Lincoln Public Schools

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To: School Committee
From: Mary Sterling
Re: Status Report on Beginning Phase of Implementing New Middle School Math Curriculum
Date: October 14, 2009

This status report provides the background for a significant change in the middle school math program, describes the early weeks of using new materials and new instructional approaches, and offers some impressions of this first phase of implementation.

Background

Curriculum Materials

In spring 2009, the School Committee accepted the recommendation of the Superintendent to bring in a new middle school math program in grades 6, 7 and 8. As outlined in the May 6th report to the Superintendent, the Middle School Math Review Committee recommended the selection of *Impact Mathematics* as the core program for our middle school because it offers the following strengths:

- Multi-year program is comprehensive and developmentally appropriate for middle school students
- Real life applications engage students in making mathematical connections that are relevant to their lives
- Cumulative units of instruction focus on the development of algebraic thinking and integrates the other strands of mathematics at all three grades: Number & Operations, Geometry, Measurement, Probability & Statistics
- Organization and philosophy combine the thinking of "reform" and "traditional" mathematics curricula so that conceptual understanding and procedural skill develop together and support each other

In addition to the selection of this core program, the recommendation for an Advanced Algebra section at grade 8 with a different text was also endorsed. The text chosen for this section is: Algebra: Structure and Method Book 1, by Dolciani, Brown, et al, published by McDougal Littell, 1994.

Implementation Plan

The Middle School Math Committee's recommendations included a plan for successful implementation involving the following components:

- sufficient funding for all phases of implementation
- purchase of adequate student and teacher materials
- specific and sustained teacher support and professional development, including METCO and special education staff
- timely communication to teachers, parents, students, and the community

Fortunately, sufficient funds were made available and all necessary materials have been purchased. Professional development began in the summer and has been scheduled in regular intervals during the year. Parent communication has begun and will continue throughout the year.

First Phase of Implementation

Professional Development and Collaboration

Over the summer, math and special education teachers, the METCO academic advisor, and math specialists were involved in professional development to acquaint them with the overall organization and philosophy of the *Impact* program and to prepare them for the first unit of the school year. In addition, special attention was paid to differentiation. In a summer session facilitated by two veteran teachers who have experience with *Impact,* teachers became familiar with the options for differentiation that are built into the program and they explored available resources to serve as ancillary materials.

Some of our math specialists were reassigned to focus on the new middle school program and provide collaborative support to math teachers. Each grade on each campus has a designated math specialist. They participate in the professional development opportunities and they function as co-planners and co-teachers in targeted classrooms. In particular, the math specialist focuses on the resources and systems needed to integrate differentiation on a daily basis. They also work directly in class with groups of students who need extra reinforcement or advanced learning opportunities.

Teachers truly appreciate the guidance and expertise of Faye Ruopp, principal investigator of *Impact* and accomplished math coach, who was the consultant for the summer and has agreed to work with teachers during the school year. In Ms. Ruopp's first round of meetings, teachers have benefited from her practical suggestions for using the program strategically and her advice about how to customize assessments to derive meaningful information about student performance. She will be visiting classes and debriefing with teachers at several points during the year. An early focus has been differentiation: approaches to using pre-assessment and options for different levels of classwork and homework.

Parent Communication

In September, letters were mailed home to parents of students in both the *Impact* program and the Advanced Algebra I section. (The *Impact* letter is available on the district website: www.lincnet.org select drop down menu for Administration, click on "Curriculum & Instruction," and then click on "News.") The letters describe the main emphasis for student learning and invite parents to stay in touch with the teachers as the new programs were implemented. For parents of students using *Impact,* the letter offered an invitation to hear Faye Ruopp make a presentation on the program on each campus. Those evening parent meetings were held in late September and early October. The turn-out was modest: about a dozen parents attended at Hanscom and a dozen in Lincoln. Parents also receive an introductory letter at the beginning of each new unit in *Impact.* These introductory letters are available to families through the on-line component of the *Impact* program. At the September Curriculum Open House evenings on each campus, math teachers discussed the new program and demonstrated some of its components.

The First Six Weeks in Impact Classes

Students express a generally positive attitude toward the new program. In classes I visited, several students commented on the clarity of the explanations in the text. Others appeared to follow the books' organization easily for independent work and for small group work. Teachers comment that students appreciate the variety of opportunities to work individually, in a small group, and with the whole class. They also enjoy some of the real life applications of math. Middle school students are adjusting to the expectation that problem-solving is a main focus through daily "Investigations" and that explaining their thinking is an essential and frequent part of their math learning.

Teachers have worked with students to develop systems of keeping track of class notes and work, homework, and assessments. Although each class varies, teachers are beginning to differentiate based on student readiness to take on more challenging work or student signals that more reinforcement is needed. The *Impact* program provides options in every lesson to work in class at different levels. Furthermore, there are three types of homework for each lesson, allowing teachers to customize the assignments based on student need and capability. Some homework is designed for students to practice new skills, some is intended to extend and challenge students' understanding, and some homework reinforces both skills and concepts that were previously taught.

Advanced Algebra I

The Dolciani/Brown Algebra I book is a classic presentation of Algebra concepts and procedures. The content is comprehensive and rigorous. The text's clear and straightforward format is relatively easy for students to access. Because there is a lack of exciting or intriguing math applications, the teacher uses some ancillary materials to engage students with extra problems and challenges.

Twenty-seven students on the Lincoln campus were recommended for the Advanced Algebra I course based on multiple points of assessment in grade seven. The district hired an additional .2 math teacher and created two sections of the course. Students in the Advanced Algebra I sections have been enthusiastic and motivated. The teacher reports that they are working well on the math and with each other. They have discovered that not everything comes easily in Algebra I and they have had to put in extra effort to learn some unfamiliar aspects of math. As the fall has progressed, the students seem to be willing to take more risks, ask more questions, and advocate for themselves when they need assistance understanding something new.

The Months Ahead

Teachers will continue to learn each new unit of the *Impact* program and will work with Faye Ruopp to refine their instruction. Differentiation will include using the *Impact* "Inquiry Investigations" and will introduce more ancillary materials such as Drexel University's Math Forum and the Exeter Math Program problem sets. Common Assessments will be selected to administer to students and then district-wide teachers will undertake a collaborative analysis to discover trends in student performance and adjust instruction accordingly.