

## **Improved Mathematics Knowledge and Skills**

All students demonstrate improved mathematics knowledge and skills.

### ***Vision Statement***

Our students are deep mathematics thinkers that have mastery, also, of basic and procedural skills. They use multiple strategies to solve real world problems. Our students value the practical application of math. They understand that effort counts greatly toward their success in math learning. Our students are motivated to achieve automatic recall of facts and fluency with math procedures. Students develop and apply critical thinking as they progress in the mathematics curriculum.

We envision a rigorous streamlined math curriculum that focuses on depth of understanding that is based on a coherent progression of topics of ascending difficulty from preschool through high school graduation. To prepare students for Algebra, the curriculum must simultaneously develop conceptual understanding, computational fluency, and problem-solving skills. These capabilities are essential for higher level mathematics beyond algebra.

We use a balanced instructional approach that incorporates student centered learning and teacher directed instruction, providing students with opportunities to learn independently and in a group. Instruction is differentiated to ensure access of the curriculum for all students. Technology is used appropriately to support instruction and learning. We envision all students engaged in a minimum of 60 minutes of math instruction each day.

The Newburyport community understands the importance of life-long math learning from birth through college and beyond. Our parents believe that effort is more important than ability in determining a child's math performance. Literacy in mathematics is as fundamental to individual success as reading and writing. A strong mathematics education is essential for any citizen who is to be prepared for the future. Our student's parents understand this and support the schools and their children in this learning process. Effort counts

### ***Opportunity for Improvement***

Newburyport students are scoring below state expectations on the state MCAS test in mathematics in grades 4–8. The Newburyport School district uses three different math programs in grades K-8. A written curriculum is just beginning to emerge, but program specific thinking still dominates. Currently, too little time is spent on mathematics instruction on a daily bases and there are inconsistencies in instruction from school to school and classroom to classroom. The absence of a fully articulated curriculum leads to redundancy and inefficiency in instruction. Newburyport like many school districts must continue to deepen the content knowledge of all teachers of mathematics as supported by research reported in the National Math Panel 2008. The current instructional approach in math needs to achieve more balance between student centered learning and teacher directed instruction. There are inadequate supports for struggling students and students who are ready to accelerate. Parents and the community in general are not aware of the increasing importance of high level math literacy that will be required of students in the new global economy and work place.

**Root Cause: Absence of a complete Pre-K – 12 curriculum has lead to a dependence on programs and texts to define what is taught rather than a defined curriculum**

<b>Long Term Strategies</b>	<b>FY010 Specific Actions</b>
<p>Develop a robust math curriculum that ensures the coherent progression of topics Pre-K - 12</p> <p>Reduce elementary math programs from three to two</p>	<p>Identify the most critical topic at each grade level and the relationship between grade levels</p> <p>Identify the learning benchmarks at each grade level and develop assessments to evaluate individual and class achievement.</p> <p>Implement Investigations in Grade 2</p> <p>Prepare Grade 1 with professional development for Investigations implementation in FY11.</p> <p>Continue release time for curriculum development work</p> <p>Support math programs at all levels by providing budget to update texts and materials</p> <p>Continue support for math coaching in the district</p> <p>Establish team to develop strategic goal for STEM-- Science, Technology, Engineering, Math for inclusion in the spring 2010 Strategic Plan update.</p>

**Root Cause: Insufficient time is provided for mathematics instruction district wide and large variations occur between schools and classrooms.**

<b>Long Term Strategies</b>	<b>FY010 Specific Actions</b>
<p>Establish minimum of concentrated ‘time on learning’ standard for daily math instruction at each grade level.</p>	<p>Implement minimum of concentrated time on learning standard for daily math instruction grades 1-8 and full day kindergarten.</p> <p>By 2010-2011 school year the high school will implement a schedule that includes a minimum</p>

	<p>of 60 minutes of <u>daily</u> math instruction.</p> <p>Block schedule elementary mathematics instruction to ensure consistent time on task with mathematics.</p> <p>Maintain current Middle School commitment 60 minutes of daily math instruction.</p>
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**Root Cause: Teachers and administrators need sufficient content knowledge and best instructional practices in mathematics as suggested in current research.**

Long Term Strategies	FY010 Specific Actions
<p>Provide professional development for educators at all grade levels to deepen content knowledge and knowledge and skills in best instructional practices.</p> <p>Investigate concept of specialized elementary math teachers and design pilot program for FY11.</p> <p>Hire and retain highly qualified math teachers K-12.</p> <p>Ensure that teachers new to the District are given initial training in Newburyport's curriculum and program.</p>	<p>Provide teachers new to the District with initial training embedded in mentor program.</p> <p>K-8 math coach/specialist and High School Department Chairs and members will coordinate support of new teachers</p>

**Root Cause: Insufficient support for students on either end of the learning continuum—those requiring intervention and students who demonstrate mastery beyond the grade-level curriculum.**

Long Term Strategies	FY010 Specific Actions
<p>Develop assessment plan that provides data on each student's knowledge and understanding of math concepts and skills.</p> <p>Determine and implement Tier 2 and Tier 3 math interventions.</p>	<p>Begin implementation of research-based best practices program of instruction with required professional development for implementation.</p> <p>Develop common assessments and provide time for teachers to evaluate and discuss data.</p>

<p>Develop philosophy and practices to address students who demonstrate mastery beyond the grade-level curriculum.</p> <p>Budget personnel and resources, if needed, to provide high quality interventions and curriculum for students at both ends of the continuum.</p>	
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**Root Cause: Lack of appreciation among community members for high level math literacy and a lack of knowledge of the significance of effort (as opposed to natural ability) in student’s math performance.**

<b>Long Term Strategies</b>	<b>FY010 Specific Actions</b>
<p>Educate parents and community on the importance of mathematics learning and the critical nature of ‘effort expended’ on math learning and the time spent on task.</p> <p>Parent education programs will provide information and skill development for parents of pre-school children that will ready students for school learning.</p> <p>Parent education programs and activities will familiarize parents with the curriculum, instructional strategies, and learning expectations at each grade level</p>	<p>Continue to hold elementary math/literacy nights.</p> <p>Develop list of best practices for circulation to teachers by year’s end related to teacher “send-homes” and communications in regard to math and helping parents to help students and shape student attitudes toward math.</p> <p>K-8 Math/Coach Specialist and NHS Mah Department Chair will collaborate to communicate concepts from the 2008 National Math Report to teachers, parents, and community.</p>