Math Curriculum Report

Presentation to the Board of Education

December 2, 2003

Timetable for Math Review

- **Sept. '01 → June '02:** Committee Meetings, Review of Math Performance, Visitations to Observe Overall Programs, Data Collection
- **Summer '02:** Curriculum writing begun.
- **Sept. '02 → June '03:** Committee Meetings, Elementary Program Visitations; curriculum writing continues.
- **Jan. '03:** PTSA Presentation and Discussion on review process, performance and planning.
- **Summer '03:** Curriculum writing completed for all courses K-12; Planning for piloting completed.

Timetable for Math Review (con't)

- **Sept. '03 → Jan. '04:** Elementary Pilot by K-5 Teachers
- **Nov. '03:** Parent Information Sessions
- **Jan. '04:** Selection of Elementary Program
- **Feb. '04 → Summer '04:** Elementary Staff Development
- **Sept. '04 → June '05:** Implementation of new elementary program, ongoing staff development for elementary teachers; Middle School math groups reduced from 4 to 3; HS courses added.

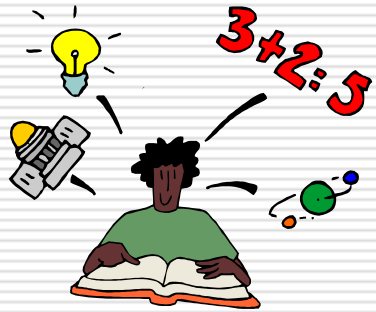
Math Curriculum Committee

- James Buckley
- Kari Carlson
- Joel Cassidy
- Kerry Castro
- Francine DeDonato
- Jennifer Dolan-Waldman
- Laurie Dyno
- Dolores Garcia-Blocker
- Raina Kor
- Don Kuhn
- Theresa McCauley
- Judy Nadler
- Karen Nurmi
- Karen Palmer
- Mrinalini Rajwar
- Joe Rodriguez
- Lisa Schofield
- Rey Serrano
- Krista Shortino
- Lisa Urban
- Frank Viggiani
- Laurel Warager

NYS Key Concepts in Math

#1 - MATHEMATICAL REASONING - Students use mathematical reasoning to analyze mathematical situations, make conjectures, gather evidence, and construct an argument.

#2 - NUMBERS AND NUMERATION - Students use number sense and numeration to develop an understanding of the multiple uses of numbers in the real world, the use of numbers to communicate mathematically, and the use of numbers in the development of mathematical ideas.



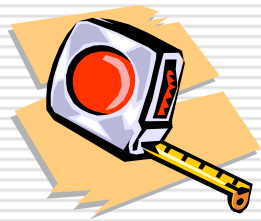
NYS Key Concepts in Math (con't)

#3 - OPERATIONS - Students use mathematical operations and relationships among them to understand mathematics.

#4 - MODELING / MULTIPLE REPRESENTATION - Students use mathematical model/multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships.

NYS Key Concepts in Math (con't)

#5 - MEASUREMENT - Students use measurement in both metric and English measure to provide a major link between the abstractions of mathematics and the real world in order to describe and compare objects and data.



#6 - UNCERTAINTY - Students use ideas of uncertainty to illustrate that mathematics involves more than exactness when dealing with everyday situations.

#7 - PATTERNS / FUNCTIONS - Students use patterns and functions to develop mathematical power, appreciate the true beauty of mathematics, and construct generalizations that describe patterns simply and efficiently.

Data Collection from Other Schools

- Surveyed Westchester districts for general questions.
- Visited districts to discuss overall math program:
  - Byram Hills
  - Ardsley
  - Edgemont
- Observed elementary math classes in:
  - Scarsdale (Trailblazers)
  - Ardsley (TERC)
  - Chappaqua (Everyday Math)
- Had presentations to Irvington staff from:
  - Representatives of each publishing company
  - Teachers from Scarsdale and Ardsley

School Visitations

GENERAL INFRASTRUCTURE

- What is your enrollment, grade configuration, class size, number of sections per grade?
- What is the length of instructional time per day?
- What is your grouping policy?
- What are your criteria for placement?
- How easily and often do students move?
- How do you communicate with parents about placement, program?

School Visitations (con't)

CURRICULUM

- What program/texts are you using?
- How long have you been using this program?
- What staff development has been necessary?
- How much is the program supplemented by teachers? Why?
- What assessments do you use?
- Are materials (manipulatives) specific to the program?
- Do you have a written curriculum for these grades?
- How does the district coordinate curriculum?
- How do you monitor the implementation of the curriculum between grades and buildings?

School Visitations (con't)

SUPPORT SERVICES

- How do you provide for students who don't meet state standards?
- AIS services?
- Is there a math lab?
- Do you use any computer assisted instruction for support?
- To what extent do you include special education students?
- Do you have any before or after school support for students in math?

Visitation Findings

- There was a significant difference in the amount of instructional time in Irvington and the districts visited: 45 minutes In Irvington, 60 minutes in districts visited.
- There was a difference in grouping patterns; no district had between class regrouping for math at the elementary level.
- All schools were continually revisiting their math instruction; some had recently changed programs, others were considering change.
- Ongoing staff development was recommended.
- Standardized tests linked to the NYS testing program were commonly used.
- Preparation for NYS tests was more of a focus than in Irvington.

Math Pilot Program Teachers

- Cathy Buttino
- Claudia McNamara
- Krista Shortino
- Janice Bochicchio
- Susan Buck
- Laurel Warager
- Kari Carlson
- Kerry Castro
- Peggy Farley
- Julie Milio
- Michelle Griffin
- Katie Kavanaugh
- Sarah Carnahan
- Ronnie Alpert
- Carol LaBella
- Diane Robson
- Lisa Schofield
- Judy Nadler
- Mary Jane Roth
- Carla Peters
- Joan Snell

Areas of Focus for Pilot

1. Enrichment as part of the program
2. Integrated use of manipulatives
3. Critical thinking
4. Strong assessment component
5. Conceptually based
6. Process oriented
7. Developmental approach
8. Ease of differentiating instruction
9. Thorough computational component

Areas of Focus for Pilot (con't)

10. Constructivist approach with modeling
11. Clarity of language
12. Everyday applications of math
13. Homework component
14. Consistent with NCTM standards
15. Integrated calculator use and application
16. Clearly written and laid out teacher's guides
17. Suitability for high achieving students
18. Suitability for low achieving students

Parent Information Sessions

Nov. 14 and 19, 2003

1. Curriculum Review Process
2. New York State Standards and Testing
3. Hands-on Math Experience
4. History of the Current Program
5. Student Performance Results
6. Current Practice
7. Pilot Programs
8. Teacher Training
9. Meeting the Needs of All Students

Recommendations

1. Increase instructional time at the K-5 level. (Implemented in September 2003.)
2. At 3rd grade, students will remain with their homeroom teachers for all subject areas so that the teacher's knowledge of the student's abilities in reading and writing can be incorporated into math instruction.
3. At 4th and 5th grades, students will work with one teacher for ELA and social studies, another teacher for math and science, allowing teachers to focus their planning on specialized areas to reflect student interests and abilities.
4. At Grades K-3, staff development will be provided to all teachers in whichever math program is adopted.
5. At Grades 4 & 5, staff development will be provided to teachers specializing in math and science instruction.

Recommendations (con't)

6. At Grades 6 – 8, modify the grouping practices to have three groups at each grade.
7. Continue to offer Math A (HS course) to an appropriate number of 8th graders.
8. In 2004-05, allow time for teachers at Grades 5 & 6 to review impact of new elementary program, work in the summer to modify the Grade 6 program as necessary.
9. Increase math elective offerings at the HS such as Statistics, other application courses.
10. Revise Math A and Math B courses to reflect NYS changes.