

BALTIMORE COUNTY PUBLIC SCHOOLS

Date: February 11, 2003

To: Board of Education

From: Dr. J. Hairston, Superintendent

Subject: BCPS – UMBC National Foundation Grant
“School – University Partnership for Excellence Research-based (SUPER) Science, Technology, Engineering, Math (STEM) Project”

Originator: Christine Johns, Deputy Superintendent, Curriculum and Instruction

Resource Staff: Ronald Boone, Executive Director, Federal and State Programs
Kim Grabarek, Specialist for Teacher Quality, Federal and State Programs

Recommendation

That the Board of Education members receive details and have the opportunity to ask questions regarding this collaborative grant.

NATIONAL SCIENCE FOUNDATION GRANT

Baltimore County Public Schools, in partnership with the University of Maryland Baltimore County, has been awarded a five-year, \$13,001,219 teacher quality grant from the National Science Foundation (NSF) to fund the School-University Partnership for Excellence in Research-based (**SUPER**) Science, Technology, Engineering, and Math (**STEM**) Project. This project will enhance the system's capacity to provide all students with challenging math and science curricula in order to increase student achievement and eliminate achievement gaps. The grant project will also increase the number, quality, and diversity of prek-12 math and science teachers.

The partnership of the Baltimore County Public School (BCPS) and the University of Maryland Baltimore County (UMBC) proposes an innovative project that is based on research-based best practices for improving student achievement and teacher quality. The three primary goals are to: (1) increase the number, quality and diversity of preK-12 teachers of math and science in BCPS, (2) enhance BCPS's capacity to provide all students with challenging math and science curricula to increase system-wide student STEM achievement and reduce the race and poverty achievement gaps, and (3) conduct ongoing assessment of the project's outcomes and contribute to the development of national capacity to introduce and sustain successful math and science education reform.

To achieve these goals, the project will:

- Create Science, Technology, Engineering, and Math (STEM) Academies in the following schools: Hebbville Elementary, Dogwood Elementary, Featherbed Lane Elementary Primary and Intermediate, Southwest Academy, Woodlawn Middle, and Woodlawn High, where all science, technology, engineering, and math (STEM) educators in the academies will receive high quality professional development. In addition, UMBC interns will be placed in these buildings and will participate in a high quality teacher- training program to become certified teachers after one year.
- Expand the UMBC Urban Teacher Education Principal, Teacher, and Intern Scholarships to recruit and retain the most talented science, technology, engineering, and mathematics (STEM) educators. Upon completion of the program and certification requirements, a total of 178 UMBC interns agree to spend four years teaching in a high-need Baltimore County public school, in order to stabilize the teaching forces at the BCPS science, technology, engineering, and mathematics (STEM) academies, provide exemplary teachers for other BCPS high-need schools, and increase student achievement.
- Provide over 100 hours of science, technology, engineering, and math (STEM) training to 1,760 teachers to equip teachers to align curriculum, instruction, and assessment; diagnose students' academic needs; and identify best practices required to differentiate instruction across disciplines.

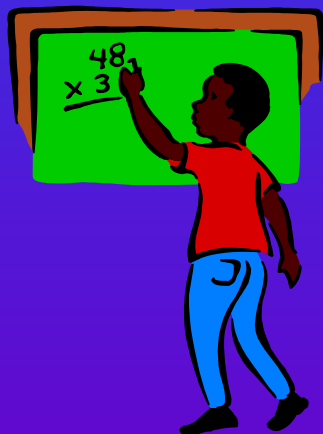
- Provide weekend and summer accelerated academic coursework for students in the aforementioned schools.
- Identify and hire Visiting Scholars, talented scientists and educators, to accelerate the development and teaching of scientifically based, technology-oriented curricula.

In 2002, the National Science Foundation funded seven Comprehensive Awards, with a success rate of 8%, for a total of \$47million. Eleven states received awards. Baltimore County Public Schools, in partnership with University of Maryland Baltimore County received one of the seven Comprehensive Awards totaling \$13,001,219.

NATIONAL SCIENCE FOUNDATION

MATH-SCIENCE PARTNERSHIP(MSP)
PROGRAM GRANTS:

COMPREHENSIVE AWARD



Awarded by NSF to the

BCPS - UMBC



Partnership

The BCPS – UMBC Partnership:

- Is one of only seven grants awarded nationwide.
- Received funding despite a grant application success rate of only 8% for this program.



School-University Partnership for Excellence in Research-based (SUPER) Science, Technology, Engineering, and Math (STEM) Project

- Grant Total: *\$13,001,219*
- Time Period: *10-1-02 through 9-30-07*
- Principal Investigators: *Christine Johns,
John Lee*

Grant Goals:

- Enhance schools' capacity to provide all students challenging math and science curricula, increase system-wide student STEM achievement, and reduce the race and poverty achievement gaps.
- Increase the number, quality, and diversity of math and science teachers, especially in low-performing, underserved schools.
- Conduct ongoing assessment of Project outcomes and targets and contribute to the national capacity to introduce and sustain successful math and science education reform and disseminate products and results.

Grant Purpose:

- 178 Math & Science teachers from private sector to be placed in challenged schools.
- 9 high-tech computer labs.
- 1760 BCPS Math/Science teachers trained in the use of technology through differentially engaging instruction.





- Year-round School-to-University enrichment experiences for students in underachieving schools.
- Development of innovative, technology-based math-science curricula.

Grant Goals and Purpose are:



- Directly aligned with teacher quality and high academic standards components of *No Child Left Behind* and *Bridge to Excellence*.
- Reinforces *Blueprint for Progress* Performance Goals 1 (“... all students will reach high standards ...”), 3 (“... all students will be taught by highly qualified teachers.”), 5 (All students will graduate from high school.), and 8 (“... efficient and effective use of resources ...”)



The Schools:

- Dogwood Elementary School
- Hebbville Elementary School
- Featherbed Lane Primary
- Featherbed Lane Intermediate
- Southwest Academy Middle School
- Woodlawn Middle School
- Woodlawn High School

STEM Academy Interns by Year

Year One

STEM Academies:

Interns:

Dogwood Elementary

Group 1: 12

Hebbville Elementary

Group 2: 28

STEM Academy Interns by Year

Year Two

STEM Academies:

Interns:

Dogwood Elementary

Group 1: 4

Hebbville Elementary

Group 2: 10

Featherbed Primary

Group 3: 10

Featherbed Intermediate

Group 4: 22

Southwest Academy

STEM Academy Interns by Year

Year Three

STEM Academies:

Interns:

Featherbed Primary

Group 1: 4

Featherbed Intermediate

Group 2: 6

Southwest Academy

Group 3: 12

Woodlawn Middle

Group 4: 24

Woodlawn High

STEM Academy Interns by Year

Year Four

STEM Academies:

Woodlawn Middle

Woodlawn High

Interns:

Group 1: 16

Group 2: 30

**Approximately 6,094 students
in STEM academy schools will
benefit from NSF Grant
initiatives!**



Challenging Curricula:

- Establish visiting STEM scholarships to attract talented scientists and educators from businesses, universities, and school systems.
- These “visiting scholars” along with BCPS and UMBC staff will accelerate the development and implementation of research-based constructivist curricula and educational practices to provide all students with challenging science, math, and technology curricula.
- Curriculum development will be coordinated and aligned with current BCPS curriculum and curricular initiatives as well as with Maryland Learning Outcomes.

BCPS NSF Grant Advisory Board Members

Advisory Board from BCPS, UMBC, and private partnerships have been selected. The board will meet on March 14, 2003.

