



Solutions

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INNOVATIVE PARTNERSHIPS FOR EDUCATION

Science Success in South Bound Brook

Motivated by a desire to help South Bound Brook students develop a deeper understanding of essential mathematics and science concepts, Sue High and five of her fellow teachers participated in The College of New Jersey's NJ SSI Partnership Program, where they received professional development training and produced a comprehensive five-year strategic plan to guide the district's 48 faculty members.

"The NJ SSI Partnership Program helped us recognize the value of ongoing professional development and the need for in-depth analysis of student achievement data," said Mrs. High.

With ongoing consultation from NJ SSI's Dr. Robert Weber and Amari Verastegui, Mrs. High and her team reorganized the district's science curriculum and introduced the Full Option Science System (FOSS) and Science and Technology for Children (STC): sequential, grade-appropriate science programs. FOSS and STC provide self-contained kits that promote an inquiry-based approach to solving science problems. These programs are part of South Bound Brook's long-term strategy and have contributed to an overall increase in student achievement in science. From 2002 to 2004, South Bound Brook's GEPA Science passing rates increased by 10 percentage points, from 71% to 81%.

In 2004, Mrs. High and her team implemented Everyday Math and Connected Math, two new programs that encourage students to develop their own team-based strategy to mathematics problem solving. They are hoping these programs will also lead to similar student achievement gains in mathematics.

Over the past three years, South Bound Brook faculty has placed greater emphasis on professional development. Teachers have begun to meet in study groups regularly where they share best practices on teaching strategies, assess students' work, and recognize individual learning needs. Moreover, district teachers are tailoring mathematics and science curricula to promote improved student achievement and are offering extra instruction to students who need it most.

"Teachers have noticed their students have a firmer grasp on the material taught, and are solving mathematics and science problems with greater ease and confidence at a high level," said Dr. Carol L. Rosevear, Superintendent, South Bound Brook School District.

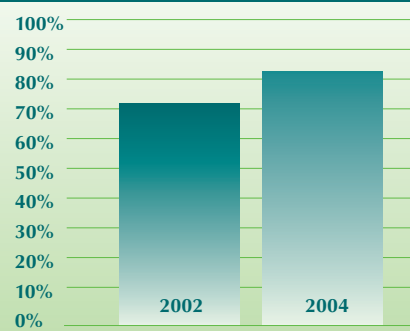
"Our teaching of mathematics, science, and technology has been revitalized at all grade levels. The training and curricular materials NJ SSI has provided have empowered teachers in their professional work. Students are interacting and engaged in their own learning at a high level," added Dr. Rosevear.

In the 2004-2005 school year, South Bound Brook met many of the yearly progress indicators toward No Child Left Behind (NCLB). The district's enthusiasm is certain to pave the way for continued successes in the following years. "The students are benefiting more than ever," added Mrs. High.

"I believe I speak for all South Bound Brook teachers when I say that working with NJ SSI has been a tremendously rewarding professional experience," added Dr. Rosevear.

For further information about the NJ SSI Partnership Program, visit <http://njssi.rutgers.edu> and click on "News and Events."

**SOUTH BOUND BROOK
GEPA SCIENCE PASSING RATES**



A group of 3rd grade students examine minerals and explore the concept that rocks contain minerals. They also complete streak and hardness tests to identify mineral properties (from the STC Module Rocks and Minerals).

NJ SSI welcomes back our Regional Centers, school districts, and all statewide partners to the start of a new school year. *Solutions* highlights district success stories and provides our partners with news and information. In this issue you'll find:

- Science Success in South Bound Brook . . . 1
- Bristol-Myers Squibb Center Opening . . . 2
- GEPA Gains in Lindenwold 3
- News from the NJ DOE 3
- Calendar of Events 4

Inside

Bristol-Myers Squibb Center Opening at Montclair State

On October 24, the NJ SSI Regional Center at Montclair State University (MSU) will celebrate the opening of the Bristol-Myers Squibb Center for Science Teaching and Learning. Funded by a facilities grant of \$500,000 from the Bristol-Myers Squibb Foundation, the five-room center houses PRISM programs to improve teacher preparation in mathematics and science. Existing programs of PRISM (Professional Resources in Science and Mathematics) have been supported for several years by Regional Center grants from NJ SSI. The PRISM programs have expanded recently under a three-year Math-Science Partnership grant (\$866,000 for 2005-06) from the NJ State Department of Education.

“We have taken to heart the alarming reports that tell us that high school students in the United States are at the bottom of the ladder when it comes to science and math literacy rates in industrialized nations,” said MSU President Susan Cole. “We in the university community must find better ways to teach the skills students will need to compete in this 21st century, global economy.”

According to a recent National Center for Education Statistics study of eighth-graders, students in other industrialized nations perform better in mathematics and science than their counterparts in the United States. The study reported that higher levels of achievement were demonstrated when teachers placed emphasis on experiments, practical investigations and problem-solving – all key components of an inquiry-based teaching methodology.

In the recent academic year, PRISM provided professional development in inquiry-based approaches to more than 700 teachers in 48 school districts. Dr. Jacalyn Willis, PRISM founding director, said, “I am pleased that the new operations and facilities award provides recognition of the successful 10-year track record of PRISM. The Bristol-Myers Squibb Center allows us to build on our successes, acquire new resources, add additional programming, and expand into more school districts.”

PRISM programs support best teaching practices in mathematics and science through summer institutes, classroom coaching, workshops, conferences, field experiences, videoconference dialogues with scientists and

mathematicians, credit-bearing courses, and strategic planning programs for district staff. The Bristol-Myers Squibb Center for Science Teaching and Learning strengthens collaboration of scientists, mathematicians, and education professionals in the design and delivery of inquiry-centered teaching approaches.

A signature program of PRISM that is slated for expansion is “The Rainforest Connection,” which ties researchers in a tropical forest habitat in Panama directly to students in New Jersey classrooms. The research-centered videoconferences will include new field locations and additional scientists and topics for the next school year.

The university-corporate partnership that supports PRISM programs may serve as a model for improve-

ment of science and mathematics education. John L. McGoldrick, executive vice president, Bristol-Myers Squibb, noted that, “Our partnership with academia strives to give our teachers and their students the finest resources to enhance our talent pool and ensure that we continue to have the best scientists in the world.”

Bristol-Myers Squibb has funded two Centers for Science Teaching and Learning in New Jersey at Montclair State and Rider University. These Centers

are important extensions of a \$6 million commitment from the company started in 1993 to help raise the quality of science education in New Jersey.



Anna Mazzero and Jackie Willis, NJ SSI Regional Center Assistant Director and Director, designing the workshop on adaptations of teeth.

For over twelve years, NJ SSI has engaged New Jersey school districts through its five Regional Centers, provided Standards Implementation grants directly to districts, and offered professional development and technical assistance programs. Supported by the State of New Jersey, and in collaboration with the Center for Mathematics, Science and Computer Education (CMSCE) at Rutgers University, NJ SSI has built and maintained the educational infrastructure to achieve statewide education reform and increase student achievement.

GEPA Gains in Lindenwold

Lindenwold's four-year partnership with NJ SSI has been a fruitful one. Since 2001, the district has received three Standards Implementation Grants to improve their mathematics and science curricula. Over the past four years, Joanna DiStasi, mathematics supervisor, and Richard Fitch, science supervisor, have noted the dramatic rise in GEPA test results: more than 31% for total students in mathematics, and almost 17% in science (see the graph below).

DiStasi and Fitch are delighted with the rapid improvement in their students' state test scores, and they cite NJ SSI's financial support and professional training as integral components to their district's success.

"NJ SSI's Standard Implementation Grants gave us the opportunity to make needed changes in both our teaching and student learning styles to an inquiry-based format in both mathematics and science. They provided the professional development required to affect these changes, along with the materials necessary for implementation," noted DiStasi.

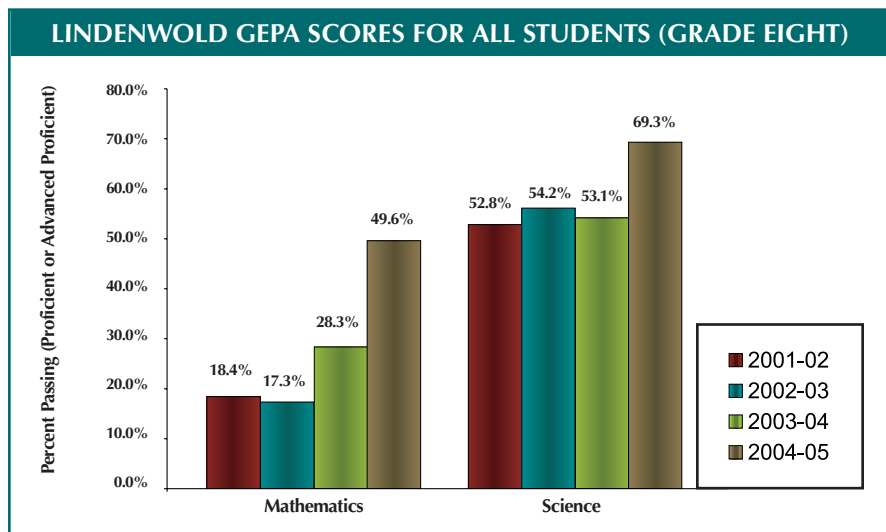
The NJ SSI Regional Center at Rowan University provided Lindenwold with professional development and mentoring in science to all the middle school and special education teachers in the district. In addition, Lindenwold has implemented a number of programs in the science curriculum, including STCMS, FOSS, Premier, SALI and IEY modules from SEPUP. District teachers had major input in selection of the modules and have developed a strong sense of ownership with the new curriculum.

Of approximately 16 modules in use, eight were implemented in grades 5 through 8 during 2003-2004; the remainder during 2004-2005. Training and implementation of inquiry-based science modules in grades K through 4 began last year and will be completed in 2005-2006.

In mathematics, Lindenwold selected the Everyday Math curriculum for the elementary level. During 2003-2004, these teachers attended professional training, provided by the NJ SSI Regional Center at Rowan. District grades 6, 7 and 8 students and high school special education classes have received the Connected Math program, which has demonstrated development of thinking skills and is aligned with the state standards.

"NJ SSI's support and guidance allowed us to make well-informed decisions about the best curricula for our students and teachers. Our GEPA scores confirm that we are on the right track to achieving significant gains in both mathematics and science," added Fitch.

For further information about the Standards Implementation Grants, visit <http://njssi.rutgers.edu> and click on "News and Events."



NEWS FROM THE NJ DOE

Michael Heinz joined the New Jersey Department of Education as the Science Coordinator in July 2005. Prior to arriving at the NJ DOE, Mr. Heinz taught 8th grade science and a high school Geographic Information Systems course at the Woodbury Public Schools. In addition to his regular instructional duties, Mr. Heinz served as the Team Leader for the NASA Explorer School. "The partnership with NASA refined my vision of how standards-based instruction can look in practice. It proved to me that my commitment to student-centered instruction is powerful and effective," he remarked.

Prior to moving to New Jersey, Mr. Heinz was a staff developer in the Corpus Christi Independent School District in Corpus Christi, Texas. He worked in collaboration with Education Trust to improve literacy skills and to increase rigorous standards across content areas.

He earned his Bachelor of Science degree in Secondary Education, with an emphasis in Earth and Space Science at Penn State University and his Master of Science degree in Curriculum and Instruction with an emphasis in mathematics and science education at Texas A & M University - Corpus Christi.

In addition to his responsibilities as the State Science Coordinator, Mr. Heinz will be serving as the Program Officer for the U.S. Department of Education's Math Science Partnership grants in New Jersey. He will also be collaborating with school personnel from across the state on a number of professional development projects.

He can be reached at michael.heinz@doe.state.nj.us or by contacting him at (609) 984-7453.

CALENDAR OF EVENTS

SEPTEMBER

9/13 – 12/20 (9 sessions)
Annenberg Series: Physical Science (K-8)
 CMSCE, Rutgers University
 9/19 – 5/14
Introduction to Real Time Data (K-12)
 (offered throughout the year)
 CIESE, Stevens Institute of Technology
 9/22
Foundations of Physical Science (7-12)
 County College of Morris
 9/28 – 12/15
Annenberg Series: Geometry (K-8)
 (10 sessions)
 CMSCE, Rutgers University

OCTOBER

10/4 – 5/12
Savvy Cyber Teacher: Using the Internet Effectively in the K-12 Classroom (K-12)
 (10-week course offered throughout the year)
 CIESE, Stevens Institute of Technology
 10/5 – 10/6
New Jersey Science Convention
 Garden State Exhibit Center, Double Tree Hotel, and Holiday Inn, Sommerset, NJ
 10/12 or 10/19
Exploring Internet Resources for Mathematical Problem-Solving (6-9)
 CIESE, Stevens Institute of Technology
 10/17, 10/18
Science NJ ASK Assessment Workshop (2-4)
 Rowan University
 10/18, 10/19, 12/12, 12/13
Family Tools and Technology (4-7)
 The College of New Jersey
 10/19
Pre-K Conference: Meeting the Learning Expectations for Mathematics and Science (Pre K-Kdgn.)
 County College of Morris

NOVEMBER

10/25
Our Solar Connection (5-12)
 Raritan Valley Community College
 10/26 – 10/28
Association of Mathematics Teachers of New Jersey Conference
 Marriott Hotel and Garden State Exhibit and Convention Center, Somerset, NJ
 10/27 – 3/23/06
Dynamic Classroom Assessment (6-12)
 Rowan University
 10/28
CPO Physical, Earth & Space (6-12)
 Rowan University
 NOVEMBER
 11/1
Preparing Students for NJ ASK 3 & 4 Math Assessments: Working with Data, Number Sense: Whole Numbers (3-4)
 CMSCE, Rutgers University
 11/1
Using the Internet to Enhance Math Instruction (3-12)
 CMSCE, Rutgers University
 11/2, 11/15, 12/6, 12/14
Lenses on Learning (Part 2)
 (administrators and supervisors, K-8 math)
 NJ SSI and NJMSP, Rutgers University Foundation for Educational Administration and New Jersey Principals and Supervisors Association
 11/2
Preparing Students for NJ ASK 3 & 4 Math Assessments: Patterns, Algebra, and Geometry (3-4)
 CMSCE, Rutgers University
 11/2
Introduction to Hands-On Astronomy (5-12)
 Raritan Valley Community College
 11/3
8th Annual Symposium for Math, Science, and Technology (K-12)
 Rowan University

11/3
Preparing Students for NJ ASK 3 & 4 Math Assessments: Measurement, Number Sense and Fractions (3-4)
 CMSCE, Rutgers University
 11/3
Developing Algebraic Concepts for the HSPA (9-12)
 Rowan University
 11/3, 11/17, 12/8
Math NJ ASK Assessment Workshop (3-7)
 Rowan University
 11/7
Achieving Success With The NJ ASK: Activities and Strategies for Use in the Math Classroom (3-6)
 CMSCE, Rutgers University
 11/15
CPO Science & Physics (9-12)
 Rowan University
 11/15
Bringing Environmental Science into Your Classrooms: Ecosystems (4-8)
 CMSCE, Rutgers University
 11/18
Neo Sci: Technology for AP Biology and AP Chemistry (7-12)
 County College of Morris
 11/29
Strategies to Prepare Special Education Students for the HSPA
 CMSCE, Rutgers University
 11/30
Introduction to Hands-On Astronomy (5-12)
 Raritan Valley Community College
 DECEMBER
 12/1
CPO Science Physics First and Foundations of Physics (7-12)
 County College of Morris
 12/1
Test Prep in Science for GEPA/HSPA (6-12)
 CMSCE, Rutgers University

12/1
Preparing Students for NJ ASK 3 & 4 Math Assessments: Working with Data, Number Sense: Whole Numbers (3-4)
 CMSCE, Rutgers University
 12/2
Preparing Special Education Students for the GEPA (5-8)
 CMSCE, Rutgers University
 12/5
Preparing Students for NJ ASK 3 & 4 Math Assessments: Measurement, Number Sense and Fractions (3-4)
 CMSCE, Rutgers University
 12/5, 12/6
Science HSPA Assessment Workshop (9-12)
 Rowan University
 12/6
Messages from Space (5-12)
 Raritan Valley Community College
 12/7
Brush Up Your Math/Science for Pre-Engineering (5-12)
 The College of New Jersey
 12/7 or 12/14
Learning Mathematics with Dynamic Geometry Software (6-9)
 CIESE, Stevens Institute of Technology
 12/9
The Creative Classroom: Integrating Math and Technology (6-12)
 Middlesex County College
 12/12, 12/13
Science GEPA Assessment Workshop (5-8)
 Rowan University
 12/13
Bringing Environmental Science Into Your Classrooms: Human Population
 CMSCE, Rutgers University (4-8)
 For additional information about these events and other professional development opportunities, please visit the News and Events section of the NJ SSI web site at: <http://njssi.rutgers.edu>

Developed and designed by David Eng Communications



INNOVATIVE PARTNERSHIPS FOR EDUCATION

Rutgers, The State University of New Jersey
 640 Bartholomew Rd.
 Piscataway, NJ 08854-8003

Tel 732-445-2241
 Fax 732-445-2848
<http://njssi.rutgers.edu>

NJ SSI REGIONAL CENTERS

- The County College of Morris
- Montclair State University
- Rowan University
- Rutgers University
- The College of New Jersey