

**Executive Guide  
to the  
Report of the Mathematics Summer Research Committee**

**The Summer Research Committee members:**

Dot Ball	Betsy Keegan
Math Department Chair	6 <sup>th</sup> grade teacher
Hollis Brookline High School	Hollis Upper Elementary School

Caryn Miller	Patti Flynn
4 <sup>th</sup> grade teacher	6 <sup>th</sup> grade teacher
Hollis Upper Elementary School	Hollis Upper Elementary School

Karin Pillion  
Math Coordinator  
Brookline School District

**The major focus of the research:**

- Reviewed the National Mathematics Advisory Panel's (NMAP) report.
- Compared SAU 41 math curriculum to the curriculum from states whose frameworks were highly rated by the Fordham Foundation Study – Massachusetts and California.
- Researched best practices in enrichment opportunities.

**The Summer Research Report contained 65 recommendations in the areas of:**

- 1) Curriculum
- 2) Administration
- 3) Students
- 4) Parents
- 5) Teachers
- 6) Data

Overall, the report recommends that our focus as a community needs to remain on the end result – which is the math achievement of our students at the end of 12<sup>th</sup> grade.

- 85% of Hollis-Brookline students will pursue some type of post-secondary degree.
- Success in algebra is crucial.
- SAU 41 should prepare students for success in algebra.

## **Recommendations - Highlights and responses:**

### 1) Curriculum

#### Recommendation #1, #4, #5, #8, #11 & #25(paraphrased):

#1: Schools should increase emphasis on automaticity of math facts.

#4: Schools should define “mastery” at each grade level and develop strategies to move from “mastery” to “skill maintenance” at each grade level.

#5: Schools should develop goals requiring each student to meet grade-level benchmarks on a yearly basis leading to complete mastery of arithmetic by the end of 6<sup>th</sup> grade.

#8: Mathematics curriculum Grades K – 6 should be re-written with more emphasis on ARITHMETIC skills. This is not to suggest that SAU #41 curriculum should abandon NCTM standards or New Hampshire GLE’s.

#11: SAU #41 should continue to coordinate elementary school mathematics so that both Brookline School District and Hollis School District require the same level of mastery at the end of 6<sup>th</sup> grade.

#25: Administrators ensure that all teachers are using the checklist effectively.

#### Response:

The SAU Math Checklist of Skills has been updated to reflect automaticity/mastery benchmarks for each grade level. The checklist also includes added rigor for math skills for students. This checklist will be implemented in all SAU #41 schools k-6<sup>th</sup> grade. The checklist can be found at:

<http://www.sau41.k12.nh.us/Curriculum/Templates/Math/SAU%2041%20Mathematics%20Checklist.pdf>

#### Recommendation #3, #64 & #65 (paraphrased):

#3: Schools should use traditional algorithms.

#64 & #65: Purchase new textbooks.

#### Response:

The Hollis School District has changed the Pre-k – 6<sup>th</sup> grade math program to enVision Math. This program focuses on traditional algorithms. A link to the recommendation of the math textbook committee can be found at:

<http://sau41/PDFs/H%20MATH%20TEXTBOOK%20COM.pdf>

#### Recommendation #12: (paraphrased):

Hollis elementary schools develop multiple strategies for practice including the use of PDAs, Smartboards, computer programs and web-based practice.

#### Response:

The enVision Math series has a web-based component for multiple ways to practice and re-teach skills. This website can be accessed by staff, students and families.

#### Recommendation #17: (paraphrased):

As soon as possible, pacing guides should be developed for each grade level.

#### Response:

Pacing guidelines for envision math have been set for HUES. HPS will follow the pacing guides provided by the publisher and finalize after the first year of implementation. Both HPS and HUES also developed a common assessment plan for the use of multiple assessments so that all students are ensured an equal math grading program. This allows for flexible grouping to operate smoothly.

Recommendation #22 (paraphrased):

The 6<sup>th</sup> grade math curriculum is to be followed by all teachers in the same manner.

Response:

The 6<sup>th</sup> grade team at HUES is clear about the expectations for its students in the area of math. After discussions with administrators from HBMS, it was never the intention for teaching to be interrupted for placement testing. This practice will no longer happen.

Recommendation #33:

Special Education teachers and paraprofessionals receive the same professional development in mathematics that is provided to classroom teachers.

Response:

All teachers, special educators, and para-educators have been provided the same professional development for the new enVision Math program.

Recommendation #35 & #38:

#35: Hollis School District should develop a more meaningful program for math enrichment. Once this program is developed, it should be followed by all teachers in a consistent manner.

#38: When enrichment is chosen for a student, the enrichment activity should be meaningful. It should be obvious how a student will increase their mathematical thinking processes and/or knowledge by completing the enrichment activity.

Response:

New math activity binders have been compiled for grades 1 – 6 during the summer of 2009 for implementation in the 2009/2010 school year. These activities are not extra math; they provide opportunities for students to use their math knowledge/skills and fully integrate them to solve challenging problems.

## 2) Administration

Recommendation #16 (paraphrased):

Provide opportunities for faculty of different grade levels and different buildings to discuss the math program from their particular vantage point.

Response:

Early release days were used during the 2008/2009 school year and will continue to be used for math discussion during the 2009-2010 school year.

Recommendation #20:

Educators in the Hollis School District should review the guidelines regarding the amount of math homework that is appropriate for each grade level.

Response:

Homework guidelines are in place. However, HPS and HUES task teams will review the guidelines for accuracy and implementation practices.

Recommendation #23:

When a decision is made as to the “best math program for the Hollis School District,” it is imperative that it be supported by all math teachers in the district and the SAU.

Response:

Administration will oversee implementation.

3) Students

Recommendation #21, # 31 & #32 (paraphrased):

#21: Hollis School District provide more resources to further develop early intervening services under the RTI program in mathematics.

#31: Special educators work more closely with the classroom schedules to ensure that learning is not compromised.

#32: When possible, special educators support the classroom math objectives by providing services in the classroom as opposed to a resource room.

Response:

HPS and HUES had developed early intervening strategies for students in need in the area of mathematics. At HPS this consists of existing staff entering classrooms to support students, with some pull-out groups as needed. At HUES, this consists of the special educator team and the math support teacher teaching the math curriculum in flexible groups during the math block time.

4) Parents

Recommendation #39 & #40 (paraphrased):

Provide parent education and support.

Response:

Math resources for parents have been posted to Hollis website. Current plans are underway for a math night for parents during the 2009/2010 school year.

5) Teachers

Recommendation #28:

Educators need to determine what strategies can be used to encourage children to put forth more effort.

Response:

Focused discussions at HPS and HUES have led to a flex grouping model with peer coaching and math support in the classrooms for identified and early intervening students.

Recommendation #43 & #45 (paraphrased):

Teachers should be provided with ample opportunities for professional development as well as mentor support in the area of mathematics.

Response:

Hollis School District has imbedded math expertise to provide individual and small group math coaching to all teachers.

Recommendation #48 (paraphrased):

Professional development time to analyze NWEA scores to drive instruction

Response:

Teachers have been provided common planning time and team time to analyze NWEA scores during the 2008/2009 school year. This practice will continue during the 2009/2010 school year.

Recommendation #50 (paraphrased):

Explore creating teams with similar proficiency levels. This recommendation is implying that teachers use data from multiple assessments to reduce the range of proficiency levels and create flexible grouping opportunities for students.

Response:

HPS and HUES are currently implementing flex groups in the area of mathematics.

6) Data

Recommendation #51 & #52 (paraphrased):

All teachers should be assessing prior knowledge before beginning a new topic and implement strategies to meet the needs of students.

Response:

All HPS and HUES teachers will pre and post test students in each topic area in the enVision Math program to drive their instruction. Information will be used for the creation of flexible groups at HUES.

Recommendation #58 (paraphrased):

Administration of local assessments should be re-evaluated in light of the data provided by NWEA.

Response:

A Hollis Data Cohort was formed in October 08 and is reviewing the current data matrix.

Recommendation #60 (paraphrased):

All three districts (Hollis, Brookline, and Hollis Brookline Cooperative) should work collaboratively on data analysis.

Response:

Powerschool has been purchased SAU-wide which will allow for quick and collaborative analysis of data.

This summary is intended to provide an overview of those recommendations having the most immediate impact on Hollis students, and how the Hollis School District is responding to those recommendations. As we progress, we will work toward addressing the many other recommendations contained in the report.

Regular updates will be provided to the community via Hollis School Board meetings and on the Hollis School District website.

**Next Steps 2009/2010 School Year:**

The **HPS and HUES Math Task Teams** will begin work on the following recommendations:

*Recommendation #6:* Hollis educators will investigate students' understanding of equality (as recommended by the National Math Advisory Panel Report and by our own research committee). Math Task Teams will use data from the NWEA and NECAP tests to validate whether this is a concern for the Hollis School District.

*Recommendation #7:* If the data supports the concern, it is recommended that teachers research and develop strategies to help students better understand these concepts.

*Recommendation #14:* The technology teachers for the Hollis elementary schools should help teachers better identify appropriate technology tools to develop mastery and automaticity of basic facts.

*Recommendation #20:* Educators in the Hollis School District should review the guidelines regarding the amount of math homework that is appropriate for each grade level.

*Recommendation #29:* Some teachers have observed increased math phobia in 6<sup>th</sup> grade students. Data should be gathered for further investigation of this observation.

The **SAU Math Task Force Committee** will begin work on the following recommendations:

*Recommendation #9:* SAU #41 should develop a long-term goal that all students will complete Algebra 1 or Introduction to Algebra 1 in 8<sup>th</sup> grade. The SAU Task force will explore if this is feasible.

*Recommendation #10:* SAU #41 should develop a long-term goal that all college-bound students will take Algebra 3/Trigonometry or Precalculus in High School.

*Recommendation #18:* Collaboration with the Brookline School District should be maintained to ensure that SAU 41 grade level expectations are being achieved by both school districts on the same timeline. This coordination ensures that all students entering HBMS do so with the same focus of instruction.

*Recommendation #19:* Educators within the Hollis School District should develop guidelines pertaining to the use of a 4-function calculator.

*Recommendation #26:* SAU #41 Math Task Force should consider rewriting the “Checklist of Skills” in terms of a “Sequence of Skills.”

*Recommendation #27:* Administrators create structures by which educators in their buildings keep abreast of developments in math curriculum and make changes to the curriculum as well as the delivery of the curriculum accordingly.

*Recommendation #34:* Any plan that is developed to identify “mathematically promising” students should use multiple measures and should be research-based.

*Recommendation #36:* If a decision is made to allow students to vertically accelerate, consideration must be made as to the impact on curriculums in HBMS and HBHS. The impact of providing Algebra to qualifying 6<sup>th</sup> graders must also be considered.

*Recommendation #56:* The Committee will develop a list of Professional Development Opportunities. This should serve as the beginning of a regularly updated list that is easily accessible to all teachers.

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