, research skills, and project design. In addition, students were divided into teams to participate in recreation and sports activities. A parents' advisory group facilitated a series of workshops on decision making, conflict resolution, school-to-work skills, goal setting, and planning and applying to college. These workshops were offered to students and parents during the five-week program. Field trips to

local industries, mentoring by undergraduate and undergraduate Rensselaer students, and leadership activities occurred during the summer session.

One change from last year was the kind of training provided to undergraduate student assistants. Student assistants served as residential advisors and teaching assistants. During the first year it became clear that the principal way in which student assistants interacted with participants was based on their relationship with their siblings. This proved to be the least effective method of interaction. Consequently, a training program focused on issues relating to intellectual, social, and personal development, and strategies to facilitate growth during the five-week summer program and academic year. An effective student staff is critical to the success of the program. In addition, careful and deliberate

selection of a resident director, preferably an adult, creates a sense of community and safety within the program.

In these times of fiscal challenges, summer science camps fill a growing gap between the opportunity for inner city and rural youth who already have a low expectation to engage in challenging science and mathematics instruction, and the ability of well meaning parents and communities to seek meaningful summer experiences for these youths. To engage middle school youth in summer educational support programs expands the presence of colleges and universities in local schools and communities and generates future scientists, engineers, and mathematicians whose first commitment is to those institutions that supported them early in their school careers.

Project Director
RPI

ScienceQuest participants share memories and learning experiences at annual reunion by Laurie Kittrell

A chance to reminisce, rediscover old friends, and learn even more about science was what campers from the 1994 ScienceQuest camp had hoped for, and that is exactly what they got at the



Students at the ScienceQuest reunion pose with a lifelike cow statue at the Mayfield Dairy Farm plant.

annual ScienceQuest reunion held on June 20 in Athens, Tennessee.

Athens proved to be the perfect spot for the reunion because it lies approximately halfway between Knoxville and Chattanooga. Those two cities are host to the annual ScienceQuest summer camp, and most of the participants live in the vicinity of either Knoxville or Chattanooga. Hosting the reunion in Athens was not merely a matter of convenience, however, since the city is home to several businesses whose daily operations rely on science. The ScienceQuest group was given excellent tours of two of those businesses—Johnson Controls and Mayfield Dairy Farms Inc.

The Johnson Controls facility was the first tour stop and served as the meeting place for the two groups of participants. The students were given an up-close look at manufactur-

ing processes of the plant, a major supplier of automobile seat frames to U.S. automobile manufacturers. The plant uses robotics for many aspects of production, and the ScienceQuest veterans were able to see several robots in action. They were also shown many other pieces of equipment, as well as the gauges used to test the different parts of the seat frame for quality. After the tour, a human resources representative as well as several technical experts were on hand to answer questions about plant operations and the preparations needed for a career in a technical field. The students were advised that courses in math and science, a positive attitude, and a drug-free lifestyle are all essential to their future careers.

After the visit to Johnson Controls, the students had lunch at an Athens restaurant in a room reserved just for them. There they enjoyed a special meal, got reacquainted with friends from the previous summer, and looked at albums full of photos from the 1994 camp. The lunch break was also a time for the students to complete ScienceQuest evaluation forms and to share with each other the ways their ScienceQuest experiences helped them during the school year.

"ScienceQuest helped me learn about teamwork and helped me get along with my peers. I also learned to build robots, which was a big help with science projects at school," said Clomeisha Robinson, a student at Orchard Knob Middle School, near Chattanooga. Clise Johnson, a student at Robertsville Middle School in Oak Ridge, agreed that ScienceQuest helped build skills in teamwork, as well as in mathematics.

Lunch was followed by a tour of the Mayfield Dairy Farms facility, where the group learned about the plant's 200,000 gallon-a-day milk operation, as well as its ice cream, juice, and frozen yogurt production. Of special interest to the students were the blow mold machines, which are used to make Mayfield's distinctive yellow milk jugs. The tour guide explained to the group that the yellow color is not just for marketing purposes—it actually helps retain flavor and nutrients by preventing the milk from being exposed to light. The students also saw the milk containers being filled by massive machines in another part of the building. Although they were unable to tour the laboratory due to construction, they received an in-depth description of the scientific testing done on all Mayfield's products to ensure quality and freshness and viewed some of the testing procedures on videotape.

Of course kids will be kids (and so will their adult chaperons), so the most popular part of the Mayfield's tour for everyone was at the end when they were treated to ice cream cones. However, this part of the tour was not without scientific merit, since the young scientists were able to see a real-life application of physical science as they raced to finish their treats before the hot summer sun turned solids into liquids.

ScienceQuest 1995 was held July 5-28 in Knoxville and Chattanooga. The camp is administered for the National Science Foundation by Oak Ridge Associated Universities, located in Oak Ridge, Tennessee. The camp is designed to generate interest in science and mathematics among minority students at the middleschool level.

Oak Ridge Associated Universities

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