



MATHEMATICS & SCIENCE CENTER

ANNUAL REPORT

2002-03

The Mathematics & Science Center delivers educational programs that lead and support area school divisions in developing all students' math and science skills. The six member school divisions provide the operating budget of this educational consortium: Chesterfield, Hanover, Henrico, King William and Powhatan counties and the city of Richmond. Other school divisions also participate through special lessons-on-a-fee basis or Institutional memberships: Prince George and Charles City counties, the cities of Hopewell and Petersburg, and St. Bridget's School and the Steward School.

Students, teachers, and parents learn in the Center's uniquely designed award-winning facilities, in regular school classrooms equipped with special materials and visiting staff, through web-based programs, and in special Saturday and summer programs on campus and at a variety of locations throughout the community.

An electronic report available at
<http://mathsciencecenter.info>



METRO RICHMOND SCIENCE FAIR

- 616 students submitted papers to be screened for presentation at the 11th Annual Metro Richmond Science Fair.
- 296 papers were selected for presentation at the Fair held at Deep Run High School.
- 30 of the Fair’s winners participated in the Virginia Science and Engineering Fair, winning 9 awards.

Metro Richmond Science Fair. The Center fosters the development of future scientists through sponsorship of this regional fair, now affiliated with the Intel International Science and Engineering Fair.

Professional Development. The Center “teaches the teachers” through courses, workshops, field experiences, and model classroom lessons.

Saturday and Summer Courses for Students. The Center provides state-of-the-art programs and opportunities for students and parents such as the Saturday Adult-Child, Discoverers, and Questers programs and a variety of summer programs including one-week courses for all students and the Regional Summer Governor’s School for Middle School Youth.

Strategic Planning. The Center continuously dialogues with participating divisions to establish educational priorities and develop appropriate services.

Web-Based Programs. The Center provides on-line information and is currently developing new web-based educational sites for students and on-line educational resources for teachers.

Weekday Lessons & Kits for Students. The Center staff teaches lessons in the Center’s designed classrooms, mobile facilities, or area classrooms. In addition, specialized equipment and instructional kits are circulated for use by teachers.



- The Fair became an official member of the Intel International Science and Engineering Fair. Marissa Kessler of Mills E. Godwin High School represented the Metro Richmond Science Fair at the international competition and was among the 300 of 1100 students receiving awards (fourth place in biochemistry).
- 16 students were selected to participate in the Discovery Channel Young Scientist Challenge program and 2 students were recognized as national finalists.
- The MSC Foundation provided cash prizes for 19 first place winners including all categories of the senior division and 4 categories of the junior division.

PROGRAM PARTICIPANTS, 2002-03

Program	Participants
Metro Richmond Science Fair	616
Professional Development for Teachers	2,226
Saturday and Summer Courses for Students	3,549
Web: mathsciencecenter.info	381,972
Web: SpiderRoom.info	TBD
Weekday Lessons & Kits for Students	166,885

- Over 200 volunteers and 16 businesses provided cash, in-kind donations, and volunteer hours to make the Fair successful.



PROFESSIONAL DEVELOPMENT

- The Center taught the teachers through 73 different workshops, field experiences, and graduate courses. More than 2,226 teachers received 12,784 contact hours of instruction.
- A multiyear sequential training program for teachers pursuing middle school mathematics, Algebra I Add-On, or Secondary Mathematics endorsements continued. Fourteen courses were taught in partnership with Virginia Commonwealth University and Norfolk State University. Eight of the courses focused on mathematical content and six on the application of various calculator and computer-based technologies to the teaching of mathematics.
- Thirty-eight teachers learned to create web-based lessons using Microsoft Word and Dreamweaver. Twenty-five teachers learned to use Geographic Information Systems (GIS) to teach the earth and environmental sciences. The Dwight D. Eisenhower Program, and the State Council of Higher Education for Virginia, provided funding for these institutes.
- Twenty-seven elementary and middle school teachers improved their understanding of probability and statistics through a two-week institute funded by Capital One Financial Services, Inc.
- Twenty-four teachers continued coursework for an Interdisciplinary Master's Degree offered through Virginia Commonwealth University, the University of Virginia, and the Center. As part of their fellowship, participants taught in the Center's educational programs. Funding was provided by the GK-12 Program of the National Science Foundation.
- Twenty math and science educators increased their understanding of real-world applications through in-depth visits to area businesses. CAPER, PEER, and the Center sponsored the institute.



SATURDAY AND SUMMER COURSES FOR STUDENTS

- 3,549 students received 39,691 contact hours of instruction through a variety of special programs outside the regular school day.
- 1,783 adults and children participated in special classes offered at the Center and in area schools including special PTA programs. New courses included *Digi-Block Math* for kindergarten students and *Electrical Circuits* for fourth graders. Courses were offered throughout the school year and during the summer.
- 495 students participated in the Center's revised Saturday Morning Discoverers Program, now offered to fourth and fifth graders. New course titles included *Animal Trackers*, *Chemistry of Toys*, and *Computer Math Games*.
- 564 middle and senior high students participated in the Saturday Morning Questers Program with offerings at the Center, MCV, and the VCU School of Engineering. Among the six new courses were *Roller Coaster Physics* and *Wildlife Explorers*.
- The Regional Governor's School for Middle School Students was expanded from four to six courses and enabled 164 students to benefit. New course offerings included *The Microcosmos*, *LEGO-Robotics Challenges*, and *From the Ground Up*.
- 106 gifted fourth and fifth graders learned advanced mathematics through fall and spring sessions of *Topics in Math*.
- 437 students explored math and science through the one-week courses taught in the Center's Summer Programs for fifth through twelfth graders.

STRATEGIC PLANNING

- The Commonwealth Educational Policy Institute at Virginia Commonwealth University completed a study of web-based educational programs suitable for the Center and made recommendations to a joint meeting of the MSC Board and the MSC Foundation Board. The MSC Foundation and the MSC Operating Budget funded the study.
- Over 75 individuals participated in a yearlong strategic planning process to articulate priorities for the Center.
- The MSC Board approved three major educational priorities for the Center: professional development for educators, web-based educational programs, and a new service model for weekday programs offering a choice of student or teacher programs.
- The MSC developed a multiyear plan, based on eight objectives, for achieving the major priorities set by the divisions.



WEB-BASED PROGRAMS

- The Center implemented <http://mathsciencecenter.info>, a new informational web site containing information and registration materials for the Center's programs for teachers, students, and schools. In the first year 381,972 visitors engaged in sessions.
- *SpiderRoom.info*, the Center's first educational web site was launched. In the first year TBD visitors engaged in sessions. The site contains interactive lessons, on-line surveys, hands-on experiments, and on-line quizzes and rewards. The Memorial Foundation and Virginia General Assembly provided funding.
- Seven web-based lessons for high school students were piloted. The interactive lessons introduced students to modern scientific instruments including gas chromatographs, ALTA reflectance spectrophotometers, and a variety of calculator-based sensors and probes. The Virginia General Assembly, Mathematics & Science Center, and National Science Foundation funded the lessons.
- All MSC Staff received training to develop web-based lessons using Microsoft Word and Dreamweaver.



WEEKDAY LESSONS FOR STUDENTS

- The Center taught 134,485 students, with 22,833 taught in the Center's designed facilities and 111,652 taught in regular school classrooms. The 134,485 participants received 190,107 contact hours of instruction.
- Thirty new classroom lessons were added including 14 new biological and earth science lessons, 3 new physical science lessons, and 13 new mathematics lessons. Topics ranged from the environmental impact of alien species to the physics of satellite launches to geometric concepts involved in art and architecture.
- The newly renovated Spider Room opened and a new lesson, *The World of Spiders*, for third graders was implemented. The Midlothian Rotary Club, Mary Morton Parsons Foundation and Windsor Foundation provided funding for the renovation.
- The Center's fresh and saltwater aquaria received new mechanical systems including aeration, filtration, and pumps. The William H., John G., and Emma Scott Foundation funded the improvements.
- Over 32,400 students received lessons based upon the instructional kits and specialized equipment lent by the Center, including the new *Spiderology Kit*.



2002-2003 STAFF

Julia H. Cothron	Executive Director	Drew Keller	Educator
Sam Albert	Maintenance, Henrico	Jackie Krajewski	NSF Scholar in Residence
Megan Anderson	Educator	Mitzi Leighty	Administrative Assistant
Kristina Anthony	NSF Scholar in Residence	Brenda Levy	Weekday Instructor
Vicki Armentrout	Weekday Instructor	Beverly Lewis	Business Manager
James Beasley	Educator	Virginia Lewis	NSF Scholar in Residence
Alia Bey	Weekday & Saturday Instructor	Chris Lundberg	Coordinator
Layah Bruce	Weekday Instructor	Melinda Mace	Office Assistant
Janice Bryson	Coordinator	Dorothea Martin	NSF Scholar in Residence
John Bunting	Coordinator	Betty May	Weekday Instructor
Gayle Bynum	Educator	Mary McCarthy	Weekday Instructor
Elaine Chapman	Weekday Instructor	Charles McNamara	NSF Scholar in Residence
Doug Childers	Weekday Instructor	Alice Middleton	Weekday Instructor
Tina Copeland	Weekday Instructor	Debbie Mitchell	Operations Assistant
Margaret DeLoach	Part-time Custodian, Henrico	Jennifer Newcomb	Weekday Instructor
Karol Edmunds	Weekday Instructor	Donna Newman	Operations Assistant
Marilyn Elder	Educator	Robin Newton	Director of Development
Mike Embrey	NSF Scholar in Residence	Mike Phillips	Custodian, Henrico
Vicki Farlow	Weekday Instructor	Rebecca Pittman	Educator
John Fink	Work-Study	Pat Priestas	Educator
Tawana Gilyard	Operations Assistant	Jerome Randolph	Assistant Educator
Frank Gulla	Educator	Martha Rogers	Coordinator
Ivery Hall	Weekday Instructor	Devon Ryan	Weekday Instructor
Norbert Hamm	Specialist	Janet Taylor	NSF Scholar in Residence
Rhonda Hawley	Educator	Grace Terry	Weekday & Saturday Instructor
Meredith Humphrey	NSF Scholar in Residence	Martha Vogel	Associate Educator
Carolyn Hunter	Sr. Account Technician	Gail Warren	Educator
Courtney Hunter	Educator	Joyce Watson	Educator
Kirsten Inocencio	Educator	Mark Webster	Specialist
Nannie Isler	Custodian, Henrico	Angela Wood	NSF Scholar in Residence
Richard Jainchell	Weekday Instructor	Denise Young	Weekday Instructor
Bill Jeffords	Associate Educator	Don Young	Weekday Instructor
Beth Kappus	Weekday Instructor		



MATHEMATICS & SCIENCE CENTER BOARD

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Mrs. Sue F. Watson	School Board Member	Hanover County Public Schools
Dr. Julia H. Cothron	Executive Director	Mathematics & Science Center



Mathematics & Science Center

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