

MITCHELL & HILLSIDE SCHOOLS

PRE-FEASIBILITY STUDY

TOWN OF NEEDHAM – PUBLIC SCHOOLS
NEEDHAM, MASSACHUSETTS



MITCHELL ELEMENTARY SCHOOL



HILLSIDE ELEMENTARY SCHOOL

FINAL REPORT

6 JULY 2012



DORE & WHITTIER
ARCHITECTS, INC.

260 Merrimac St. Bldg 7, 2nd Flr • Newburyport • Massachusetts
Phone: 978-499-2999 • Fax: 978-499-2944
1795 Williston Road, Suite 5 • South Burlington • Vermont
Phone: 802.863.1428 • Fax: 802.863.6955
www.doreandwhittier.com

TABLE OF CONTENTS

TABLE OF CONTENTS AND ACKNOWLEDGEMENTS	A
INTRODUCTION AND BACKGROUND	B
EXECUTIVE SUMMARY	C
EDUCATIONAL FRAMEWORK REPORT	D
SPACE UTILIZATION AND EDUCATIONAL PLANNING	E
ENROLLMENT PROJECTIONS	F
CONCEPTS AND OPTIONS	G
COST ESTIMATES	H
APPENDIX	I

Meeting Notes- 4-9-2012 PPBC-School Committee Joint Meeting
Enrollment Projection Supporting documents (Analysis- FSN, and Chart)
Educational Program Summaries for each Option- incl Full Day K
Needham Public Schools- Class Size Policy
Cricket Field Assessors Map
Park and Recreation Motion dated 6/11/2012
Partial DeFazio Park-DPW boundary survey
Informational Sheet- "Clearing the Air on Hillside Elementary School Air Quality Issues"
Athletic Fields and Recreation Facilities Summary
Town of Needham Athletic Field Inventory

Acknowledgements

Needham Public Schools and Town of Needham

Dore & Whittier Architects, Inc. would like to acknowledge the following individuals for their dedication to the Town of Needham and for their assistance to the Design Team.

Needham School District Administration

- Daniel Gutekanst, Ed. D., Superintendent of Schools **
- Michael Kascak, Principal- Hillside School **
- Michael Schwinden, Principal- Mitchell School **
- Susan Bonaiuto, Director of Community Education & Planning **
- Anne Gulati, Director of Financial Operations **

Town of Needham Administration

- Kate Fitzpatrick, Town Manager
- Steven Popper, Director of Design & Construction, Dept. of Public Facilities – Construction **
- Hank Haff, Project Manager, Dept. of Public Facilities – Construction **
- Patricia Carey, Director of Park & Recreation Department **

School Committee

- Heidi Black, Chair*
- Joseph P. Barnes, Vice-Chair
- Connie Barr
- Marianne Cooley*
- Michael Greis
- Susan B. Neckes
- Kim Marie Nicols

Permanent Public Building Committee

- George Kent, Chairman
- Stuart Chandler
- John Keene
- Mark Presson
- Paul Salamone
- Irwin Silverstein

Design Team:

Architect/Project Manager

- Dore & Whittier Architects, Inc. **
- Newburyport, MA and So. Burlington, VT
- www.doreandwhittier.com

Educational Planning

- Frank Locker Educational Planning
- Dover, NH

Cost Estimating

- PM&C
- Hingham, MA

* School Committee PPBC representatives for this project

** Members of the Working Group

INTRODUCTION & BACKGROUND

Study Overview

This Pre-Feasibility Study is the next installment of a multi-step process that the Town of Needham and Needham Public Schools has undertaken to determine a long-term solution for the Hillside and Mitchell Elementary Schools. Following a Comprehensive Site & Building Assessment of the Hillside, Mitchell and Pollard Schools, completed in August 2011 by Dore & Whittier Architects, the Permanent Public Building Committee (PPBC) along with the Town of Needham and the School District, decided to proceed with the next phase of the investigative process of determining the future viability of the Hillside and Mitchell Elementary Schools. This information will be used to prepare a Statement of Interest (SOI) for the Massachusetts School Building Authority (MSBA).

The focus of this Pre-Feasibility Study is to develop possible solutions for the Hillside and Mitchell schools. While the Site and Building Assessment Study focused on the physical condition of the buildings and sites, this Pre-Feasibility Study provides a review of the educational programming and space needs of the two schools. Although the focus of this Study is on the Hillside and Mitchell Schools, the educational goals of the district were important to consider in order to develop a foundation for future decisions. This promulgated a district-wide look at elementary school parity, educational delivery and the feasibility of providing full-day kindergarten at each elementary school across the district.

In an effort to outline the educational goals of the district, an Educational Framework Workshop / Visioning Session was held. A number of stakeholders in the educational delivery process for Needham schools attended this meeting including members of the school district, town officials, parents and community members. Dr. Frank Locker, an educational planner and consultant to Dore & Whittier Architects (D&W), facilitated the Workshop and prepared a report which summarized the results of the Workshop. This report is included herein under Section D.

A review of enrollment projections (provided by the School District) was conducted to determine a baseline for planning options and provide district-wide understanding of the areas of growth and district needs.

Options and cost estimates were developed, reviewed and presented. These options and cost estimates are included in this report, along with a discussion regarding the thought process for their development as well as the review process for their consideration. While some options were eliminated because they did not meet the goals of the district, there were no decisions made or recommendations offered regarding the remaining options. That decision is part of the next step in the MSBA process. The basis for this Study and the development of options can be found in the Section G - Concepts and Options.

EXECUTIVE SUMMARY

The Process

Through the course of this study, Dore & Whittier Architects worked closely with the Working Group which included members from both the school district and town administration. These meetings were held to provide input and feedback on the information shared through each step of the process.

Concepts and options were developed based on the goals outlined in the Visioning Session and the information obtained from previous studies. Revisions were made through an interactive process and the results are presented herein. These options are intended to provide a framework and basis for the submission of the Statement of Interest (SOI) to the MSBA and are not to be considered a recommendation of one specific option or solution.

Educational Framework Workshop

An Educational Framework Workshop held in February 2012 included a variety of stakeholders from the school, town and community at large. The workshop identified the educational values and goals related to early child and elementary school years and provided a foundation for decision-making as it relates to the Hillside and Mitchell Elementary Schools. The full report on the Educational Framework Workshop can be found in Section D of this report.

Framework Components reviewed include:

- Needham Public School Guidelines
- Guiding Principles for Educational Delivery and Facilities
- Effective Delivery of Programs & Services
- Efficient Delivery of Programs & Services
- School Size & Grade Structure
- Parent & Community Outreach

The Workshop Highlights

Noted below are some of the goals and highlights that were developed during the Workshop and led to the guiding principles used in the development of the options presented. These principles were considered in the development of the conceptual design options in this report and should be considered as benchmarks in future studies and design options.

- Limit a new elementary school enrollment size to the 400-500 student range;
- Provide schools with the ability to have small learning communities;
- Provide schools with three to four sections per grade;
- Neighborhood elementary schools are preferred;
- Flexible and adaptable spaces should be created , and wireless technology should be available in all spaces;
- Explore the building options that would allow full-day kindergarten to be offered district-wide;
- Provide collaborative spaces for students and staff in school design;
- Provide programmatic connections within the building for ELL, Learning Centers, Specials, materials;
- Plan “learning areas” as “clusters” of interrelated spaces;
- Plan for parent and community use of building and improve outreach.

Planning Assumptions - Forming the Basis for Conceptual Option Development

The Visioning Workshop highlights were presented to the Permanent Public Building Committee (PPBC) and the School Committee who, through a series of meetings and discussion, arrived at a consensus of Values or Goals which became the guidelines and basis for the development of the Concept Options.

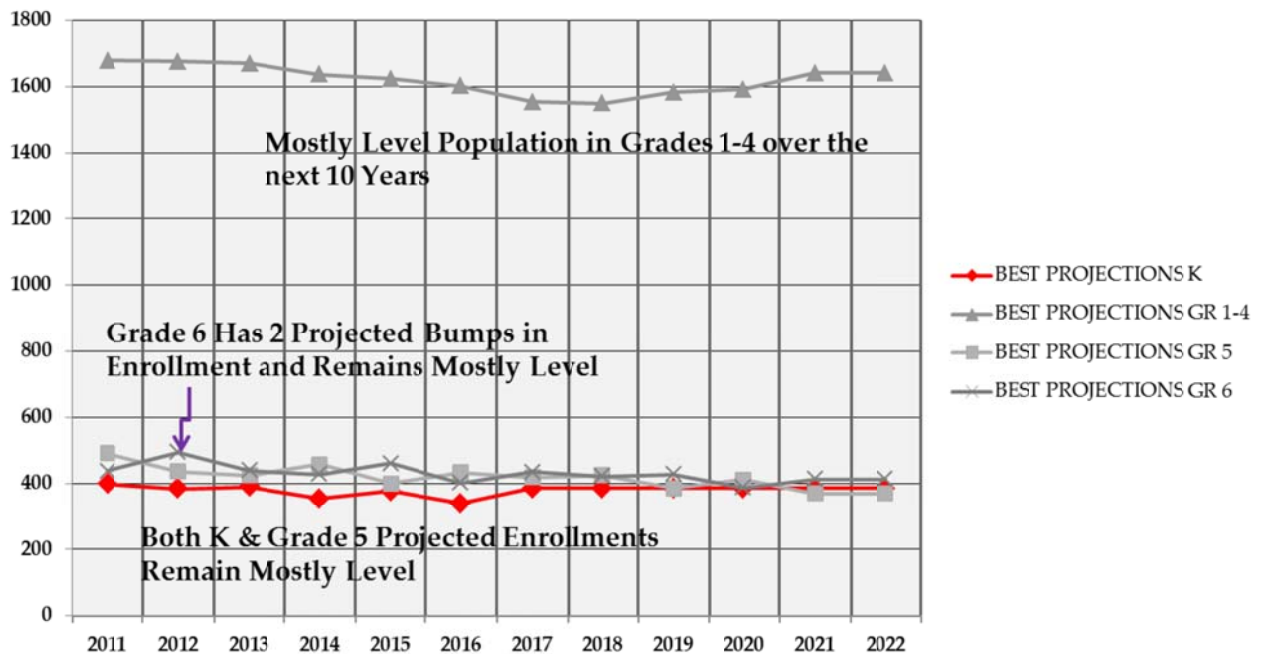
Those Goals are as follows:

- Focus is on addressing Hillside and Mitchell space and facility concerns;
- Plan for 21 students/classroom and use MSBA guidelines as the basis development of options;
- Use current enrollments for future capacity considerations;

- Elementary Schools should provide 3-4 sections per grade;
 3 sections per grade = 18 classrooms @ 21 students / cl = 378
 4 sections per grade = 24 classrooms @ 21 students / cl = 504
- School size should be in the range of approximately 400-500 students;
- Elementary schools should be neighborhood based;
- Reduce transportation requirements when possible;
- Minimize redistricting when possible;
- Facilities should have the ability to offer full-day kindergarten to all families;
- Minimize cost that will not be reimbursed or are considered temporary cost (i.e. Modular Classrooms).

Enrollment Projections

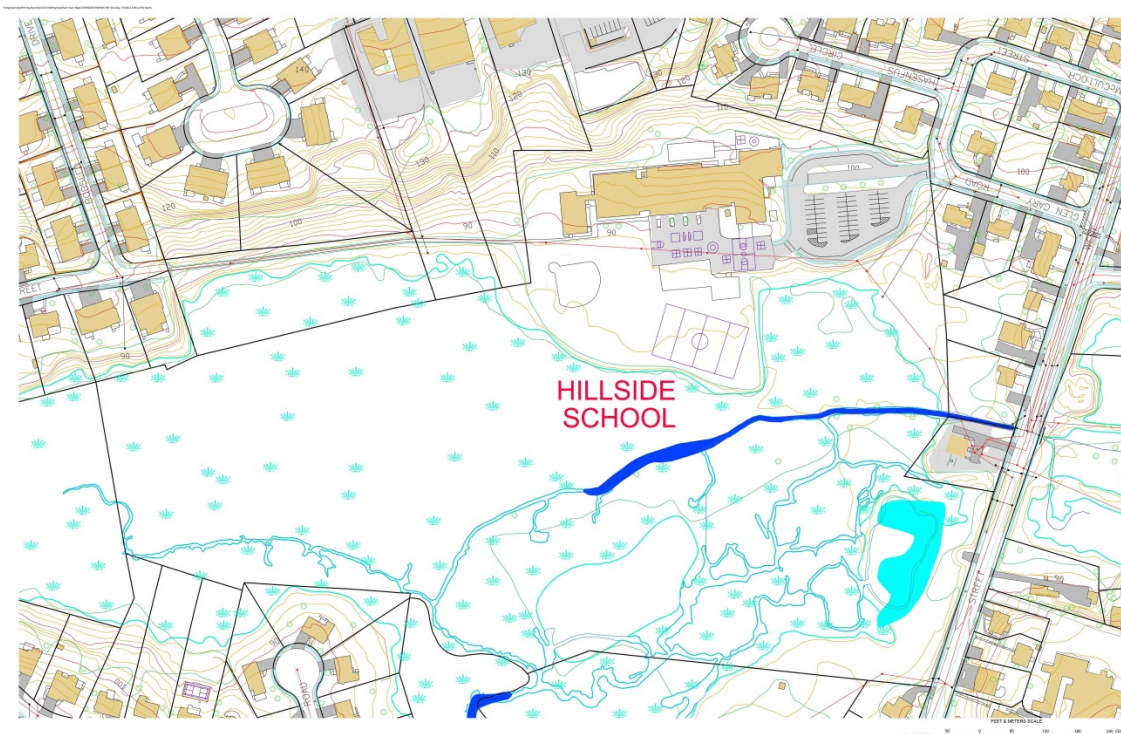
In developing the Conceptual Options, it was necessary to understand the district-wide enrollment projections and the effect that offering full-day kindergarten has on each elementary school in the district. The following chart shows the expected enrollment projections for the Town of Needham for the next ten years. These projections were prepared by the Future School Needs Committee working as an independent study group for the Needham Public School District. The graph indicates a level enrollment projection across grades with a few dips and bumps.



Site Conditions for Consideration in Developing the Conceptual Design Options

Hillside School - Site Overview

The Hillside School site, although larger than the Mitchell School site, is more restricted. Hillside School sits on a 24.6 acre site; however due to wetlands and buffer zone constraints only 5.8 acres of the site is usable for building, parking and playing fields. These wetlands controls and restricted site access limit the opportunity for building, parking and playfield expansion. Despite its neighborhood location, the school site is not conducive to walking which results in a large number of parent drop-offs and pick-ups. Including the Needham, Boston and after-school programs serving the Hillside School population, there are five school buses in the morning and six buses in the afternoon as well as three vans in the morning and seven vans in the afternoon that enter and exit the site. At mid-day, up to five vans access the site. These are in addition to the many parents who drop off and pick up their children daily. The inadequate parking area and limited vehicular access restricts the flow of traffic on-site and has created congestion both on and off the site, resulting in vehicular back up in the neighborhoods and on West Street. These traffic issues have created potential safety hazards for the Hillside School neighbors and students. Additional traffic, parking and site circulation issues are created as a result of special events held at the school, such as voting and school performances. These additional traffic concerns have led to the recommendation (with support from the Needham Police Department) that the Hillside School no longer be considered for use as a voting site.





Teacher & Visitor Parking at Hillside School

A significant consideration for the future use of this site as a school is the fact that it is being monitored by the Massachusetts Department of Environmental Protection (MADEP) for chemicals that seeped into the soil and groundwater in the mid 1980s. The existing Hillside School has been equipped with a ventilation system to mitigate the issue. The building, site, and ventilation systems are being monitored by a professional environmental management firm under the purview of the MADEP. This existing condition should not be considered a deterrent from using this site for additions to the existing building or for the construction of a new building. However, there are additional site procedures and building systems that are required for construction on a site that has had soil and ground water contamination. The cost factor for these atypical construction methods and additional building systems has been included in the estimated project cost presented in this report. Additional information regarding the environmental issues and the mitigation methods can be found in the Appendix of this report.

The inherent nature of the Hillside site, the topography, nearby wetlands and high water table has created an environment that is conducive to flooding. The Hillside School has experienced significant annual flooding in the crawl space beneath the lower level slab. This flooding has led to surface rusting of pipes and structural steel members located in the crawl space below the first floor level. This is not a safety concern at this time, but will need to be addressed in a future improvement project. The flooding has had an impact on the ability of the school to function properly at times. On several occasions, the flooding has required the closing of a major corridor, several classrooms and restrooms in the lower level of the school.

Mitchell School- Site Overview

The Mitchell School site is a 12.5 acre site situated in a densely populated neighborhood with sidewalks, which makes it conducive to walking to school. The “walkability” of this site has reduced the number of students that need to be bused to the school. However, there are a large number of parents that drop off or pick up students. There are three vehicle entrances to the site:

- (1) One entrance at the rear of the school from a neighborhood side street for staff parking, and bus loop. There are two buses that pick up and drop off in this loop, one local bus and one METCO bus, and two vans that pick up in the afternoon for after school day care programs;
- (2) An entrance from Brookline Street into a parking lot that is used for parents, visitors, and additional staff parking;
- (3) A one-way entrance / exit driveway loop accessed from Brookline Street. This loop is used for parent pick-up and drop-off both in the morning and in the afternoon.

A total of 75 parking spaces are available on site. The lack of parking and queuing space in the driveway loop leads to a bottleneck and traffic congestion. In an effort to limit the on-street parking, parents double load the driveway at the end of the day. This prevents traffic from flowing through the loop. Additional cars queue along Brookline Street which creates a safety hazard as through traffic must pass in the lane of oncoming traffic.

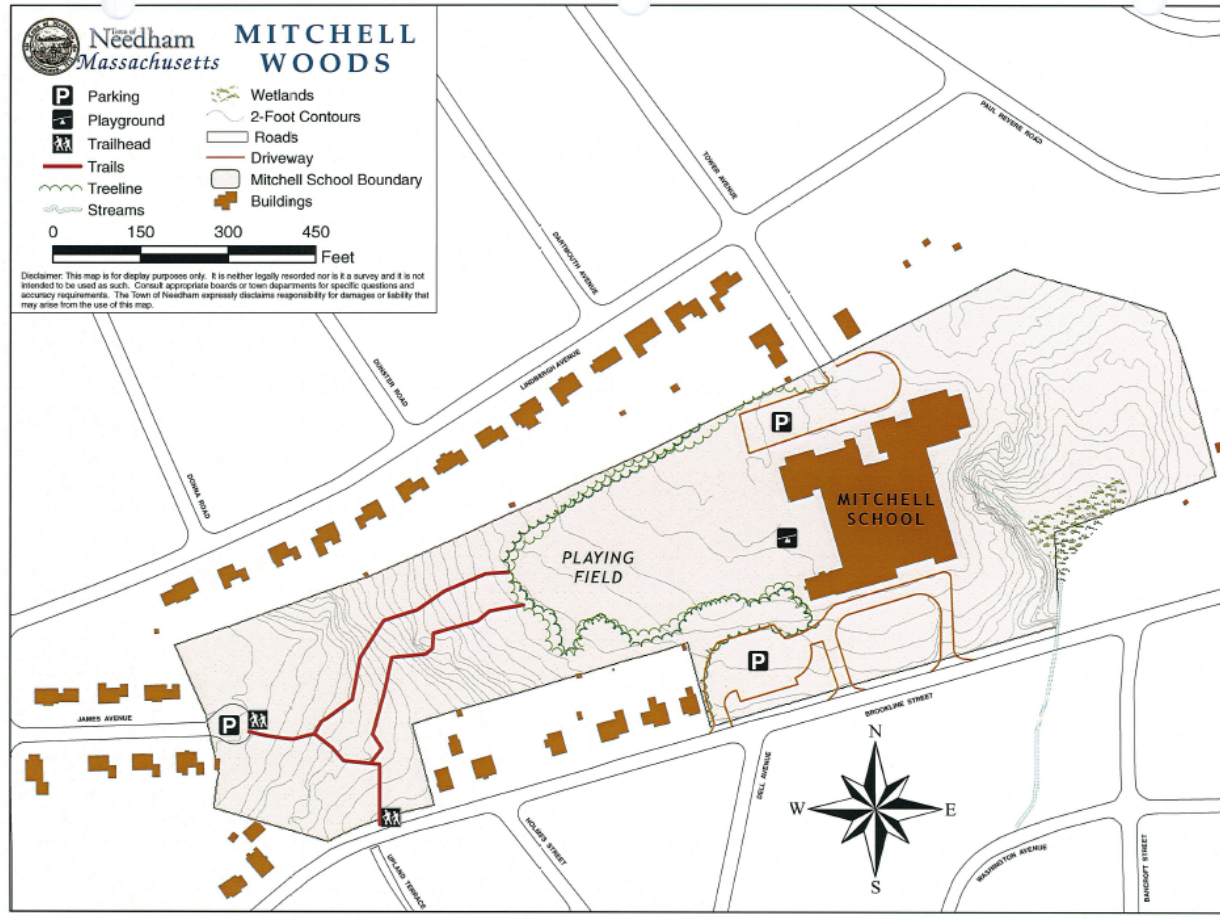


Doubled staking in driveway



Cars passing in oncoming traffic lane

The Mitchell School site is large enough for the current school population and provides open space for playfield and a large playground. The site is bordered by Mitchell Woods, a wooded path and steep hill walking site that is under the jurisdiction of the Conservation Commission, neighborhood homes to the north and south, and steep grade with wetlands on the east side of the property.



Existing Building Conditions

In August 2011, Dore & Whittier Architects conducted a Comprehensive Building Assessment of the Hillside and Mitchell Schools. Both schools were found to be in great need of infrastructure repairs and upgrades. The Hillside and Mitchell Schools are similar in that both schools have not had a major addition or renovation in over 40 years, and neither school has sufficient infrastructure to provide a 21st century learning environment for their students. Classrooms are undersized, and there is a lack of dedicated or appropriate teaching spaces for one-on-one learning, music, or art. The existing buildings are in need of repairs and upgrades to building systems including mechanical, electrical, plumbing, fire protection, thermal protection and handicap accessibility. For a thorough understanding of the needs and the cost associated with these capital improvements, please refer to the previous D&W report, *Comprehensive Facilities Assessment Report* dated August 2011.

Space Utilization and Educational Programming

Both the Hillside and Mitchell Schools were noted to have a number of space use constraints which were observed during the Site & Building Assessment and documented in the *Comprehensive Facilities Assessment Report* of August 2011.

A few examples common to both the Mitchell and Hillside schools were:

- Significant lack of administrative space and appropriate storage; copiers, paper and work spaces were located in the corridors;
- Significant lack of remedial/tutorial and special education spaces; small group instructional spaces were found in stairways, corridors, and converted storage rooms;
- Appropriate storage space; large storage items were found in stairways, hallways and electrical/mechanical rooms; each school has constructed and continues to build outdoor sheds for additional storage;
- Undersized classrooms, gymnasiums, and lunch rooms, art and music rooms (based on current MSBA guidelines);
- Spaces that were designed for a different use, such as closets and former office space, are being used for small group meeting space; the stage is used for music class, and the former teacher's work space is used for special education needs.

The following charts offer an overview of the size of a few existing core space and how they compare to the current MSBA guidelines for spaces of the same function. The MSBA square foot guidelines are based on student enrollment.

Hillside School

square foot dimensions are based on the current enrollment of 435 students

Room type	Existing (sf)	MSBA Standard for gr. 1-5 (sf)	% over / under
Typical classroom 1959 wing	850	950	-11%
Typical classroom 1969 wing	820	950	-14%
Library / Media	2200	2600	-15%
Cafeteria	2175	3250	-33%
Art	815	1000	-19%
Music	1020	1200	-15%
Overall Student Capacity	47,000 sf 435 students	47,000 sf 261 students	-40%

Mitchell School

square foot dimensions are based on the current enrollment of 477 students

Room type	Existing (sf)	MSBA Standard for gr. 1-5 (sf)	% over / under
Typical classroom 1949 wing	780	950	-18%
Typical classroom 1959 wing	870	950	-8%
Typical classroom 1969 wing	980	950	3%
Library / Media	2100	2800	-25%
Cafeteria	2400	3500	-31%
Art	470	1000	-53%
Music	625	1200	-48%
Overall Student Capacity	49,000 sf 477 students	49,000 sf 272 students	-42%

in a
page

Options and Concepts

The options and concepts below include the use of the existing Hillside and Mitchell School sites, and the use of additional sites for new or temporary buildings. Two additional sites considered in the concept options are DeFazio Park and Cricket Field. Other sites could be considered in future options. These two sites were considered because of their location and proximity to existing schools and neighborhoods; however, neither of these sites is under the jurisdiction of the School Committee. A legal process will be required to transfer jurisdiction to the School Committee for the purpose of constructing a school. Parking and traffic implications along with play space and playing fields must be considered for each proposed option and site, for both temporary and long-term use. Also, the impact on students and neighborhoods during construction must be taken into account. Whether students remain on-site during construction or are bused to temporary structures, there will be an impact on their learning environment and a period of transition for families, students, teachers and staff.

DeFazio Park was considered for the potential location of a 6th grade school or a 5 / 6 School because of its proximity to the existing Pollard Middle School and playfields. In the conceptual options that include DeFazio Park (Option 3), the existing fields would serve as outdoor recreational space for a new school. This space would be shared with the Pollard Middle School during school hours. Cricket Field was considered a potential location for an elementary school due to its walkable neighborhood and proximity to the existing Hillside School district. It is noted that this was done without express approval of the Park and Recreation Commission. Although the Cricket Field site is not located in the current Hillside School district, it is assumed that with any of the options, some redistricting of students will occur.

As noted in greater detail in Section G of this report, there will be an impact on the availability of outdoor play space and sports fields with each option during the time of construction. In each of the options, the construction of permanent or temporary buildings for swing space will affect the field availability for sports programs at both the Town and the High School level. Neighborhood use of parks and playgrounds and the Park and Recreation Summer Program will be impacted by the loss of field space and playgrounds. It is the goal of each concept to replicate the number of fields, playgrounds and hard court play areas that currently exist. This is accomplished with each of the concept options, with the exception of options that include additions and renovations to the existing buildings.

Several possible conceptual design options were developed and presented to the Working Group, PPBC and School Committee. These concepts were based on the Comprehensive Facilities Assessment report completed in August 2011, the Enrollment Projections prepared by the Future School Needs Committee completed in November 2011, the Educational Framework

Pre-Feasibility Study

Workshop held in February 2012, and the Goals outlined above. Through a process that involved several meetings with a Working Group and Sub Committee, four primary options were considered for further development. These options are outlined below.

OPTION 1: Hillside & Mitchell School Solutions on Two Sites

Two 4 section schools

or

One Larger 5 Section School at Mitchell Site &

One Smaller 3 Section School at Hillside Site

OPTION 2: Hillside & Mitchell School Solutions on One Site

(990 students permanently on the Mitchell School Site)

One 8 Section School

or

Two 4 Section Schools

OPTION 3: New 6th Grade Center for 438 6th grade students & redistrict all schools

High Rock as Elementary: 3 sections per grade school / 420 students

Newman Elementary School: 5 sections per grade / 651 students

Broadmeadow Elementary School: 4 sections per grade / 525 students

Eliot Elementary School: 3 sections per grade / 420 students

New Mitchell Elementary School: 5 sections per grade / 546 students

Hillside School would no longer be required to serve the elementary school population and could be repurposed. This would leave the Hillside community without a neighborhood elementary school.

OPTION 4: Provide District-Wide Grade Reconfiguration

1. Create K-4 Elementary Schools across district
2. Add Full-Day K to Each Elementary School
3. Build a New 5 / 6 School at DeFazio Park
4. Keep 7/8 Pollard School

A number of considerations were developed for each of the above concept options, and each of these options were reviewed and compared to the Values and Goals established by the PPBC and School Committee. These considerations are highlighted in the Options Review Section of this Study (see section G).

Through this study and development of the conceptual options, the PPBC and School Committee reached a consensus that the following options did not match the needs or goals of the district. Those options are:

- **Option 2:** A permanent 990 student (8 sections per grade) school does not meet the educational programming goals of the district. Two schools of 450 students each was also proposed for this site. There are many reasons that the Mitchell School site is not thought to be appropriate for 990 students. The parking, site circulation, and reduction of sports fields and open play space all added to the decision to remove this option from the list of potential options to be considered.
- **Option 3:** This option included the study of a new Grade 6 school at two potential locations: the DeFazio Park (3A.1) and the Pollard School Site (3A.2). In reviewing the Pollard School site, it was concluded that two schools on the small Pollard Middle School site increased the parking, site circulation and traffic issues that already exist at this location. Additionally, the proximity to wetlands and steep grade limited the placement of a new building, parking and drive areas.
- **Option 4:** This option proposed the reconfiguration of grades across the district, combining 5th and 6th grades in a new building to be located at DeFazio Park. It also provided full day Kindergarten through 4th grade at Newman, Broadmeadow, Mitchell, Eliot and High Rock Schools. With this option, the existing Hillside School would no longer be needed as an elementary school and could be eliminated or repurposed. The School Committee and other members of the community who were involved in the Visioning Session noted the success of the 6th Grade School, the difficulty in redistricting all students, the impact of a 5 / 6 school on DeFazio Park site and the elimination of an elementary school in or near the Hillside School district as not being consistent with the Values and Goals outlined by the Committee.

The graphics associated with the remaining concept options are included in Section G of this study.

The Case for Grouping Hillside and Mitchell School Projects Together

Through the course of this Pre-Feasibility Study and the development of options, it has become clear that in order to develop a number of viable concepts to meet the needs of the school district, as well as the best interest of the students, parents and taxpayers for the Town of Needham, a future MSBA Feasibility Study should include both the Hillside and Mitchell Schools together. A few reasons for this are:

1. Both schools are in need of significant facility improvements:

- a. Neither school has had a significant renovation or permanent addition in over 40 years;
- b. Both schools have equipment and building components that have reached the end of their useful life and are due for replacement with some of these having an effect on the learning environment and methods for delivery (i.e. technology);
- c. Both schools are in need of significant renovations to meet current building, energy, and handicap accessibility codes.

2. Both schools are significantly undersized:

- a. Both schools have significant space deficiencies and are approximately 40% below current MSBA standards for the number of students currently in attendance. See summary noted above;
- b. The space deficiencies in both schools have had an effect on programming and educational delivery to the Hillside and Mitchell students.

3. Both schools have site constraints:

- a. Limited parking, site circulation, wetlands and steep grades limit the location for construction staging and increase existing traffic and safety issues; the ability to move students off-site during construction will mitigate some of these issues, and there is a potential for cost savings if the temporary classroom solution served both construction projects.

4. Time and Cost Savings:

- a. Significant time savings could be recognized by grouping these two schools together in the MSBA process and the timeline to reach equity in the facilities and educational programs available to students would be reduced. There are 5 elementary schools in Needham and each of the other three has had a major renovation or has been newly constructed in the last ten years. As noted, Hillside and Mitchell Schools have not had renovations or additions in forty years. If only one of these schools is considered for additions / renovations / or new construction, the second school may not receive facility upgrades for another ten or more years creating a gross inequity of education facilities and the ability to deliver educational program in the Needham School district;
- b. As seen in the cost models (Section H), the creation of swing space has significant cost implications to the Town as it is a cost center that is not reimbursed by MSBA. Grouping of the projects will minimize duplication for creating swing space that would otherwise have to be made available for separate and discrete projects.

Impact on Existing Field Space and Outdoor Recreation

Each of the options noted will have an impact on the existing outdoor recreation facilities available to the Town for sports programs, playgrounds and general open play space. With the exception of options that show Additions / Renovation to the existing schools, the open space and play fields have been restored or relocated in an effort to equal the number of fields and playgrounds that currently exist. In some cases, these fields are relocated to other sites, and in other options the fields are relocated or reconstructed on the same site. In all options, there would be an impact on playing fields during the construction period unless substitute fields are constructed elsewhere. The cost of replacing these fields and playgrounds in final projects has been included in each of the options, including site-specific constraints such as retaining walls, mitigation for high water tables, addition of buildings for restrooms where required and replacing play structures where the construction will interfere with the current location of these structures or play areas. In options that call for Additions / Renovations to the Mitchell school (i.e. 1A.1), the existing playground area would be relocated to the open field space, a multiuse field and diamond would be replaced on-site and the second existing diamond would have to be relocated to another site or the existing site would need to be expanded beyond its current boundaries. The existing play fields and playground would not be available for use during the time of construction and renovation.

In the Hillside School Additions / Renovation Option (1A.1) the proposed parking expansion and extension of the drive for service access to the far end of the building would encompass the existing hardtop play area, and extend into the existing multiuse field and diamond. The completed project would include relocation of the playground area and the reconstruction of a small multiuse field and small diamond. Some of this field area would extend into the far west corner of the site which would need some mitigation due to its proximity to the wetland.

Options that consider using Cricket Field as a permanent school site will use the Hillside school site to replace the playfields and playgrounds that exist at Cricket Field as well as the Park and Recreation building that is used for storage and for the summer community programs. A small diamond, small multiuse field and playground would remain at Cricket field to be used by students during school and by the neighborhood and Park and Recreation after school hours. However, it is important to note that the Park and Recreation Commission voted to ask that the Cricket Field site not be considered for use as a school site. See the Appendix for an excerpt of the meeting minutes from Park and Recreation meeting of June 11, 2012.

Cost Estimates

Cost Estimates were developed to correspond with each of the conceptual options. These cost estimates include the site-specific costs of each option, such as the impact to wetlands, storm water, hazardous materials remediation, demolition of existing buildings or partial building, option-specific costs such as site-specific remediation measures (Hillside), phasing and the use of temporary modular classrooms on alternative sites. The following is a summary of the cost estimates for each of the remaining conceptual options. A more detailed breakdown for each option is provided in Section H of this study.

PRELIMINARY Estimated Project Costs Summary					6.26.12
Hillside & Mitchell Elementary Schools - Prefeasibility Study					
Needham Massachusetts					
The following is a summary of Estimated Project Costs developed for the Hillside and Mitchell Elementary Schools. The options developed are conceptual in nature and therefore the estimated project costs are intended to provide a preliminary order of magnitude view at the potential project costs. Project costs consist of estimated site and building construction costs, design and construction contingencies, phasing, soft costs to cover the values of the design team, owner's project manager, investigative services, etc and fixtures, furniture and technology costs. The project costs presented are in current 2012 dollars and may need to be adjusted for inflation depending on future construction timeframes.					
Options:	# Sections Per Grade	Pop	Estimated Costs	Subtotals	
Option 1A: Two Separate Sites with Balanced Enrollments					
Option 1A.1: Mitchel ES - Additions / Renovations	4	503	\$ 37,892,000		
Hillside ES - Additions / Renovations	4	487	\$ 46,539,000	\$ 84,431,000	
Option 1A.2a: Mitchell ES - New School	4	503	\$ 39,543,000		
Hillside ES - New School (w/ temp modulars)	4	487	\$ 46,046,000	\$ 85,589,000	
Option 1A.2b: Mitchell ES - New School	4	503	\$ 39,543,000		
Hillside ES - New School (w/ Mitchell as temp c	4	487	\$ 38,416,000	\$ 77,959,000	
Option 1A.2c: Mitchell ES - New School (w/ temp modula	4	503	\$ 46,123,000		
Hillside ES - New School (w/ temp modulars)	4	487	\$ 42,406,000	\$ 88,529,000	
Option 1A.3: Mitchell ES - Additions / Renovations	4	503	\$ 35,282,000		
Cricket Field - New School (replace Hillside)	4	487	\$ 39,746,000	\$ 75,028,000	
Or Mitchell ES - New School	4	503	\$ 38,143,000		
Cricket Field - New School (replace Hillside)	4	487	\$ 39,746,000	\$ 77,889,000	
Option 2: Hillside and Mitchell Schools located on One Site					
990 students located on one site					
Option eliminated from consideration					
Option 1B: Two Separate Sites, Resize Populations					
Option 1B.1: Mitchell ES - Additions / Renovations	5	612	\$ 43,907,000		
Hillside ES - Additions / Renovations	3	378	\$ 41,094,000	\$ 85,001,000	
Option 1B.2a: Mitchell ES - New School	5	612	\$ 43,982,000		
Hillside ES - New School (w/ temp modulars)	3	378	\$ 41,551,000	\$ 85,533,000	
Option 1B.2b: Mitchell ES - New School	5	612	\$ 43,982,000		
Hillside ES - New School (w/ Mitchell as temp c	3	378	\$ 34,201,000	\$ 78,183,000	
Option 3: New 6th Grade School, High Rock becomes Elementary School, New or Renovated Mitchell					
Option 3A: New 6th Grade School at DeFazio Field	20	438	\$ 45,099,000		
Option 3A.1: Mitchell ES - Additions / Renovations	5	546	\$ 44,111,000	\$ 89,210,000	
Or New 6th Grade School at DeFazio Field	20	438	\$ 45,099,000		
Option 3A.1: Mitchell ES - New School	5	546	\$ 45,136,000	\$ 90,235,000	
Option 4: Create K-4 Schools District-wide/Add Full Day Kindergarten					
Grade reconfiguration (K-4, 5/6 school, 7/8 school)					
Option eliminated from consideration					

Conclusion

In conclusion, there are several viable options available for the Needham School District, but no option is without significant undertaking. There is no easy and obvious solution to the difficult site constraints, overcrowding, inefficient existing buildings and sites, and no easy resolution to the loss of field use during construction phasing. Each potential site has its own set of limitations and compromises. For example, Cricket Field is currently under the jurisdiction of the Park and Recreation Commission and DeFazio is under the jurisdiction of the Board of Selectmen, therefore making either of these sites a viable school venue would require significant collaboration, agreement, and / or compromise. The conceptual design options provided herein are meant as a starting point for the Town of Needham and its citizens to begin to consider the educational programs, school facilities and recreational spaces that will begin to shape the future of Needham Public Schools. The values and goals developed here will be used as guidelines for both the facilities and the educational programming that will be considered as Needham moves forward into the next step, developing a Statement of Interest (SOI) for the MSBA.

EDUCATIONAL FRAMEWORK REPORT

Educational Framework Workshop

An Educational Framework Workshop held in February 2012 included a variety of stakeholders from the school, town and community at large. The workshop identified the educational values and goals related to early child and elementary school years and provided a foundation for decision-making as it relates to the Hillside and Mitchell Elementary Schools. This section includes the Workshop report. An Executive Summary of the principals and guidelines resulting from this Workshop can be found on pages C-1 through C-3.

Framework Components reviewed include:

- Needham Public School Guidelines
- Guiding Principles for Educational Delivery and Facilities
- Effective Delivery of Programs & Services
- Efficient Delivery of Programs & Services
- School Size & Grade Structure
- Parent & Community Outreach



EDUCATIONAL FRAMEWORK

Hillside + Mitchell Pre-Feasibility Study

Needham Public Schools
Needham, MA



February 2012
Frank Locker Educational Planning



CONTENTS

Ch 1

Contents + Acknowledgements

Ch 2

Executive Summary

Introduction

Framework Components

Essential Concepts

Ch 3

Framework Components

Introduction

Framework Components

Needham Public Schools Guidelines

Guiding Principles

Effective Delivery of Programs + Services

Efficient Delivery of programs + Services

School Size + Grade Structure

Parent + Community Outreach

Ch 4

Appendices

4.1 Workshop Notes

4.2 21st Century Schools Presentation

4.3 Summary of Current School Statistics



Contents + Acknowledgements





ACKNOWLEDGEMENTS

Needham Stakeholders

PARENTS/COMMUNITY

Kevin Keane	Mitchell School Council
Anne Weinstein	Parent

SCHOOLS STAKEHOLDERS

Rita Bissonnette-Clark	Acting Principal, Newman School
Donna DeMaria	Kindergarten Teacher, Hillside School
Jessica Downey	Principal, High Rock School
Emily Gaberman	Principal, Broadmeadow School
Michael Kascak	Principal, Hillside School
Mary Rizzuto	Elementary Science Curriculum/ Instructional Specialist
Mike Schwinden	Principal, Mitchell School
Suzanne Wilcox	Principal, Eliot School

NEEDHAM PUBLIC SCHOOLS ADMINISTRATORS

Susan Bonaiuto	Director of Community Education
Christine Brumbach	Director of Student Development
Tom Campbell	Director of Human Resources
Deb Gammerman	Director of Technology + Innovation
Anne Gulati	Director of Financial Operations
Dan Gutekanst	Superintendent
Terry Duggan	Director of Program Development
Mary Lammi	Director of Elementary Special Education
David Neves	Fine Art Director
Kathy Pinkham	Director of Wellness

NEEDHAM PUBLIC SCHOOLS SCHOOL COMMITTEE MEMBERS

Maryann Cooley	Co-chair School Committee
Heidi Black	School Committee

TOWN OF NEEDHAM STAKEHOLDERS

Hank Haff	Project Manager
Stephen Popper	Director of Design + Construction
Dick Reilly	Finance Committee

Architects

DORE & WHITTIER ASSOCIATES

Roberto Fitzgerald	Architect
Michele Rogers	Architect
Donald Walter	Architect

Educational Planner

FRANK LOCKER EDUCATIONAL PLANNING

306c Dover Point Rd
Dover, NH 03820
617.412.7444
www.franklocker.com

Dr Frank Locker

INTRODUCTION

The Educational Framework articulates the Needham Public Schools' educational values and goals related to early child and elementary years as a foundation for decision-making in the Hillside and Mitchell Pre-Feasibility Study. While stimulated by the needs of the study, the Framework outlined here has value beyond the study, and may act as a tool to stimulate continued educational improvements throughout the district. Note, however, that many issues regarding early child and elementary learning have not been addressed since the Framework focuses on issues critical to continuing the Pre-Feasibility Study.

The Framework was developed by a planning group of educational administrators representing the district and all elementary schools, with facilities staff, parents, and the study architects.

FRAMEWORK COMPONENTS

The Educational Framework for early child and elementary years is described in Ch 3 through several components:

- **Needham Public Schools Guidelines** states current school planning guidelines of the district
- **Guiding Principles** establish broad parameters for educational delivery, school structure, and facilities, incorporating key concepts from the following explorations
- **Effective Delivery of Programs + Services** searches for the principles of effective education
- **Efficient Delivery of Programs + Services** addresses school planning from an operational point of view
- **School Size + Grade Structure** identifies critical planning parameters
- **Parent + Community Outreach** addresses improved connections to the community

Essential concepts developed by the planning group are described below.



Executive
Summary



ESSENTIAL CONCEPTS

Guiding Principles

Excerpts from the Guiding Principles:

EDUCATIONAL

- Pairing of Preschool and Kindergarten offers great learning and developmental advantages
- Continuity of learning through Grade 8 should be considered as part of elementary learning
- More consistency is needed in teaching science, especially at the upper elementary grade levels
- There is a high value placed on looping. Explore looping for two or three grade levels
- There is interest in exploring multi-age learning. Explore the possibility of establishing a multi-age program Pilot Project
- The one year-long High Rock experience has received very positive feedback from staff and families; however, the one year program exacerbates transitions for a small number of special education students.
- The fewest number of years in any single building should be three to four years
- Plan for class sizes in the 18 to 20 student range
- Community use of facilities increases sense of community trust of our schools
- Knowing students well is highly related to school size, or to Small Learning Community size within a school
- Create focused, interdisciplinary learning programs such as STEM or STEAM
- Kindergarten is more effective as a full day program, and should be standard for all students

FACILITY IMPLICATIONS

- Plan learning areas in new schools as clusters/suites of interrelated spaces to foster collaboration, build small learning communities, and add comfort to school for small children
- Explore PK and K, and perhaps Grade 1, as a single community-wide school

- Plan for community use of selective school spaces on time-share basis through appropriate community storage, entry and toilet locations, and convenient parking
- Limit new elementary school size to 400 students, with Small Learning Communities within to build relationships
- Plan new neighborhood elementary schools for no less than three grade levels. Plan community-wide schools for no less than two grade levels
- Make technology ubiquitous and in the hands of students as needed by planning for wireless technology in all elementary learning spaces

Effective Delivery of Programs + Services

Excerpts include:

PRE-KINDERGARTEN PRESCHOOL

- Pre K is currently effective
 - Works but space not OK
- Pre K could be improved with greater connections to Kindergarten.

SPECIAL EDUCATION

- Low Incident Special Education:
 - More space needed
 - Transition problems are seen with low incident Special Education (LISE) group
 - Neighborhood? District wide?
 - Does current pattern fit our values?
 - A 6th building would bring a transition challenge

NOTABLE STRATEGIES

- Create flexible, adaptable, integrated, adjustable spaces (eg, wireless) for all special programs and all classrooms
 - Ensure acoustics, wireless, sound field systems

Efficient Delivery of Programs + Services

Excerpts:

IESS: EFFICIENT SCHOOL SIZE

- Three to four sections/grade are desirable





- One Specialist at each school - Art/Music/PE - is desirable
- Collaborative spaces are desirable

PROGRAMMATIC CHALLENGES

- Need better programmatic connections within building
 - ELL growth
 - Learning Centers
 - Specials
 - Materials

CHALLENGES

- Lack of collaborative spaces
- Travel time for Specials teachers
- Lack of gathering spaces for full school

School Size + Grade Structure

Excerpts:

IDEAL GRADE GROUPINGS

Grade groupings should be based on developmental ages of students and minimize the number of transitions from building to building.

Grouping concepts are;

- Group Pre-K with K
- Perhaps Include Grade 1 as well
- Group Grades 2 through 4
- Group Grades 5 and 6, associated with Grades 7 and 8

SCIENCE

- Science is taught differently at all schools
- Curriculum consistency can be enhanced with science specialist teachers

UPPER ELEMENTARY YEARS, GRADES 5 AND 6:

- Departments would allow prep for Middle School
- Easier transition to Middle School

PROFESSIONAL FOCUS

- It is better for teachers to have a small developmental age grouping

- Professional Learning Communities improve learning
- Small Learning Communities improve learning:

Parent + Community Outreach

Excerpts:

CRITIQUE OF CURRENT OUTREACH

- Better outreach is needed
- Some families are less engaged
- We can improve outreach

STRATEGIES TO IMPROVE OUTREACH

- Learning goes beyond the school day and beyond Grade 12
 - Create adult seating/meeting spaces at elementary schools
- Identify spaces we have in the community that can also be used for students
 - Flexibility between schools and community

SERVICE LEARNING

How early can service learning start?

- Kindergarten
 - Never too young





INTRODUCTION

The Educational Framework presented here is intended to articulate the Needham Public Schools' educational values and goals related to early child and elementary years, to act as a foundation for decision-making in the Hillside and Mitchell Pre-Feasibility Study. While stimulated by the needs of the study, the Framework outlined here has value beyond the study, and may act as a tool to stimulate continued educational improvements throughout the district. Note, however, the Framework focuses on issues critical to continuing the Pre-Feasibility Study; consequently many issues regarding early child and elementary learning have not been addressed.

The Framework was developed by a planning group of educational administrators representing the district and all elementary schools, plus facilities staff, parents, and the study architects.



Educational Framework

FRAMEWORK COMPONENTS

The Educational Framework for early child and elementary years is described here through several components:

- **Needham Public Schools Guidelines** states current school planning guidelines of the district
- **Guiding Principles** establish broad parameters for educational delivery, school structure, and facilities, incorporating key concepts from the following explorations
- **Efficiency Assessment** addresses school planning from an operational point of view
- **Effectiveness Assessment** searched for the principles of effective education
- **School Size and Grade Structure** identifies critical planning parameters
- **Parent + Community Connections** addresses improved connections to the community





NEEDHAM PUBLIC SCHOOLS GUIDELINES

Ideal Elementary School Size

The Ideal Elementary School Size (IESS) guideline is an informal concept that has been used to guide planning for elementary schools for decades. The construct calls for three to four classrooms per grade. The number of classrooms per grade is a foundation issue in planning schools, affecting everything from costs of operations to quality of educational delivery, to comfort for students and parents. Workshop participants assessed the appropriateness of the IESS in most of the challenges they undertook. For reference, current classrooms per grade of the elementary schools are:

- Broadmeadow three to four, varies by year
- Eliot three
- Newman five to six, varies by year
- Hillside three to four, varies by year
- Mitchell three to four, varies by year

Class Size

The following are School Committee class size policies for the elementary years:

- Preschool: No policy
- Kindergarten to 3: 18-22
- Grades 4 and 5: 20-24
- Grades 6 to 12: Reasonable class size

GUIDING PRINCIPLES

The Guiding Principles presented here were created to summarize the values, beliefs, and concepts developed by the Planning Group, who examined educational best practices and community issues affecting the delivery of 21st Century elementary education in Needham. These Guiding Principles present the essence of that inquiry. They are not policy but address the overarching themes identified by participants to serve as a foundation for planning schools for the elementary years in Needham. As such, they are intended to inform the immediate Hillside

and Mitchell Pre-Feasibility Study, and future educational delivery and facilities planning in Needham.

Educational Concepts

- Pairing of Preschool and Kindergarten offers great learning and developmental advantages
- A focus on elementary learning should not stop at grade 5, but rather embrace continuities through Grade 8
- More consistency is needed in teaching science, especially at the upper elementary grade levels
- There is a high value placed on looping. Explore looping for two or three grade levels
- There is interest in exploring multi-age learning. Explore the possibility of establishing a multi-age program Pilot Project
- The one year-long High Rock experience has received very positive feedback from staff and families; however, the one year program exacerbates transitions for a small number of special education students.
- Explore utilizing core teacher specialists for grades 5 and 6 to increase consistency of curriculum delivery and to ease transition into Middle School
- Building relationships with students, knowing them well, contributes to improved learning
- Building relationships among teachers increases professionalism, reduces isolation, and contributes to all teachers knowing students better
- Multi-year buildings allow teachers to know students better, allowing them to make learning more personalized for each student. Explore possibilities for multi-year buildings
- Principals and teachers should know their students well
- Collaboration time is highly valued. Create the time and the places to foster it
- Plan for class sizes in the 18 to 20 student range
- Some educational specialists work out of several buildings and see a large number of students, and thus are challenged in getting to know students well. Consider strategies for increasing the knowing of students by specialists, including building size and configuration





- Community use of facilities increases sense of community trust of our schools
- Knowing students well is highly related to school size, or to Small Learning Community size within a school
- Create focused, interdisciplinary learning programs such as STEM or STEAM
- Kindergarten is more effective as a full day program, and should be standard for all students

Facility Implications

- Plan learning areas in new schools as clusters/suites of interrelated spaces to foster collaboration, build small learning communities, and add comfort to school for small children
- Explore PK and K, and perhaps Grade 1, as a single community-wide school
- Suites of collaborative spaces are more effective than rows of isolated classrooms along a corridor
- With cluster planning circulation space can be converted to educational space, and therefore offer more for learning
- Plan for community use of selective school spaces on time-share basis through appropriate community storage, entry and toilet locations, and convenient parking
- Explore adult use spaces in the elementary schools, such as Community Meeting Rooms
- Limit new elementary school size to 400 students
- Organize all elementary schools to foster relationships through Small Learning Communities
- Plan new neighborhood elementary schools for no less than three grade levels. Plan community-wide schools for no less than two grade levels
- Account for space needs of special programs such as low incident Special Education
- Plan space for World Language and Music in all elementary schools
- Make technology ubiquitous and in the hands of students as needed by planning for wireless technology in all elementary learning spaces

EFFECTIVE DELIVERY OF PROGRAMS + SERVICES

This assessment of the effectiveness of programs and services has been culled from the comments of three Table Teams working independently.

KINDERGARTEN

- Full-day K: full day across district at central location(s)
 - Should not be fee-based
- Full day K is important in every school so that:
 - Looping-K-1 can occur
 - Building community can occur

PRE-KINDERGARTEN PRESCHOOL

- Pre K is currently effective
 - Works but space not OK
- Pre K could be improved with greater connections to Kindergarten. Explore the following:
 - ½ day Pre-K and full day Pre-K grouped with Kindergarten across the district
- PK-K Early Learning Center: full-day K or ¾ day PK and K
 - Movement based on developmental needs

SPECIAL EDUCATION

- Low Incident Special Education:
 - More space needed
 - Transition problems are seen with low incident Special Education (LISE) group
 - Neighborhood? District wide?
 - Does current pattern fit our values?
 - A 6th building would bring a transition challenge

EFFECTIVE DELIVERIES DESIRED

- Multi-age should be explored

IESS: EFFECTIVE SCHOOL SIZE

- Broadmeadow and Newman are too big





MISSING/NEED TO DO BETTER:

- Creating opportunities/space for collaboration:
 - Adults
 - Children
- STEAM - more programs, more and better space
- ELL programming is a challenge
- Grade configuration should pay attention to transitions
 - Speed transitions have been a problem
- The 6th grade in each elementary school could look like the team model
- Restore elementary World Language and K Music
- Reconsider the role of media training and the Media Center in elementary schools:
 - How to deliver tech services differently? Integrated media regularly vs “having media”
 - A Media Center that encourages community use

CHOICE/THEMATIC SCHOOLS

- We like the elementary program model (we do not feel Theme School is appropriate)
- Thematic Schools:
 - Community seems to value the neighborhood school

NOTABLE STRATEGIES

- Create flexible, adaptable, integrated, adjustable spaces (eg, wireless) for all special programs and all classrooms
 - Ensure acoustics, wireless, sound field systems

CURRENT CLASS SIZE GUIDELINES

- NPS classroom guidelines are OK

OVERLOOKED/UNDERPLAYED EDUCATIONAL DELIVERIES

- Standard-based

EFFICIENT DELIVERY OF PROGRAMS + SERVICES

Two Table Teams addressed efficiencies in educational delivery.

IESS: EFFICIENT SCHOOL SIZE

- Elementary schools at capacity
- Three to four sections/grade are desirable
 - Newman - five sections
 - Broadmeadow - four to five sections
- One Specialist at each school - Art/Music/PE- is desirable
- Collaborative spaces are desirable

CHALLENGES AT FOCUS SCHOOLS AND FELLOW SCHOOLS

- Elementary growth - Hillside - Mitchell - Eliot
- Build capacity for future growth
- Very different school sizes
- Bussing?
- Hillside
 - Older facility
 - Technology challenged
 - Core areas undersized
 - SPED class - too small
 - Halls - too small
 - ADA problems
- Mitchell
 - Older infrastructure
 - No collaborative spaces
 - “My kids” vs “Our kids”
 - Culture of 20th century + 21st century
- Newman
 - Designed as middle school
 - Poor flexibility
 - Inefficiency of 20th Century
 - Distance to core areas
 - Transit time for Specialists
- Some specialists serve 800 students in two buildings
 - Cannot know building
 - Cannot know children





- Relationships

PROGRAMMATIC CHALLENGES

- Need better programmatic connections within building
 - ELL growth
 - Learning Centers
 - Specials
 - Materials

REVIEW OF STAFFING + HIDDEN COSTS

- Inefficient passing time within schools
- +/- one hour/day
- Busing vs walking

EXAMPLES OF CLEVERNESS

- Creative use of current space
 - Effectiveness?
- Clusters of classrooms and clever use of ‘spaces between’ hallways
 - Effective?

CHALLENGES

- Lack of collaborative spaces
- Travel time for Specials teachers
- Lack of gathering spaces for full school

SCHOOL SIZE + GRADE STRUCTURE

Three Table Teams addresses school size and grade structure.

IDEAL GRADE GROUPINGS

Table Teams identified ideal grade groupings based on developmental ages of students. Two Table Teams identified clear breaks (characterized by “/” below); one Table Team felt breaks are evident but not so strong as to drive school organization (characterized by “:” below.) The developmental breaks were identified as:

- **PK K 1 / 2 3 4 / 5 6**
- **PK K 1 : 2 : 3 4 : 5 6 7 8**
- **PK (K / 1) 2 3 4 / 5 (6 / 7 8)**

Two Table Teams added Grades 7 and 8 to the developmental considerations.

All Table Teams showed a developmental break after Grade 4.

Two Table Teams showed a developmental break after Grade 1; the third showed it after Kindergarten, but identified the advantage of looping from Kindergarten to Grade 1.

Commentary included these qualifications:

PRESCHOOL TO GRADE 8

- Two Table Teams noted we should be considering PK-8 learning, not just PK-6 learning
 - 6th grade should be aligned with grades 7 and 8

SCIENCE

- Science is taught differently at all schools
 - It is evident observing students arriving at High Rock

EARLY YEARS

- K and 1st grade could be in the same developmental grouping
 - If Grade 1 was included, there would be more room for looping
- PK-K:
 - Youngest teams in a familiar environment
 - Developmentally appropriate
 - Start as a whole town community, not in neighborhood schools

ELEMENTARY YEARS, GRADES 1 TO 4:

- Looping would be most flexible here
- Offers flexibility for students to “repeat”

UPPER ELEMENTARY YEARS, GRADES 5 AND 6:

- Departments would allow prep for Middle School
- Easier transition to Middle School





RELATIONSHIP BUILDING

- Principals and teachers should know their students well
- Opinion as to the maximum number of students that can be well known by a principal varied by Table Team, but was consistently lower than the average elementary school size in Needham. Table team opinions were:
 - 250-400 with multiple years
 - 425 if the principal knows students/family over three to four years. Fewer years are not effective in knowing students.
 - Ideal: 350
 - Doable: 450
- The maximum number of students that can be well known by teachers/staff varied slightly, and was considerable smaller than any current elementary building size in Needham. Two table Teams responded:
 - 60-70 students
 - 80 in one year for teachers
- The maximum number of students that can be known by specialists:
 - Ideal: 350
 - Doable: 450

COLLABORATION

- It is believed to be effective to collaborate
 - Areas of collaboration include:
 - Curriculum
 - Development
 - Assessments
 - Best practice
 - Student needs
 - 21st century skills
 - Grade/developmental teams are effective
 - Need flexibility to meet variety of needs due by a large number of grades (four to five grades) and inclusion
- Thoughts related to the maximum number of teachers that can effectively work in a in collaborative grouping varied slightly:
 - One Table Team said six to eight collaboration # for teachers

- This is valued: ensure time + space to make it effective
 - Another said five to seven
 - Grade level (all grade groups)
 - Teams (vertical: 3rd & 4th)
 - Subjects (Art with Science)

CLASSROOM SIZE

- Classroom size was addressed by one Table Team. They concluded the following class sizes:
 - Ideal: 18-20
 - Doable: 20
 - Would look different in ½ or whole day K
 - More kids in whole due to movement
 - Aides in larger classes

PROFESSIONAL FOCUS

Two table teams addressed whether teachers would be more effective if a part of a professional team focused on a small number of developmentally linked grade levels. Their responses:

- Yes, it is better for teachers to have a small developmental age grouping
- Yes, Professional Learning Communities improve learning
 - Peer feed-back
 - Relationship building
 - Risk-taking
 - Equity across grade (teaching)
- Yes, Small Learning Communities improve learning:
 - Flexible grouping
 - Changing groups

PROFESSIONAL DEVELOPMENT

One Table Team identified these topics for Professional Development:

- How we help all teachers' comfort level with collaborative spaces
- How to create and maintain flexible grouping
- Setting goals





- Use of data →ie K assessments
 - Balance with time to reflect on best practices
 - To ultimately improve instruction
- STEM
- 21st C skills - both to teach and further craft

- Develop relationships; get to know the parents and family
 - Is there parking for parents?
 - Is the school inviting---yet safe?

PARENT + COMMUNITY OUTREACH

Two Table Teams addressed issues of connections beyond school. Here are their responses:

CRITIQUE OF CURRENT OUTREACH

- Better outreach is needed:
 - Senior citizens
 - Non-parents
 - Local higher ed institutions
 - Beth Israel Deaconess
 - Local businesses
 - METCO parents
- Some families are less engaged:
 - ELL
 - Low income
 - Dual working parent home
 - METCO
- How do we make it better?
 - Mall classroom
 - Go to organizations
 - New Senior Center
 - Hold weekend events
 - Charitable fundraisers
 - Relay for Life
 - Senior greeters in our schools
 - Provide space for them
 - Lunch
 - Enhance community outreach/service learning
 - Learning opportunities
 - Diversify opportunities for engagement

ORGANIZATIONAL CHALLENGES TO COMMUNITY OUTREACH

- Resistance to shared materials and space
 - Trust + relationships are key
 - Opportunities to share the “bigger pix”
 - Vision with all staff: ie: Art, PE, PTC share Gym
- Storage
 - The value added is the support we receive from the community

STRATEGIES TO IMPROVE OUTREACH

- Learning goes beyond the school day and beyond Grade 12
 - Create adult seating/meeting spaces at elementary schools
- Identify spaces we have in the community that can also be used for students
 - Flexibility between schools and community

SERVICE LEARNING

How early can service learning start?

- Kindergarten
 - Never too young



AGENDA

Key Needham Public Schools leaders met on 2nd February 2012 for most of a day to develop an educational framework to guide the Hillside - Mitchell Pre-Feasibility Study.

Notes of all activities follow:

- 21st Century Elementary Schools: Presentation
- Ideal Elementary School Size (IESS)
- Summary of Current School Statistics
- Effective Delivery of Programs and Services
- Efficient Delivery of Programs and Services
- School Size + Grade Structure
- Parent + Community Outreach
- Review + Summary



Workshop Notes

21st CENTURY ELEMENTARY SCHOOLS Presentation

Frank Locker presented on the changing values, goals, and deliveries that characterize the most progressive thinking about elementary schools in the United States, and worldwide, today. Key points included:

- 20th vs 21st century schools
 - The 20th century was a century of creating efficient schools; the 21st century has been a century of looking for effectiveness in schools
 - The 20th century was the century of the teacher; the 21st century is the century of the learner
 - The teacher used to hold all the information; now the teacher is the guide
- Education has many “Best Practices”, but planning for the future requires consideration of “Next Practices”
 - Research in learning informs us of many effective educational practices
 - Some are gaining popularity
 - Others are not yet in general practice



- Learning is more effective when students apply their learning immediately
- The Multiple Intelligence theory explains why different students learn best in different ways
- 21st Century Skills Framework offers a clear concept of skills students need for success in our rapidly changing global economy. It establishes:
 - Core, subject-based learning is not sufficient any more
 - Learning relevant 21st century survival skills is just as important, perhaps more important. These include:
 - Learning and innovation skills
 - Life and career skills
 - Information, media, and technology skills
 - Learning should be interdisciplinary, bridging the gaps between subject areas
 - Learning should be infused with 21st century themes
These include:
 - Global awareness
 - Financial, economic, business and entrepreneurial literacy
 - Civic literacy
 - Health literacy
- Learning is a social activity. Students learn better when they are in strong, relationships with teachers and peers
- The Relevance and Rigor Framework of the International Center for Leadership in Education correlated Bloom's Taxonomy with application, offering a concise understanding of effective learning
- Teachers' work is supported through strong relationships with other professionals
- Schools are looking for more community connections to improve student learning
- Flexible furniture is needed to bring the student the support to learn in a variety of modalities

A copy of the presentation is included in the Appendix, Ch 4.2

IDEAL ELEMENTARY SCHOOL SIZE (IESS)

The IESS, Needham Public Schools "ideal elementary school size" construct, is an informal concept that has been used to guide planning for elementary schools for decades. The construct calls for three to four classrooms per grade. The number of classrooms per grade is a foundation issue in planning schools, affecting everything from costs of operations to quality of educational delivery, to comfort for students and parents. Workshop participants assessed the appropriateness if the IESS in most of the challenges they undertook. For reference, current classrooms per grade of the elementary schools are:

- Broadmeadow three to four, varies by year
- Eliot three
- Newman five to six, varies by year
- Hillside three to four, varies by year
- Mitchell three to four, varies by year

SUMMARY OF CURRENT SCHOOL STATISTICS

Critical elementary statistics were assembled by the educational planner and the architects, and were presented to the workshop participants as background information. A copy of the document is included in the Appendix, Ch 4.3.

EFFECTIVE DELIVERY OF PROGRAMS + SERVICES

Workshop participants were given this challenge:

FOCUS ON QUALITY, CONTINUITY, AND CONSISTENCY OF DELIVERY



Discuss these issues:

1. Consider curriculum delivery. What is educationally most effective/appropriate?
 - a. Kindergarten: ½ day vs all-day K
 - b. Pre-K: how extensive?
 - i. IS IT MORE EFFECTIVE TO HAVE PK WITH GRADES K+?
 - c. Low incident Special Education
 - d. Special services:
 - i. Reading
 - ii. Title 1
 - iii. OT/PT
 - e. General education delivery
 - f. “Specials”: art, music, PE, technology
2. What are we missing/not doing well enough?
 - a. 21st century skills
 - b. STEM or STEAM
 - c. Applied learning
 - d. Integrated arts
 - e. Movement
 - f. World awareness
3. COULD WE HAVE CHOICE/THEMATIC ELEMENTARY SCHOOLS/SCHOOLS WITHIN SCHOOLS IN NEEDHAM?
4. What effective deliveries have we overlooked/underplayed?
 - a. Multiage
 - b. Looping
 - c. Teacher teaming
5. Are there notable brilliant/clever/laudable/notable strategies/situations?
6. Are there challenges?

a. Is “critical mass” important for effective deliveries?

7. Identify potential solutions to identified challenges/problems
8. Confirm/challenge whether the parameters of IESS result in effective education
9. ARE NEEDHAM’S CURRENT CLASS SIZE GUIDELINES APPROPRIATE? COULD WE LOWER SOME AND INCREASE SOME?

Three Table Teams took up the challenge. Here are their responses:

TABLE TEAM 1

- 1. Effective/appropriate:
 - Full-day K: full day across district at central location(s)
 - Should not be fee-based
 - Pre K: ½ + full with K group across district:
 - Works but space not OK
 - Low Incident Special Education:
 - More space needed
 - Transition problems (LISE group)
 - Neighborhood? District wide?
 - Does current pattern fit our values?
 - A 6th building would bring a transition challenge
- 4. Effective deliveries:
 - Multi-age should be explored
- 9. School size:
 - Broadmeadow and Newman are too big

TABLE TEAM 2

- 1. Effective/appropriate:
 - Pre K is currently effective
- 1.b.i Full day K is important in every school so that:
 - Looping-K-1 can occur
 - Building community can occur
- 2. Missing/not doing well enough:



- a. We can do a better job with:
 - o Creating opportunities/space for collaboration:
 - Adults
 - Children
 - o STEAM - more programs, more and better space
 - o ELL programming is a challenge
- 3. Choice/thematic schools?
 - o We like the elementary program model (We do not feel Theme School is appropriate)
- 5. Notable strategies:
 - b. Create flexible, adaptable, integrated, adjustable spaces (eg, wireless) for all special programs and all classrooms
 - c. Ensure acoustics, wireless, sound field systems
- 9. Current class size guidelines:
 - o NPS classroom guidelines are OK

TABLE TEAM 3

- 1. Effective/appropriate:
 - o PK-K Early Learning Center - full-day K or ¾ day PK+K
 - Movement based on developmental needs
 - o 1-5 or 1-6, 7-8, 9-12
 - o Grade configuration should pay attention to transitions
 - Speed transitions have been a problem
- 2. Missing/not well enough:
 - o Does the 6th grade in each elementary school look like the team model (facility) that Frank showed in the slide?
 - o Restore elementary World Language and K Music
 - o Walk to Media Center vs walk to Media Center + community access
 - o How to deliver tech services differently? Integrated regularly vs “having media”
 - o A Media Center that encourages community use
- 3. Thematic Schools:
 - o Community seems to value the neighborhood school
- 4. Overlooked/underplayed educational deliveries:
 - o Standard-based

EFFICIENT DELIVERY OF PROGRAMS + SERVICES

Workshop participants were given this challenge:

FOCUS ON COSTS/EFFICIENCIES OF OPERATIONS

Discuss these issues:

1. **Confirm/challenge whether the parameters of IESS result in operational efficiencies**
2. **Identify challenges/problems at focus schools and fellow schools**
3. **Which schools have challenges?**
4. **Which programs have challenges?**
5. **Identify any examples of brilliance/cleverness**
6. **Review staffing and hidden costs**
7. **Identify potential solutions to identified challenges/problems**
 - a. **Is staff “lost time” a problem**
 - b. **Is staff inefficiency/redundancy due to building size a problem?**
 - c. **Other?**

TABLE TEAM 4

- 1. Does IESS result in operational efficiencies?
 - o Elementary schools at capacity
 - o Three to four sections/grade desirable
 - Newman - five sections
 - Broadwmeadow - four to five sections
 - Broadmeadow feels better?
- 3. Which schools have challenges?
 - o Elementary growth - Hillside - Mitchell - Eliot
 - o Build capacity for future growth
- 4. Programmatic challenges:
 - o Need better programmatic connections within building





- ELL growth
- Learning Centers
- Specials
- Materials
- 6. Review staffing and hidden costs:
 - Inefficient passing time within schools
 - +/- one hour/day
 - Busing vs walking
- Transit time for Specialists
 - Some specialists serve 800 students in two buildings
 - Cannot know building
 - Cannot know children
- Relationships
- 5. Examples of cleverness:
 - Creative use of current space
 - Effectiveness?
 - Clusters of classrooms and clever use of 'spaces between' hallways
 - Effective?
- 7. Challenges:
 - Lack of collaborative spaces
 - Travel time for Specials teachers
 - Gathering spaces for full school

TABLE TEAM 5

- 1. Does IESS result in operational efficiencies?
 - IESS
 - Three to four classes/grade
 - 400+/- students/school
 - One Specialist at each school - Art/Music/PE
 - Collaborative spaces
- 2. Challenges/problems:
 - Current inefficiencies
 - Very different school sizes
 - Bussing?
- 3. Schools with challenges:
 - Hillside
 - Older facility
 - Technology challenged
 - Core areas undersized
 - SPED class - too small
 - Halls - too small
 - ADA problems
 - Mitchell
 - Older infrastructure
 - No collaborative spaces
 - "My kids" vs "Our kids"
 - Culture of 20th century + 21st century
 - Newman
 - Designed as middle school
 - Poor flexibility
 - Inefficiency of 20th Century
 - Distance to core areas

SCHOOL SIZE + GRADE STRUCTURE

Workshop participants were given this challenge:

FOCUS ON THE IMPACT OF SIZE AND GRADE STRUCTURE ON LEARNING

Discuss these issues:

1. Identify any natural developmental breaks/thresholds in the PK-6 continuity

PK K 1 2 3 4 5 6

2. Relationship-building

- a. What is the maximum number of students that can be well known by a principal?
- b. By teachers/staff?
- c. Should principals or teachers/staff know all their students well?





- d. **What is the maximum number of teachers/staff that can effectively/intuitively work together in a collaborative grouping?**
- e. **Is it more effective for teachers/staff to collaborate?**
 - i. **On what?**
- 3. Professional focus**
 - a. **Is there an educational advantage for teachers/staff to have a small developmental age grouping?**
 - b. **Do Professional Learning Communities improve learning?**
 - i. **How?**
 - ii. **What kind?**
 - c. **Do Small Learning Communities improve learning?**
 - i. **How?**
 - ii. **What kind?**
- 4. Confirm/challenge whether the parameters of IESS result in effective education**

Three Table Teams took up the challenge. They were asked to identify the ideal grade groupings based on developmental ages of students by placing breaks as appropriate, as in this example:

PK / K 1 / 2 3 4 / 5 6

Two Table Teams identified clear breaks (characterized by “/”); one Table Team felt breaks are evident but not so strong as to drive school organization (characterized by “.”) Here are their responses:

TABLE TEAM 1

- 1. Developmental breaks:
 - o **PK K 1 / 2 3 4 / 5 6**
 - Science is taught differently at all schools

- It is evident observing students arriving at High Rock
- 2. Relationship-building:
 - o a. Maximum number of students well known by a principal:
 - 250-400 with multiple years
 - o b. By teachers/staff
 - 60-70 students
 - o c. Should principals/teachers/staff know students well?:
 - Yes
 - o d. Maximum number of teachers in collaborative grouping:
 - Grade level (all grade groups): 5-7
 - Teams (vertical: 3rd & 4th): ~~10-14~~ 5-7
 - Subjects (Art with Science):5-7
 - o e. Is it effective to collaborate? Yes:
 - I Curriculum
 - II Development
 - III Assessment/\$
 - IV Best practice
 - V Student Needs
- 3. Professional focus:
 - o A. Yes, it is better for teachers to have a small developmental age grouping
 - o B. Yes, Professional Learning Communities improve learning
 - I Peer feed-back
 - II Relationship building
 - III Risk taking
 - IV Equity across grade (teaching)
 - o C. Yes, Small Learning Communities improve learning:
 - Flexible grouping
 - Changing groups

TABLE TEAM 2

- 1. Developmental breaks:
 - o **PK K 1 : 2 : 3 4 : 5 6 7 8**
 - o We should be considering PK-8 learning, not just PK-6 learning





- The breaks exist, but they are not so strong as to drive school organization
- The big breaks are Elem Ed/MS Ed/Secondary Ed
- 2. Relationship-building:
 - a. Maximum number of students well known by a principal
 - 425 if the principal knows students/family over three to four years. Fewer years are not effective in knowing students.
 - b. By teachers/staff
 - 80 in one year for teachers
 - d. Maximum number of teachers in collaborative grouping:
 - Six to eight collaboration # for teachers
 - This is valued: ensure time + space to make it effective
 - e. Is it effective to collaborate? Yes:
 - Yes – Value grade/developmental teams, work collaboration, flexibility, and student support
 - Need flexibility to meet variety of needs (four to five grades) (low incidents)

TABLE TEAM 3

- 1. Developmental breaks:
 - **PK (K / 1) 2 3 4 / 5 (6 / 7 8)**
 - K and 1st grade could be in the same developmental grouping
 - 6th grade should be aligned with grades 7 and 8
 - PK-K:
 - Youngest teams in a familiar environment
 - Developmentally appropriate
 - Start as a whole town community, not in neighborhood schools
 - Even more program **??word??** but nixes bussing etc or large building
 - K and 1:
 - If Grade 1 was included, there would be more room for looping

- Grades 1 to 4:
 - Looping would be most flexible here
 - Offers flexibility for students to “repeat”
- Grades 5 to 6:
 - Departments within 1-5 (6) school:
 - Would allow prep for Middle School
 - Easier transition
- 2. Relationship-building:
 - a. Maximum number of students well known by a principal:
 - Ideal: 350
 - Doable: 450
 - b. By teachers/staff
 - Ideal: 18-20
 - Doable: 20
 - Would look different in ½ or whole day K
 - More kids in whole due to movement
 - Aides in larger classes
 - By specialists:
 - Ideal: 350
 - Doable: 450
 - e. Is it effective to collaborate?
 - We should know the schedule and collaboration is important
 - 21st century skills
 - Time to do so needs to stay on front burner
 - Schedule, contract
- 3. Professional focus:
 - Topics for PD:
 - How we help all teachers’ comfort level with collaborative spaces
 - How to create and maintain flexible grouping
 - Setting goals
 - Use of data →ie K assessments
 - Balance with time to reflect on best practices
 - To ultimately improve instruction





- STEM
- 21st C skills - both to teach and further craft

PARENT + COMMUNITY OUTREACH

Workshop participants were given this challenge:

DEVELOP CONCEPTS TO IMPROVE CONNECTIONS TO COMMUNITY

Discuss these issues:

1. What is the current extent of parent/community outreach?
 - a. Programs
 - b. Services
 - c. Events
 - d. Space use
2. Critique the effectiveness of parent/community outreach
 - a. Are there parents who are not “engaged”?
 - i. How do we engage them?
3. Identify any cost/organizational challenges to parent/community outreach
4. Develop strategies to improve parent/community outreach

- Health/Safety Committee
- Community education
- Good News Calls
- Community projects/services
- Plays, fairs, etc
- Superintendent’s Blog
- Cable broadcasts
- Arts
- Sports
- Performance reports
- Clubs
- Local clergy
- 2. Better outreach is needed:
 - Senior citizens
 - Non-parents
 - Local higher ed institutions
 - Beth Israel Deaconess
 - Local businesses
 - METCO parents
- 3. How do we make it better?:
 - Mall classroom
 - Go to organizations
 - New Senior Center
 - Weekend events
 - Charitable fundraisers
 - Relay for Life
 - Senior greeters
 - Provide space for them
 - Lunch
 - Enhance community outreach/service learning
 - Learning opportunities

Two Table Teams took up the challenge. Here are their responses:

TABLE TEAM 4

- 1. Current programs/outreach:
 - School Council
 - PTC
 - Principal Newsletter
 - Parent volunteers
 - Community volunteers

TABLE TEAM 5

- 1. Current programs/outreach:
 - Strong PTC
 - Weekly bulletin,
 - Listens???
 - Parent volunteers
 - PTC school programs






- PTC “social” opportunities,
- Parent volunteers in classroom, media, café, etc + community
- PTC school programs
- PTC “Social” opportunities
- NCE after school enrichment
- Informal networking between parents due to walk to school, etc
- Teachers PD + Adult Ed
- Use of Gyms
- Summer programs: Enrichment + Special Ed
- Use of fields + playgrounds
- Voting
- Challenges:
 - No after school care
 - Air conditioning is needed
 - Need more Gyms
 - PK should consider the social dynamic, not just space
- 2. Critique effectiveness of outreach:
 - Some families are less engaged:
 - ELL
 - Low income
 - Dual working parent home
 - METCO
 - We need to:
 - Diversify opportunities for engagement
 - Develop relationships; get to know the parents and family
 - Is there parking for parents?
 - Is the school inviting---yet safe?
- 3. Cost/organizational challenges to parent outreach:
 - Resistance to shared materials and space
 - Trust + relationships are key
 - Opportunities to share the “bigger pix”
 - Vision with all staff: ie: Art, PE, PTC share Gym
 - Storage
 - The value added is the support we receive from the community
- 4. Strategies to improve outreach:
 - Learning goes beyond the school day + beyond Grade 12
 - Adult seating/meeting space at Elementary
 - What spaces do we have in the community that can also be used for students?
 - Flexibility between schools and community
- How early can service learning start?
 - Kindergarten
 - Never too young

REVIEW + SUMMARY

Workshop participants had these thoughts at the end of the workshop:

- This is very complicated
- In the USA, we do not invest and plan ahead
- PK and K conversation is BIG
- PK to 6 discussion is PK to 8
- In the last project we started thinking big, but got small real fast
 - This time stay big longer
- This is a community “problem”
 - Not just a school “problem”

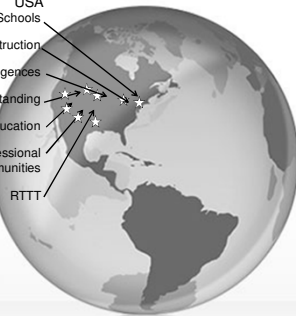




21st Century Elementary Schools
 Edited + Expanded February 2012
 Needham Public Schools

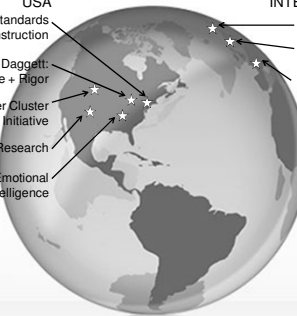
Frank Locker PhD, AIA, REFP
 Frank Locker Educational Planning
fl@franklocker.com

Improving Education
 BEST PRACTICES



USA
 Coalition Essential Schools
 Differentiated Instruction
 Multiple Intelligences
 Teaching for Understanding
 Lezotte: Effective Education
 DuFour: Professional Learning Communities
 RTTT

Transforming Education
 NEXT PRACTICES




USA
 Marzano: Standards Based Instruction
 Daggett: Relevance + Rigor
 States' Career Cluster Initiative
 Brain Research
 Social-Emotional Intelligence

INTERNATIONAL
 Finland
 Hellerup
 Reggio Emilia

GLOBAL Partnership for 21st Century Skills


District Master Planning
 MANAGING NUMBERS



Enrollment Projections
 Facilities Conditions
 Student Housing Locations
 Efficient Bus Routes
 Walking Distances
 Operational Costs
 Feeder Schools

Construction Costs
 Phasing
 Cost to Average Taxpayer
 Community Demographics
 School Locations
 Attendance Areas
 Efficient Use of Facilities

District Master Planning
 IMPROVING LEARNING



School Size
 Socio-Economic Equity
 School Choice
 Flexibility for Future Change
 Grade Groupings
 Educational Program Delivery
 Community Centers

Magnet Schools
 Community Engagement
 Achieving Excellence
 Neighborhood Schools vs Community Schools
 Community Buy In

Elementary Issues

EDUCATIONAL DELIVERY

- Collaboration/team teaching
- Collaborative learning
- Learning group size
- 21st century skills
- Reading literacy
- Project-based learning
- Arts integration
- Applied learning
- Thematic learning
- Technology integration
- Daily change
- Change over time
- What is a classroom?
- What is a media center?

Defining 21st Century Learning

Integrated
Engaged
Creative
Active + Applied
Relevant

Critical Thinking
Relationships
Collaborative
Personalized
Interdisciplinary

Constructivist
Project-Based Learning

Learning Research
LEARNING PYRAMID

Rate of retention of different modes of learning

ACTIVE LEARNING + RESPONSIBILITY HAS MORE RETENTION THAN PASSIVE LEARNING

LECTURE	5%
READING	10%
AUDIO-VISUAL	20%
DEMONSTRATION	30%
DISCUSSION GROUP	50%
PRACTICE BY DOING	75%
TEACH OTHERS and/or IMMEDIATE USE	90%

The Learning Pyramid

NTL for Applied Behavioral Science

Defining 21st Century Learning
RIGOR + RELEVANCE

EVALUATION 6	C	D
SYNTHESIS 5	Assimilation	Adaptation
ANALYSIS 4		
APPLICATION 3	A	B
COMPREHENSION 2	Acquisition	Application
AWARENESS 1		

1 2 3 4 5
KNOWLEDGE IN ONE DISCIPLINE APPLY ACROSS DISCIPLINES APPLY TO REAL-WORLD UNPREDICABLE SITUATIONS

Source: International Center for Leadership in Education WWW.LeaderEd.com

Learning Research
RIGOR + RELEVANCE
Elementary School

A Acquisition	D Adaptation
-------------------------	------------------------

- Put words together in sentence format
- Memorize multiplication tables
- Demonstrate phases of the moon
- Memorize names, locations, and capital cities of U.S. states
- Publish a brochure
- Collect data on an event and compare it to expected results, such as the number of faulty parts manufactured
- Design a candy dispenser that works without gravity
- Research a location in the U.S. and explain why it is a good place to live

International Center for Leadership in Education WWW.LeaderEd.com


Popular Press
TIME MAGAZINE


"This is a story about... whether an entire generation of kids will fail to make the grade in the global economy because they *can't think their way through abstract problems, work in teams, distinguish good information from bad, or speak a language other than English.*"


How to Build a Student for the 21st Century, TIME Magazine, December 18, 2006


Defining 21st Century Learning
PARTNERSHIP FOR 21st CENTURY SKILLS


Partnership for 21st Century Skills


Partnership for 21 st Century Skills	
CORE ACADEMIC AREAS	21 st CENTURY THEMES
 <ul style="list-style-type: none"> English/Reading World Languages The Arts Mathematics Science Geography History Government/Civics <p>Still matter a great deal but are no longer sufficient</p>	<ul style="list-style-type: none"> Global Awareness Financial, Economic, Business + Entrepreneurial Literacy Civic Literacy Health Literacy <p>Multi-Disciplinary</p> <p>Weave through content areas</p>
Charles Fadel: Deep Dives in the 21 st Century Curriculum	

Partnership for 21 st Century Skills	
CORE ACADEMIC AREAS	21 st CENTURY THEMES
	<ul style="list-style-type: none"> Global Awareness Financial, Economic, Business + Entrepreneurial Literacy Civic Literacy Health Literacy <p>Multi-Disciplinary</p> <p>Weave through content areas</p>
Charles Fadel: Deep Dives in the 21 st Century Curriculum	

Partnership for 21 st Century Skills	
CORE ACADEMIC AREAS	21 st CENTURY THEMES
 <ul style="list-style-type: none"> English/Reading World Languages The Arts Mathematics Science Geography History Government/Civics 	<ul style="list-style-type: none"> Global Awareness Financial, Economic, Business + Entrepreneurial Literacy Civic Literacy Health Literacy <p>Global Awareness = Geography + Languages + History + Sociology + Music + Art</p>
Charles Fadel: Deep Dives in the 21 st Century Curriculum	

Partnership for 21 st Century Skills	
21 st CENTURY SKILLS	
	<p>LEARNING + INNOVATION SKILLS</p> <ul style="list-style-type: none"> Creativity + innovation Critical thinking + problem solving Communication Collaboration <p>LIFE + CAREER SKILLS</p> <ul style="list-style-type: none"> Flexibility + adaptability Initiative + self direction Social + cross-cultural skills Productivity + accountability Leadership + responsibility
Partnership for 21 st Century Skills	

Partnership for 21 st Century Skills	
THE FOUR 'C's'	
	<ul style="list-style-type: none"> Creativity + innovation Critical thinking + problem solving Communication Collaboration
Partnership for 21 st Century Skills	

Africa Discovery	
MANCHESTER, MA, MEMORIAL SCHOOL	
<p>21st Century Skills in Action: Manchester Memorial School, Gr. 6</p> <p>A social studies unit on Africa was used to teach global awareness, technology skills, music and art at this Manchester-Essex school. Each student chose an African country to study in depth, did their research online, created their final projects using Powerpoint and presented them using SMART Boards. While this project was ongoing, students discussed and constructed African masks in art class, and learned about and practiced African drumming in Music class. More on this program: http://www.doe.mass.edu/edtech/practices/manchester/mma.htm</p> <p>21st century skills used in this project: global awareness, creativity, technology, collaboration, communication, problem solving</p>	
Massachusetts Dept Education 21 st Century Skills Task Force	

Defining 20th Century Schools

Defining 20th Century Schools

Defining 21st Century Schools

REALLY SMALL, SMALL,
MEDIUM, BIG, +
REALLY BIG SPACES

Defining 21st Century Schools

MULTIPLES OF
REALLY SMALL, SMALL,
MEDIUM, BIG, +
REALLY BIG SPACES

Defining 21st Century Schools

MULTIPLES OF
REALLY SMALL, SMALL,
MEDIUM, BIG, +
REALLY BIG SPACES

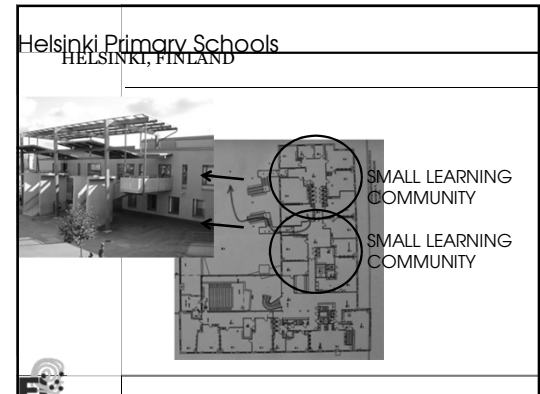
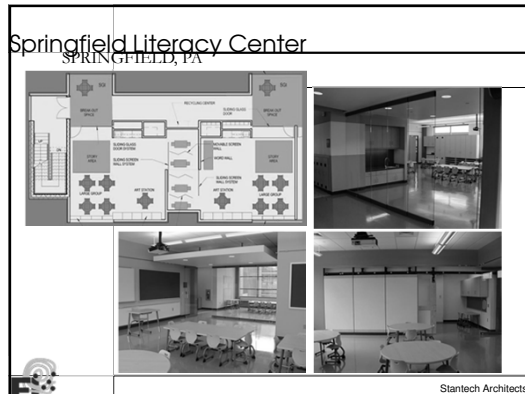
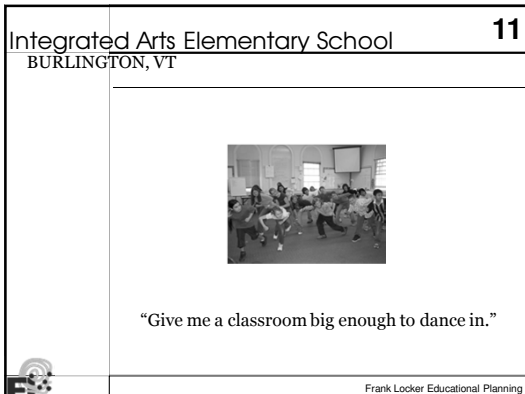
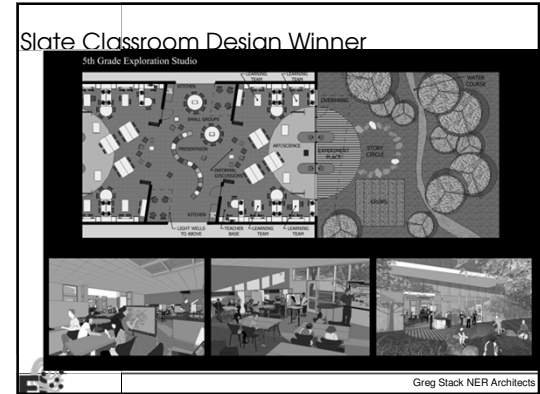
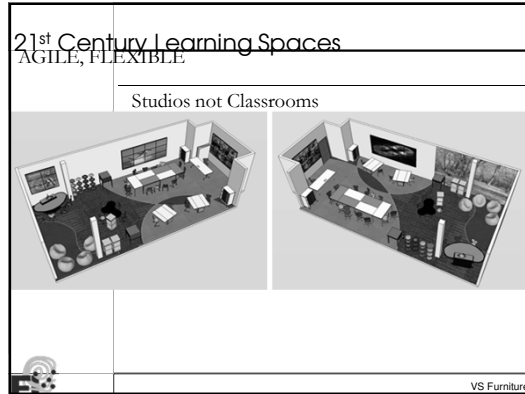
21st Century Learning Spaces

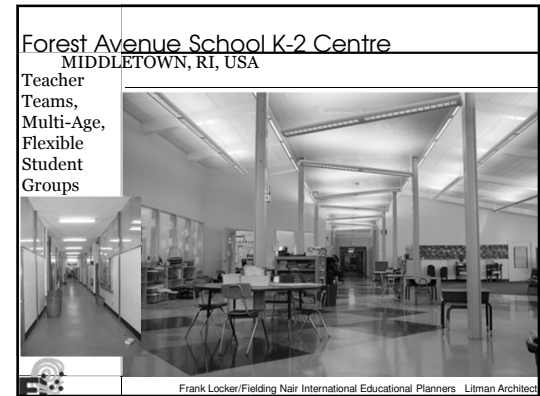
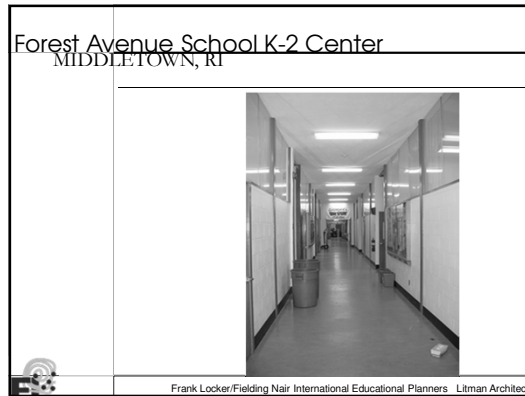
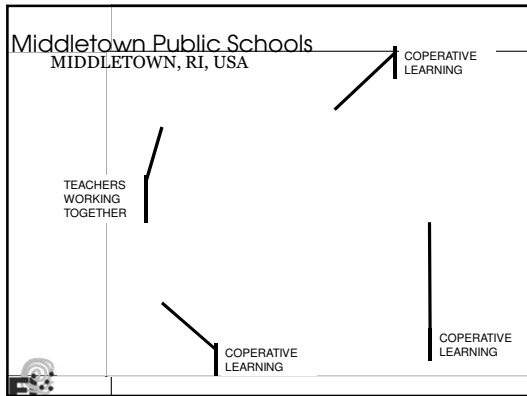
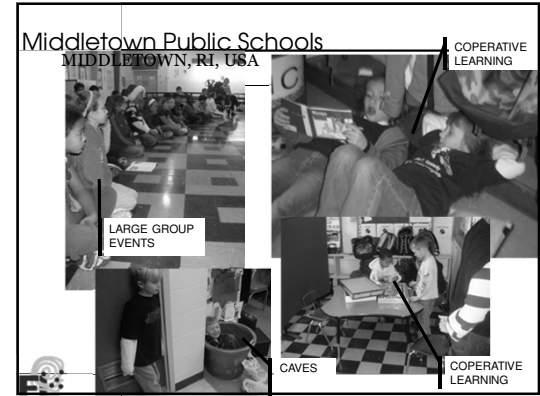
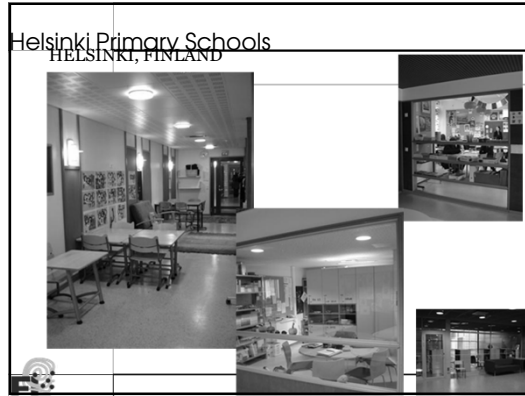
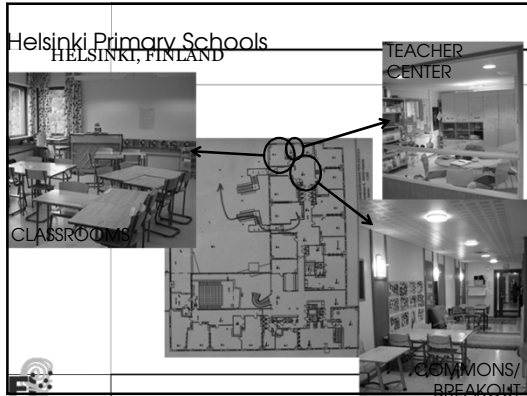
RM REAL ENTRE UK, USA, AUSTRALIA

Studios not Classrooms

EXPLORATION + INVESTIGATION
CREATIVE + MEDIA
PRESENTATION
COLLABORATION

RMeducation





Forest Avenue School K-2 Centre
MIDDLETOWN, RI, USA

Teacher Teams, Multi-Age, Flexible Student Groups

ENTRY FROM SCHOOL

TO BUSES + PICKUP

Frank Locker/Fielding Nair International Educational Planners Litman Architects

Forest Avenue School K-2 Centre
MIDDLETOWN, RI, USA

Teacher Teams, Multi-Age, Flexible Student Groups

4 Core Teachers + 2 Spl Ed Teachers + Specialists with 85 Students

ENTRY FROM SCHOOL

TO BUSES + PICKUP

Frank Locker/Fielding Nair International Educational Planners Litman Architects

Forest Avenue School K-2 Centre
MIDDLETOWN, RI, USA

Nair International Educational Planners Litman Architects

Forest Avenue School K-2 Centre
MIDDLETOWN, RI, USA

COMMONS

TEACHER CENTER

STAGE

Frank Locker/Fielding Nair International Educational Planners Litman Architects

Wooranna Park Primary School
MELBOURNE, AUSTRALIA

- Year 5 + 6
- 110 Students
- Teacher Teams
- Activity Zones
- Project-Based Learning

BEFORE

AFTER

- High Poverty
- Test Scores at 36% - 73% vs 12% Expected per Student

Family Occupation

Mary Featherston Designer

Wooranna Park Primary School
MELBOURNE, AUSTRALIA

Mary Featherston Designer



Where + What is a Classroom?

- No place for teachers to take centre stage
- Flexible furniture
- Quiet areas
- Immersive areas
- Group rooms
- Lecture theatres
- Learning centres
- Learning facilitators
- Home access
- 24/7/365 access

Alexi Marmot, Courtesy Charles Fadel, co-author '21st Century Skills'

Fredrika Bremer Upper Secondary School HANINGE, SWEDEN

BEFORE	NOW
• Big school	• Big school
• 1250 pupils	• Relationship-based
• Departmentally organized	• 3 Small Learning Communities (SLCs): <ul style="list-style-type: none"> • Heurika: Natural Sciences • Erika: Social Sciences • Merika: Arts, Health Care, Media
• "Anonymous" pupils	• 14 Working Units with 70-90 pupils each
• Students move from class to class	• Integrated teacher teams, 5-8 teachers
	• One of 18 Skola 2000 schools
	• Now 2 pupils compete for each seat in Erika + Merika
	• Student satisfaction is up
	SKOLA 2000 www.skola2000.se

Kristian Lindgren Architect

Fredrika Bremer Upper Secondary School HANINGE, SWEDEN

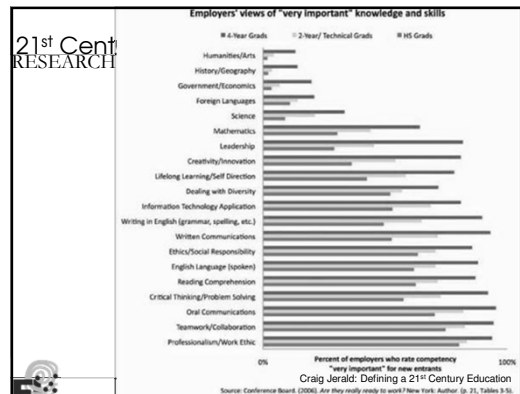
Educational Methods

- Students are continually active and work in longer sessions
- School subjects are integrated in projects
- Students are trained in taking responsibility for their learning
- Students take part in planning, carrying out and evaluating the school work
- Students have individual development programmes
- Students' social skills are trained by collaborating in groups

Organization

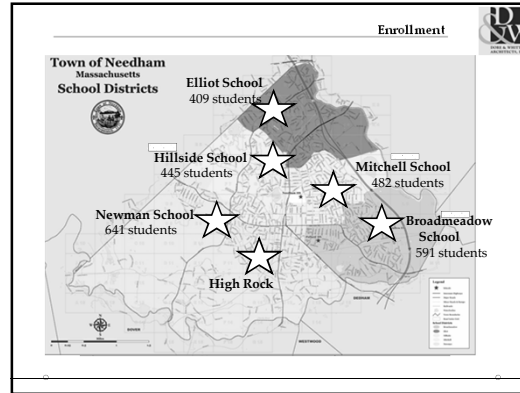
- Small schools within the big school
- Work units instead of classes
- Teachers work in teams
- Teacher teams' responsibility and authority is extensive

Kristian Lindgren Architect



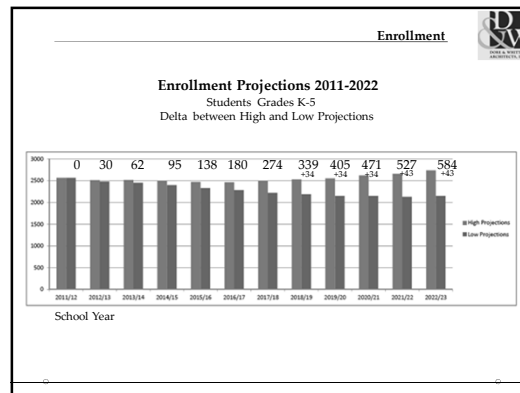
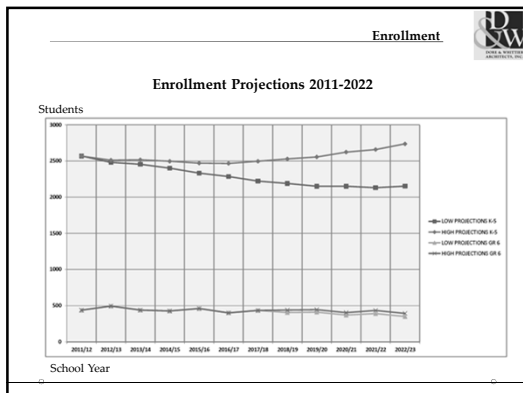
Town of Needham Hillside & Mitchell Elementary Schools Pre-Feasibility Study

February 02, 2012



School Statistics

BUILDING	GRADES SERVED	# STUDENTS FTE	# CORE CLASS ROOMS / GRADE						CLA SS SIZE RANGE	FTE TEACHERS/SPECIALIST								
			PK	K	1	2	3	4		5	6	ART	MUSC	PE	LIB	RNG	OT/P	OTHR
Hillside	K-5	445	0	4	3	3	4	3	4	15-24	0.7	1	0.8	0.8	1.4			
Mitchell	K-5	482	0	4	4	4	4	3	19-25	0.8	1.12	0.8	0.8	1.3				
Broadmeadow	K-5	591	0	4	4	5	4	5	19-24	0.9	1.18	1.2	1	1.8				
Eliot	K-5	409	0	3	3	3	3	4	19-23	0.6	1	0.8	0.8	2				
Newman	K-5	641	0	5	5	5	5	5	20-24	1	1.22	1.2	1	2				
High Rock	6	438							20.6 - 23.5	0.7	2	2	1	1.2				

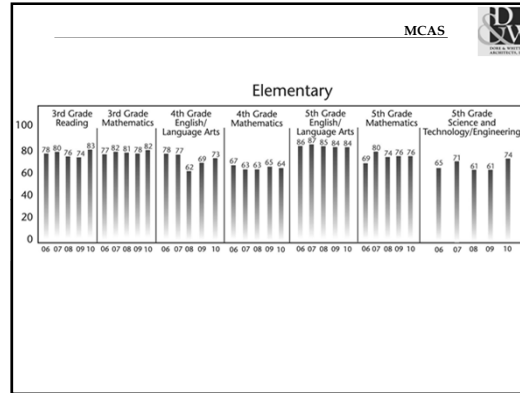


Special Education I

SCHOOL	PROGRAM	SY 2011-12		SY 2012-13		SY 2013-14		SY 2014-15	
		Teachers	Teachers	Teachers	Teachers	Teachers	Teachers		
Broadmeadow	Learning Center K-5	42	2.5	45	2.5	50	3	50	3
	Specialized Learning Center K-5	8	1	8	1	Grades 3-5/8	1	Grades 3-5/8	1
	Specialized Learning Center K-2					6	1	K-2/6	1
Eliot	Learning Center K-5	41	2.6	42	2.6	45	2.6	45	2.6
	Language-based Crm. 3-5	10	1	10	1	LBC 4-5/10	1	LBC 4-5/10	1
	Language-based Crm. 2-3					LBC 2-3/8	1	LBC 2-3/8	1
Hillside	Learning Center K-5	39	2.5	40	2.5	40	2.5	40	2.5
	Early Learning Center II 3-5	14	2	9	1	6	1	6	1
	Early Learning Center II 3-5					6	1	6	1

Special Education 2

SCHOOL	PROGRAM	SY 2011-12		SY 2012-13		SY 2013-14		SY 2014-15	
		Teachers	Teachers	Teachers	Teachers	Teachers	Teachers		
Newman Learning Center K-5	Early Learning	65	3	65	3	65	3	65	3
	Early Learning	11	1	16	1	Medically complex Autism	1	Medically complex Autism	1
Newman Learning Center 1-5-5	Early Learning	5	1	5	1	4	1	4	1
	Integrated Classrooms	55tuition /32IEP	4	55tuition /32 IEP	4	70tuition /45 IEP	(Expand to medically complex rooms) 5	70 tuition/45 IEP	5
High Rock School	Early Learning Center PK	6	1	8	1	8	1	8	1
	Learning Center 6	55	3	65	3	65	3	65	3
High Rock School	Insight	7	1	8	1	5	1	9	1
	Language Based Classroom 6	9	1	10	1	10	1	10	1
	Autism/Skills Program			6	1	0		3	1
	Therapeutic Classroom					6	1	4	1



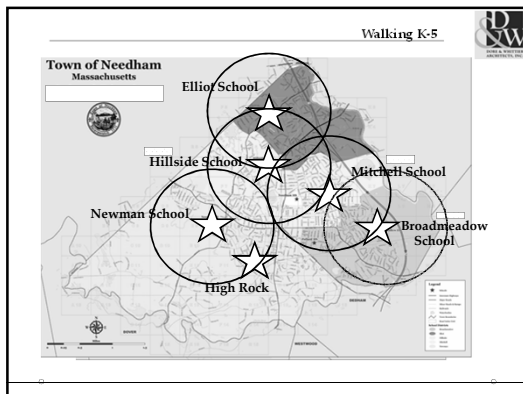
Social Emotional Learning

Goal 2
Developing the Social/Emotional Skills of All Students

To ensure that all students have the social and emotional competencies that enable them to be self-aware, to have social and relationship skills, to self-manage, and to make responsible decisions.

ential Education and Health classes provide direct instruction in decision-making, self-management and social communication/problem-solving skills. More on Needham's social/emotional learning program can be viewed at the district website: www.needham.k12.ma.us/sel/index.htm

Social and emotional learning (SEL) remains a focus PreK-12. At the elementary and middle levels, structures such as *Responsive Classroom* and advisory are in place, and curricula such as *Second Step*, Experi-



SPACE UTILIZATION AND EDUCATIONAL PLANNING

Space Utilization

Both schools were noted to have a number of space use constraints which were observed during our walk-through.

A few examples common to both the Mitchell and Hillside schools were:

- Significant lack of administrative space; copiers, paper and work spaces were located in the corridors
- Significant lack of remedial/tutorial and special education spaces; small group instructional spaces were found in stairways, corridors, and storage rooms
- Lack of storage space; several stairways and electrical/mechanical rooms are filled with items and each school has constructed and continues to build outdoor sheds for additional storage.

The charts below offer a quick overview of a few core spaces compared to current MSBA guidelines for spaces of the same function.

Hillside School

square foot dimensions are based on the current enrollment of 435 students

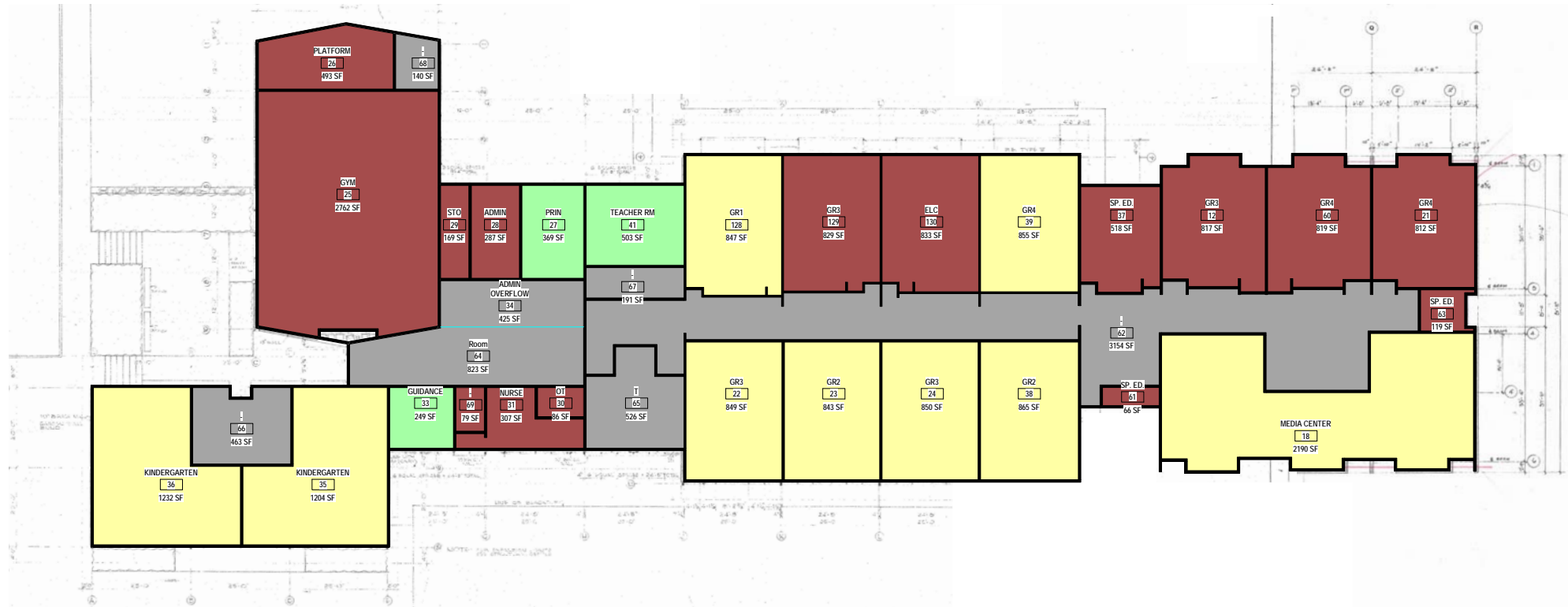
Room type	Existing (sf)	MSBA Standard for gr. 1-5 (sf)	% over / under
Typical classroom 1959 wing	850	950	-11%
Typical classroom 1969 wing	820	950	-14%
Library / Media	2200	2600	-15%
Cafeteria	2175	3250	-33%
Art	815	1000	-19%
Music	1020	1200	-15%
Overall Student Capacity	47,000 sf 435 students	47,000 sf 261 students	-40%

Mitchell School

Square foot dimensions are based on the current enrollment of 477 students

Room type	Existing (sf)	MSBA Standard for gr. 1-5 (sf)	% over / under	
Typical classroom 1949 wing	780	950	-18%	
Typical classroom 1959 wing	870	950	-8%	
Typical classroom 1969 wing	980	950	3%	
Library / Media	2100	2800	-25%	
Cafeteria	2400	3500	-31%	
Art	470	1000	-53%	
Music	625	1200	-48%	Existing music space is not a dedicated space
Overall Student Capacity	49,000 sf 477 students	49,000 sf 272 students	-42%	

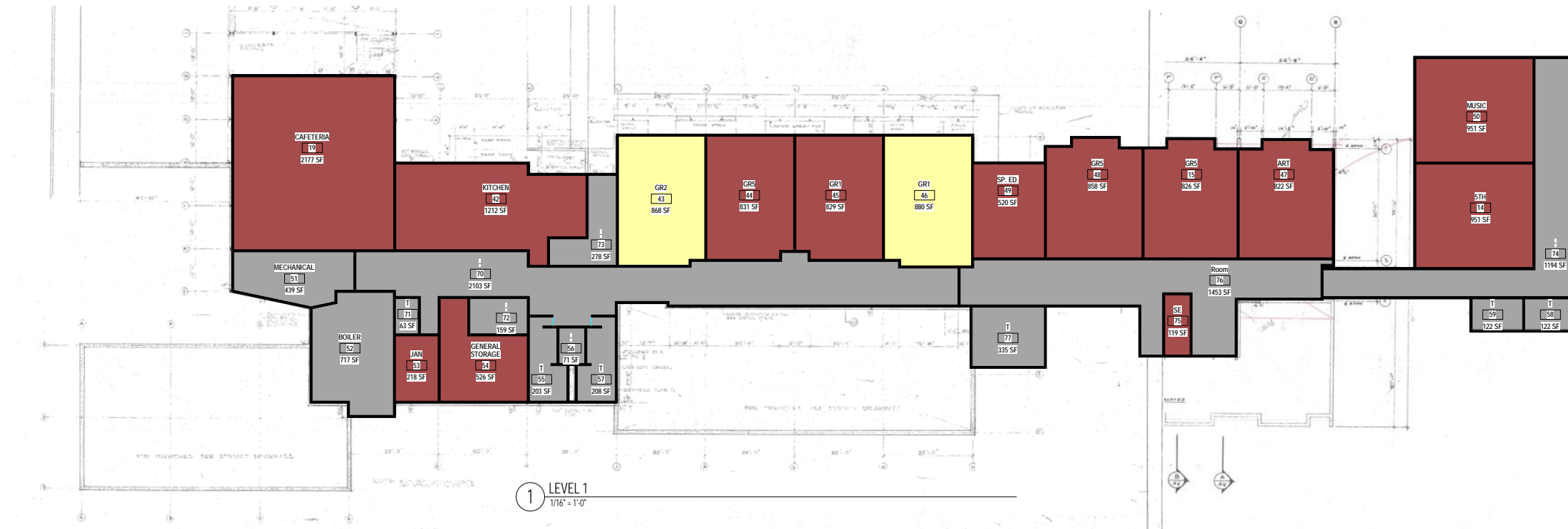
The attached floor plan diagrams of the existing Hillside and Mitchell schools indicate how the size of the existing spaces compare to the MSBA square foot guidelines for spaces of the same function. Spaces noted in yellow fall within 10% of the MSBA’s suggested size for their use, red denotes a deficiency that is greater than 10% and green notes spaces that exceed, by 10%, the suggested MSBA guideline for their function.



AREA KEY PLAN

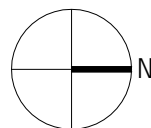
- Insufficient Space per MSBA Guidelines -Less by 10%
- Meets MSBA Space Guidelines within 10%
- Exceeds MSBA Space Guidelines by 10%
- Circulation, Toilets, and Utility Spaces

2 LEVEL TWO
1/16" = 1'-0"



1 LEVEL ONE
1/16" = 1'-0"

NOTE : PLANS ARE BASED ON A COMPILATION OF DRAWINGS BY THE ARCHITECTS COLLABORATIVE. POST- CONSTRUCTION ALTERATIONS MAY HAVE BEEN MADE. VERIFY EXISTING CONDITIONS IN FIELD PRIOR TO START OF NEW WORK. SQUARE FOOT AREAS INDICATED ARE ESTIMATED, BASED ON ORIGINAL DRAWINGS.



Hillside Elementary School, SPACE ANALYSIS

28 Glen Gary Road, Needham MA



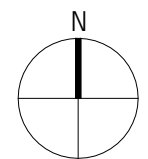


AREA KEY PLAN

- Circulation, Toilets and Utility Spaces
- Exceeds MSBA Space Guidelines by 10%
- Insufficient Space per MSBA Guidelines by 10%
- Meets MSBA Space Guidelines within 10%

2 GROUND FLOOR
1/16" = 1'-0"

NOTE : PLANS ARE BASED ON A COMPILATION OF DRAWINGS BY WILLIAM G. UPHAM ARCHITECT, RICH AND TUCKER ASSOCIATES INC. AND RICH, PHINNEY, LANG & COTE INC. POST- CONSTRUCTION ALTERATIONS MAY HAVE BEEN MADE. VERIFY EXISTING CONDITIONS IN FIELD PRIOR TO START OF NEW WORK. SQUARE FOOT AREAS INDICATED ARE ESTIMATED, BASED ON ORIGINAL DRAWINGS.



Mitchell Elementary School - Area Plan
200 Harris Ave. Needham MA



Educational Planning

Planning Assumptions - Forming the Basis for Conceptual Option Development

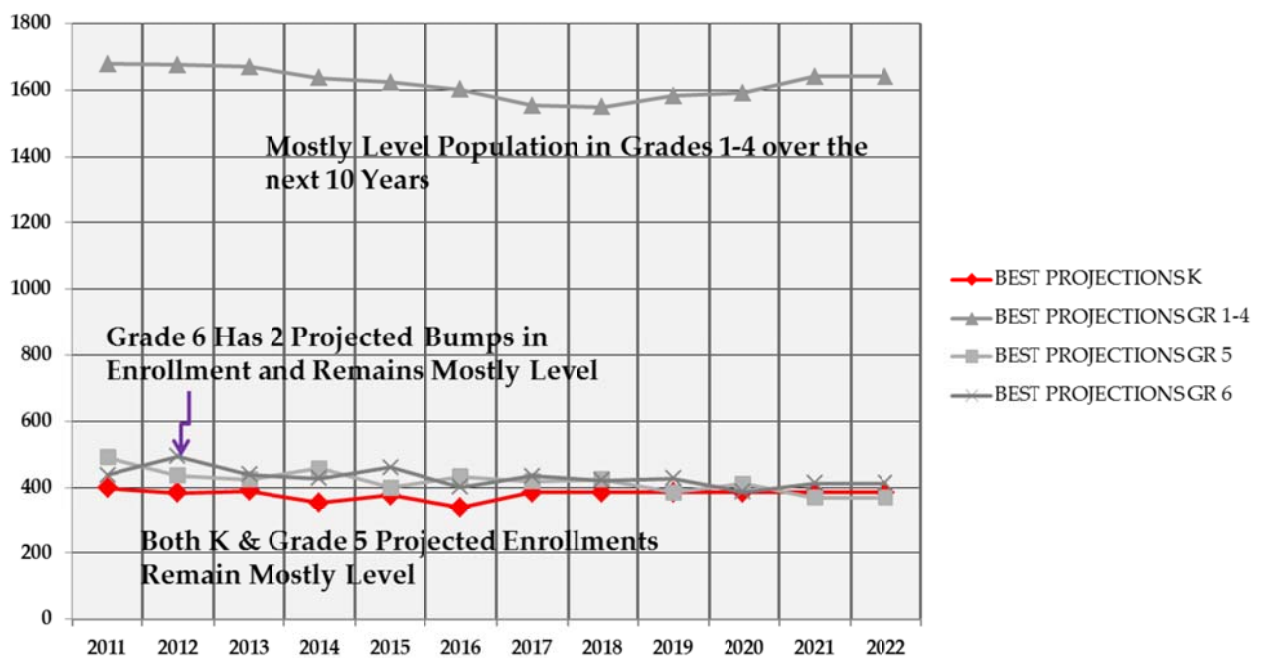
The Visioning Workshop highlights were presented to the Permanent Public Building Committee (PPBC) and the School Committee who, through a series of meetings and discussion, arrived at a consensus of values or Goals which would become the benchmark and basis for the development of the Concept Options. Those Goals are as follows:

- Focus is on addressing Hillside and Mitchell space and facility concerns
- 21 students/classroom and the MSBA guidelines as basis for planning purposes
- Current enrollments for future capacity consideration
- Elementary schools to provide 3-4 sections for grade grouping
 - 3 sections per grade = 18 classrooms @ 21 students / cl = 378
 - 4 sections per grade = 24 classrooms @ 21 students / cl = 504
- School size in the 400-500 student range
- Neighborhood based
- Reduce transportation cost
- Minimize re-districting
- Ability to offer full day kindergarten to all families
- Minimize cost that will not be reimbursed or are considered temporary cost (i.e.. modular classrooms)

For planning purposes, MSBA guidelines were used, with the exception of the number of students per classroom, which was set at 21, to allow for future capacity considerations. The educational program spreadsheets used for each option are included in the Appendix.

ENROLLMENT PROJECTIONS

In developing the Conceptual Options, it is important to understand the district-wide enrollment projections and the effect of offering full-day kindergarten at each elementary school in the district. The following chart shows the expected enrollment projections for the next ten years. These projections were prepared by the Future School Needs Committee, working as an independent study group for the Needham Public School District and indicate a fairly level enrollment across grades with a few dips and bumps.



Based on these projections, it was determined that the current enrollment at Hillside and Mitchell Schools, as well as the existing enrollment of all schools K-6, would be used as a basis for the options to be developed. Supporting documentation can be found in the Appendix.

Outlined below is a chart identifying the current capacity of the existing elementary schools and their ability to accommodate full-day kindergarten.

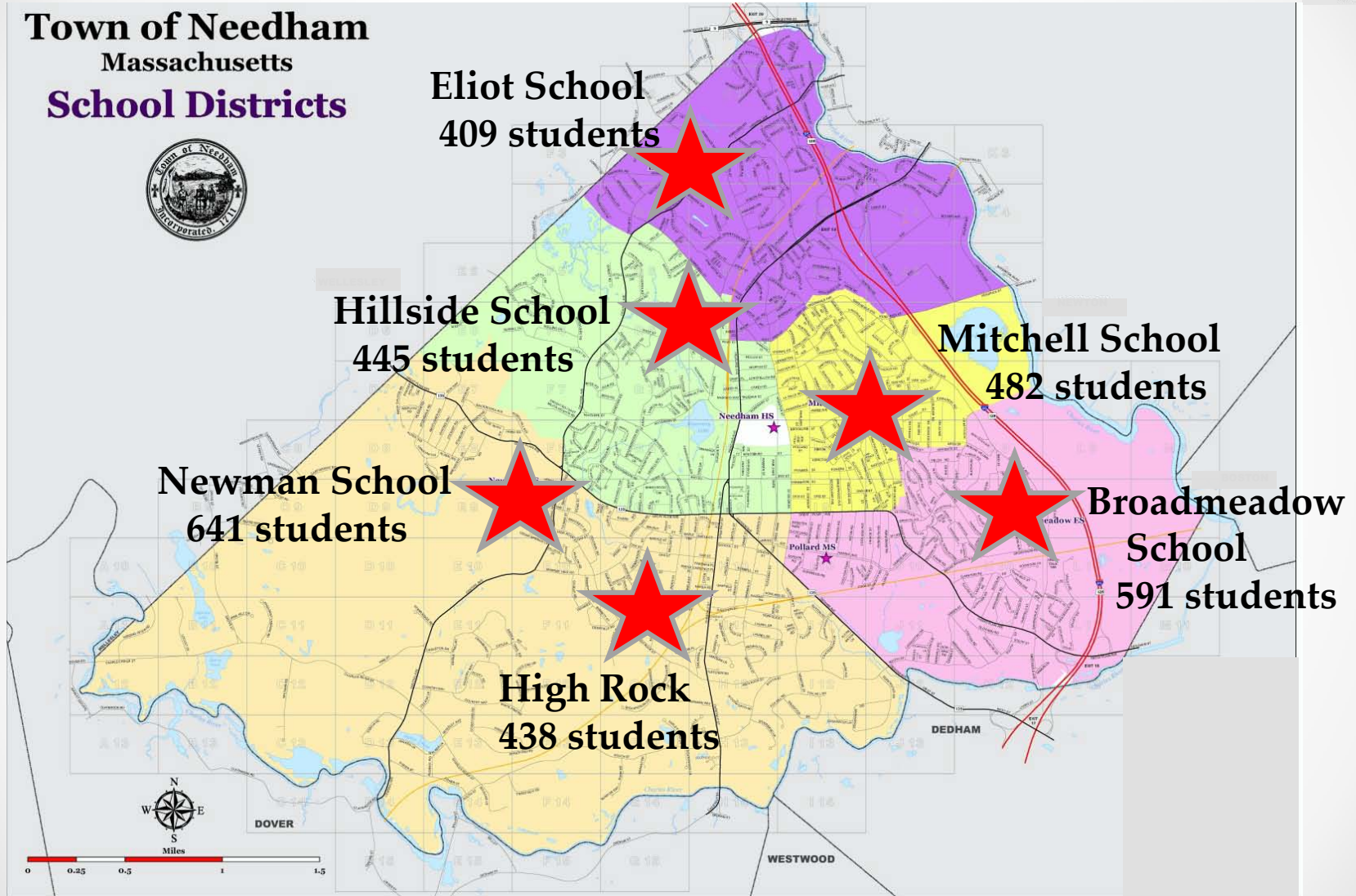
Total K-5th Grade Classrooms per School

School	Total Students	Existing Clrms	Req. Clrms * w/Full Day K	Additional Clrms Needed
Newman	641	31**	31	0
Eliot	409	19	20	1***
Broadmeadow	591	25	28	3
Hillside	445	19****	22	3
Mitchell	482	21****	23	2

- * Based on 21 students per classroom
- ** K-5 classrooms (7 dedicated Pre K classrooms = 38 total)
- *** 0 required if existing swing space is used
- **** Existing classrooms are undersized for 21 students

The attached map indicates the current enrollment of each school in the district and where the school district boundaries are located. High Rock School is a 438 student school that serves all of Needham’s 6th grade students.

Town of Needham
Massachusetts
School Districts



Current School Populations

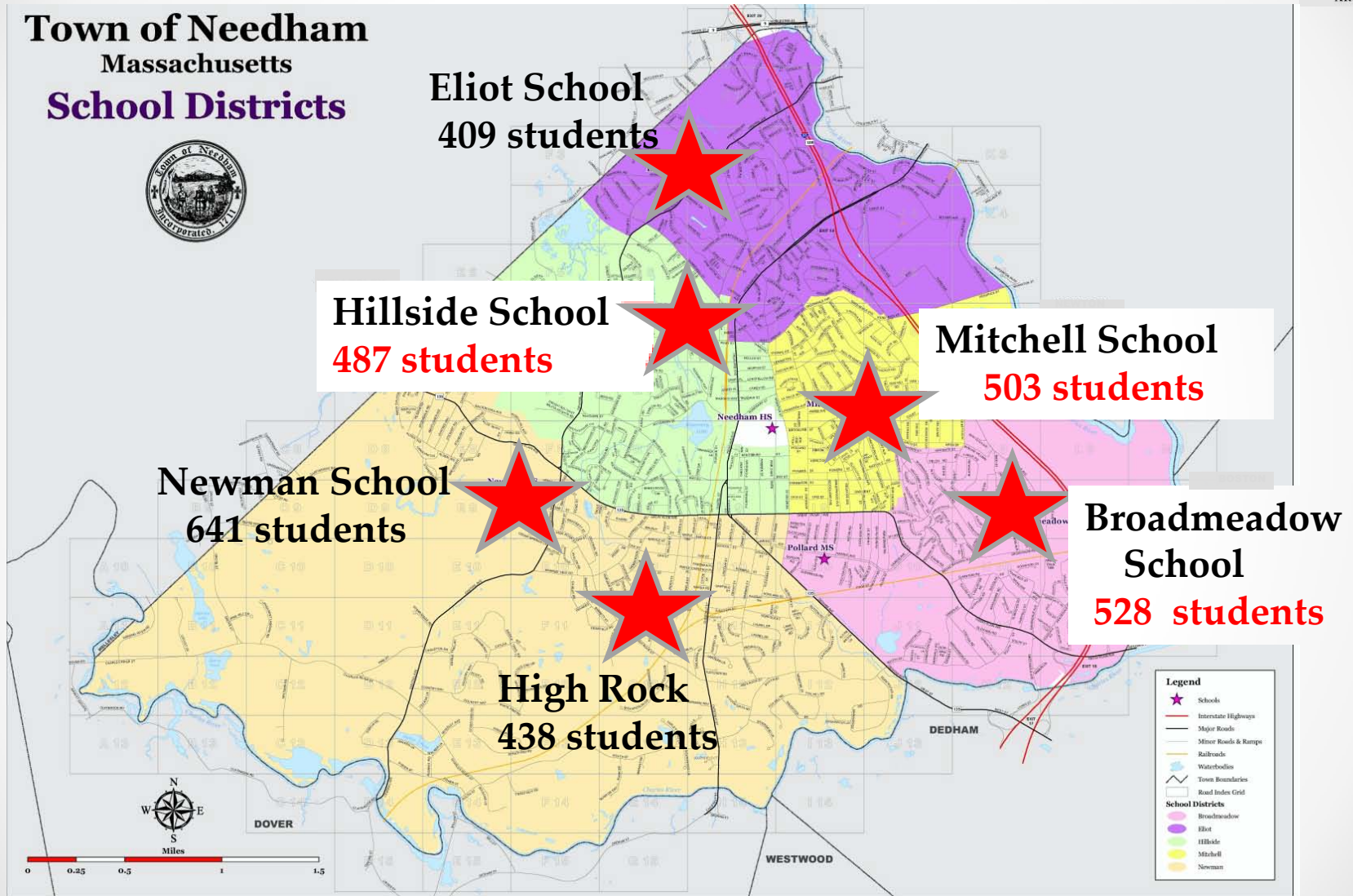
In an effort to provide full-day kindergarten to all elementary schools while, at the same time, constructing as few additions and renovations as possible, the following enrollment revisions were suggested. Newman and Eliot Schools would remain ‘as is’ with current enrollment and the existing number of classrooms. Eliot School would continue to use the converted teacher’s room as a classroom and not require any additions. The Broadmeadow School enrollment would be reduced to 528 students to fit their current 25 classrooms. Additions / Renovations or New Construction Work would be focused on the Hillside and Mitchell Schools. The schools would be renovated or constructed to meet the classroom needs for all-day kindergarten for the existing Hillside and Mitchell population as well as the overflow of students from the Broadmeadow district. This approach would consolidate the work to the two schools that are in need of renovations and/or new construction, reduce the enrollment population of the Broadmeadow School, and increase the enrollment of the Hillside and Mitchell Schools providing a more equalized enrollment population across the district. These enrollment projections are used for the basis of the Conceptual Options noted in this report.

Total K-5th Grade Classrooms per School

School	Total Students	Existing Clrms	Req. Clrms * w/Full Day K	Additional Clrms Needed
Newman	641	31**	31	0
Eliot	409	19	20	1***
Broadmeadow	528	25	25	0
Hillside	487	Additions / Renovations	24	0
Mitchell	503	OR New Construction	24	0

* Based on 21 students per classroom
 ** K-5 classrooms (7 dedicated Pre K classrooms = 38 total)
 *** 0 required if existing swing space is used
 **** Existing classrooms are undersized for 21 students

Town of Needham
Massachusetts
School Districts



Proposed School Populations – Full Day K

CONCEPTS AND OPTIONS

A brief summary of the existing conditions is offered to provide background information in order to facilitate a better understanding of the origination and development of the concepts and options.

Basis for Development of This Study

Summary from the Comprehensive Facilities Study and Basis for this Study

Outlined below is a summary of the findings from the Dore & Whittier Comprehensive Facilities Study dated August 22, 2011, which is the framework upon which this Pre-Feasibility Study is formed.

Building Similarities

Per the 1999 Kaestle Boos Associates Phase II Master Plan Scenario Development Report, it was recommended that both the Hillside and Mitchell Schools be expanded to eliminate space deficiencies that existed at that time; both schools were noted as requiring “extensive renovations”. In the 12-year Master Plan Scenario of the same report, it was suggested that the expansion of the Mitchell School take place between 2008 and 2011 and that the Hillside expansion happen between 2009 and 2012. The DiNisco Design Partnership Facilities Master Plan drew a similar implementation conclusion with Hillside School modernization scheduled for 2018 and Mitchell School modernization immediately thereafter in 2019-2020. Neither the Hillside nor Mitchell School has had a significant renovation or permanent addition in 44 years. In 1968, both schools received classroom and library additions and in 1997, temporary modular classrooms were added to the Hillside School to provide additional classroom and music room spaces. Each building has infrastructure, equipment and components that have reached the end of their useful life and are due for replacement. The cost of this work is summarized in the Dore & Whittier report of August 2011 and was also noted in the KBA report of 1999. The existing buildings do not meet current building and energy codes or handicap accessibility guidelines. Both schools lack the ability to expand their existing power and technology infrastructure which would be required to meet today’s technology needs; both schools operate antiquated ventilation systems, lack insulation in the roof, attic, or walls and have large amounts of single-pane glass, all of which contribute to higher operational cost than that associated with today’s code compliant and energy efficient buildings.

Site Limitations and Background Information

1. Hillside School Site

The Hillside School site at 24.6 acres is larger than the Mitchell School site, however; there are only 5.8 acres that are actually usable for school building, parking, bus loop, playground, and playing field purposes. The remaining 18.8 acres are primarily wetlands and buffer zone setbacks. In addition to the limited usable area; other challenges associated with the site are offered below.

- ❖ There is only one vehicular entrance/access point into the site. This limited access has created traffic congestion both on and off the Hillside School site; traffic often backs up onto West Street and creates a potential safety hazard for both pedestrians and emergency vehicles;
- ❖ Limited onsite parking has had an impact on the neighborhood as visitors often park on the side streets, block driveways, and prevent unimpeded two-way traffic. This is especially problematic during winter months and makes snow removal and emergency vehicle access difficult. The limited parking further forces many teachers to park in the drive lines of the parking lot, which often prevents other parked cars from leaving.
- ❖ A high water table and hillside topography has led to significant annual flooding in the crawl space below the building which has disrupted the operation of school. In such a flooding event, classrooms, restrooms and a main corridor in the lower level must be closed so that the water can be removed. Exposed piping and some structural floor members in the crawl space are rusting and air quality in this area of the lower level is also compromised.
- ❖ The area that is available for expanding the building, driveway and parking and accommodating the construction process is limited due to the steep grades, and wetlands that surround the site;
- ❖ Wetlands and a perennial stream buffer zone limit the expansion of fields.

Another challenge to building on the Hillside School site is the requirement for the remediation of soil and ground water throughout the construction process. The Hillside School site is part of an 80 acre parcel of land known as “Tier 1A disposal site” and is being monitored by the Massachusetts Department of Environmental Protection (MADEP). Any area of construction will require remediation measures due to the trichloroethylene (TCE) contamination. Additionally, any building or enclosed structure will require appropriate venting systems to assure the removal of TCE from indoor air (per the attached report, in the Appendix, TCE is quickly diluted when it is exposed to outside air). These existing conditions are beyond what would be considered “typical site conditions” and will have an impact on both time and cost of

Pre-Feasibility Study

construction. This was taken into account in the development of our cost estimates for options on the Hillside School site. Due in large part to the anomalies in the environmental data being retrieved from MADEP sampling, complete remediation of the site is not considered feasible at this time.

The Hillside School site is set off the main road where there is limited access to the site and limited onsite parking. On a typical school day, five school buses and three special education vans access the site in the morning. In the afternoon, there are six buses, seven vans and additional traffic for the after-school programs that enter the site. On the east side of the site, the rear of the school, a thin border of trees separates the school from the adjacent neighborhood; to the north, a steeper grade and trees create a natural buffer. The west of the site is open to fields and wetlands. The Hillside School site provides the community and neighborhood with one 60' baseball diamond and one 120'x240' multipurpose field. Both the diamond and the multi-purpose field are used by the Hillside neighborhood, the community at large, and Town Youth Sports. There are two playgrounds, one for younger children and a larger playground with a play structure and swing sets for older children. A paved area provides four square, hop scotch, and giant chess boards as well as one half court and one full court for basketball. Park and Recreation uses the Hillside School site for some of their Summer Program.

Cost impacts and considerations include:

1. Due to tight site conditions, the relocation of Hillside students during any renovation/addition or new construction project will be required. The cost of temporary modular classrooms has been included in the cost of each of the options that propose the re-use of the existing Hillside School site with the exception of options 1A.2a & 1A.2b. (These options assume that a new Mitchell school will be built on the existing Mitchell site and the Hillside students would be relocated to the existing Mitchell school). The cost of the construction of a temporary modular classroom school will vary with the proposed location and existing site conditions. The cost options noted herein include the cost of establishing a temporary school site at Cricket Field or DeFazio Park; however, other sites could be considered. Both site options include the cost of bringing power, water, sewer, and tel/data to the site, providing parking and play space, and providing a building and site that meet both the building and the accessibility codes required. Additionally, there is a cost associated with moving into and out of the modular school and repairing or restoring the park or fields once the temporary school is no longer needed. This has been included in the project cost summary for each option. Wetlands mitigation may be required at the DeFazio Park temporary modular school site due to the high water table. This has also been included. Daily

transportation of students and off-site parking for teachers (if required) is not included in the cost summaries;

2. Due to the high water table and flooding conditions, additional de-watering measures will be required adding cost to a construction project on the Hillside School site;
3. Additional permanent site and stormwater drainage is required at this site;
4. Additional permitting requirements associated with the proximity to wetlands will add both cost and time to the permitting process and phase;
5. Potential wetlands mitigation and protection requirements may be needed;
6. Temporary Chemical Remediation measures to address demolition and soils remediation during construction will have a cost impact (the extent of this remediation is unknown at this time);
7. Permanent Chemical Remediation measures (after construction) will have a cost impact (the extent of this remediation is unknown at this time);
8. Specialty venting and monitoring systems for the new or renovated school;
9. The play fields and playgrounds will be impacted by on site construction; the cost to replace the damaged playfields and playgrounds has been included in the cost summary. There will be a time period of approximately two years after construction for regrowth of the playfields.

2. Mitchell School Site

The Mitchell School site is a 12.47 acre parcel adjacent to 3.5 acres of wooded land known as Mitchell Woods. Approximately 8.35 of the 12.47 acres are suitable for school building, parking, bus loop and field purposes without extensive site work. The Mitchell School is set on a main road with access to parking and the front drop-off loop directly from Brookline Street. There is access to additional parking, and bus and van drop-off from a residential side street, Tower Avenue. The open play fields are buffered from neighbors to the north by mature trees; to the east, steep grades, wetlands and dense tree growth separate Mitchell School from its neighbors. To the west is Mitchell Woods, and to the south, neighbors' fenced backyards provide the separation from the school property.

The Mitchell School site provides open playfields for Youth Town Sports, a multi-purpose youth soccer field (120'x240') and two 60' diamonds for baseball and softball. A new playground structure, a hard surface play area, and one full-size basketball court also exist. Needham Community Education uses the Mitchell School open field spaces and playgrounds as part of their Summer Program. Although the existing site is large enough to support an enlarged school building for the current school population with space for playfields, playgrounds, expanded parking and improved driveways and drop-off areas, the expansion of the existing school would permanently reduce these play areas and an alternate location would need to be

Pre-Feasibility Study

found for, at a minimum, one of the diamonds. A new school on this site would provide playground, field space and diamonds equal to the existing. The amount of hard surface play area available would vary and be based on the design option chosen.

The existing constraints of the site include the Mitchell Woods walking trails (a wooded conservation area under the jurisdiction of the Conservation Commission) to the west, neighbors and dense neighborhoods to the north and south, and within the property boundaries, a steep hill and wetlands to the east side of the site. The limited parking and the current site circulation for vehicles have led to traffic congestion especially at the end of the school day and on days with inclement weather. The site is situated in a densely populated neighborhood which is conducive to walking to school thereby reducing the number of students that need to be bused to the Mitchell School. Currently, only one local bus and one METCO bus are needed for the Mitchell School population; there are two vans for transporting children to after school day care programs. The number of students who walk to school helps to reduce the traffic impact and onsite parking needs; however, there are a large number of parents who pick up students at the end of the day. Vehicles waiting to pick up students after school queue along Brookline Street forcing traffic to pass in the lane of oncoming traffic thus creating a potentially dangerous situation. This existing traffic congestion, as well as the need for suitable separation between construction activities and an occupied school site, must be kept in mind when reviewing the conceptual options that suggest construction phasing or potential “swing space” solutions that place the Hillside students on the Mitchell site either in temporary modular classrooms or in the existing building after a new building has been constructed.

The impact of 990 students on this site, even for a limited time, is an important consideration as is the reduced play area available to this large student body, the increased paved parking required for staff, and driveway for the additional buses and vans. The permitting for two occupied buildings with an increased population and expanded paved areas on this site has not been fully explored and would need further consideration if the options that include using Mitchell School as swing space are chosen.

Cost impacts and considerations include:

1. In the options that include additions and renovations to the existing building, as well as new building construction, cost considerations must be given to providing temporary classrooms for the kindergarten students and other classrooms on the west wing of the building that would be impacted by ongoing construction including noise, dust, and other consequences of construction activity. Any phasing options that include keeping students on site throughout the construction phase must consider the impact on learning. Temporary classrooms could include modular classrooms on site, modular

classrooms on a separate site, or relocation of students to other schools in the district, or other modular classroom sites for the duration of construction;

2. Limited access to the site for construction vehicles and areas for construction staging and contractor parking would require that most, if not all, of the open play space and some of the existing parking spaces be dedicated to the construction site. Any existing play space that remained may not be appropriate for outdoor play due to noise, air quality and proximity to active construction;
3. The construction of a new building or expansion of the existing will have an impact on the dense neighborhoods throughout the time of construction creating noise, traffic, and other construction related issues. These issues may affect the start and end time of daily construction site work which could impact the schedule and therefore, the cost;
4. If students remain on site through construction, there will be a need for the expansion of and improvements to parking and driveways for temporary use, and the potential need to increase the number of buses in an effort to reduce the pick-up and drop-off traffic throughout the time of construction;
5. Play fields and playground will not be available during construction; depending on the option chosen, the loss of fields could extend up to five years.

3. Cricket Field Site

The 6.76 acre Cricket Field is located on Hillside Avenue approximately a half mile from the Hillside School. This parcel of land has been considered in this report under two scenarios. First, Cricket Field could provide a potential location (along with other potential locations) for a temporary modular school building to provide the swing space needed for both Hillside and Mitchell school students during new construction or renovations on the existing sites. Under the second scenario, Cricket Field is a potential location for a new elementary school which would also provide the swing space for Mitchell School students during any construction on that site.

There are advantages of using this site as described. Specifically,

- ❖ its proximity to the Hillside School and neighborhood location means reduced redistricting throughout the town and consistency with the goal of providing neighborhood elementary schools;
- ❖ a school on this site would not require site remediation for chemicals or wetland protection.

On the other hand, this site is under the jurisdiction of the Park and Recreation Commission (not the Needham School Committee) and would require a multistep process to validate its viability as an option either as temporary swing space or as the location for a new school.

Pre-Feasibility Study

Furthermore, the Park and Recreation Commission have asked that Cricket Field not be considered for use as a school site.

Cricket Field, part of the *Historic Inventory of the Town of Needham*, was donated to the town in 1938. The property is deeded for recreation, park and /or educational use and is considered a valuable resource to its neighbors, the High School and Town sports programs, and to the Park and Recreation Summer Program. In 1964, a two level (main level with storage below) structure nestled into the hillside at the south end of the field was constructed to provide storage, restrooms, a covered porch for viewing of the fields and a home for Park and Recreation Summer Program. The landscape is mostly flat, with the exception of the south end where a small hill rises up from the fields. Unlike some of the other potential sites, Cricket Field is free of wetlands and streams. There is a buffer of mature trees at the south edge of the property and paved public roads provide access to three sides of the field. Some street side parking is provided along Sunnyside Road which wraps around the site.

There are two multi-purpose fields (a larger field at 217'x348' and a smaller field of 180'x300') which are used for high school and town youth sports (soccer and lacrosse). A "sand-lot" diamond for neighborhood pick-up baseball and kickball games, a half court basketball area, a playground designed for children under five, and a memorial garden dedicated to Needham girls are part of the open spaces and play areas that make up Cricket Field. The fields are used by several community groups throughout the spring and fall including the High School varsity and junior varsity girls' soccer and lacrosse teams, Town Youth sports programs, and the Park and Recreation Summer program.

Cost impacts and considerations include:

1. This parcel is not under the jurisdiction of the School Committee and requires a legal process to transfer the jurisdiction. Transferring the use of this property, even for a temporary school, will add time to the schedule may require funds that would not be reimbursable by the MSBA. This factor should be considered when reviewing cost and conceptual options. On June 11, 2012 the Park and Recreation Commission requested that the use of Cricket Field be removed from all proposed conceptual options;
2. Due to the dense neighborhood, the impact of construction on the neighbors and the increase of traffic during construction may have a cost impact, daily construction start and finish times could affect the overall schedule of work, and the increase in traffic may require additional traffic controls;
3. The limited site size and area for construction site staging may require additional site screening;
4. The use of this site for a temporary modular school (36-37 modular units plus driveways and parking) will have an impact on the use of fields both at this site as well as the site

that is under construction (Hillside or Mitchell). This may require the use of fields outside of the Town throughout the time of construction and beyond. Field rentals and busing of students to fields for practice and games will be necessary for approximately five years (construction time plus 2 years for field restoration) and will add to the overall project cost;

5. The permanent use of this site for a school would require the replacement of the Cricket Fields playing areas with play fields and playgrounds located at the Hillside School site. The Hillside School play areas and fields would be replicated at the Cricket Field site. This scenario would reduce the number of fields taken off line at one time, however the impact to the high school and town sports and the Park and Recreation summer programs would still be pronounced;
6. The school at Cricket Field would be considered a neighborhood school, within walking distance for many residents. Some redistricting of students may reduce the bus requirements for some neighborhoods but add to others; the full impact and cost of redistricting should be reviewed in greater depth.

4. DeFazio Park

As with Cricket Field, DeFazio Park has been considered one of the optional sites for both a temporary modular school or a permanent school, proposed, in this case, as a 6th grade school. The 35.6 acre DeFazio Park is the combination of three separate and distinct parcels of land under the jurisdiction of the School Committee, Park and Recreation Commission and the Board of Selectmen. The particular parcel of land that is considered in the conceptual options presented in this report is under the jurisdiction of the Board of Selectmen. This parcel was chosen in an effort to minimize the extent of construction on the existing fields and preserve the majority of the open space, playing fields, and existing buildings. DeFazio Park has recently undergone extensive renovations and now boasts of top notch athletic fields including two full-size synthetic multi-purpose fields with lighting, one full size field within an 8-lane running track, a smaller multi-purpose field, a 60' diamond and two 90' diamonds. In addition to the fields, there is a playground for younger children with picnic tables and grills, a memorial pavilion with restrooms, picnic tables and concession, an irrigation building, and a proposed (soon to be constructed) equipment storage building.

DeFazio Park is located near the Pollard Middle School and the fields and track are often used as part of the middle school physical education program. This proximity to the Pollard School would reduce the travel time for the teaching specialists as they commute between schools to provide services. It would also create the opportunity for the grade 6 students to interact with the middle school students on the sports field or in after-school programs that take place at

Pre-Feasibility Study

DeFazio Park. The High School athletic sports program uses the fields and facilities of DeFazio Park extensively, and Town Sports programs use the fields from April to November.

Due to the number of consecutively scheduled sports events, the existing gravel parking lot often overflows into the DPW and Town administration parking areas; people often park at the Pollard Middle School as well to use the fields at either site. This parking situation is a consideration when planning a school for this site. In an effort to preserve the fields, the school will take up considerable parking area. Any expansion of the existing parking or drive areas will require careful protection of the wetland buffer and the consideration of the high water table, wetlands, river and pond. These existing site conditions may have additional permitting requirements and additional protection and construction methods that may add to the cost of work on this site. Additionally, there is a narrow access road to the site from Dedham Avenue and high ground water in this area that may prevent increasing the width of this entrance. In the conceptual design, a bus loop and service road are shown to access the school through the DPW site. This design may require additional driveway upgrades along this route.

The construction of a school or temporary modular school (36-37 modular classrooms) on this site will likely require the use of the far 90' diamond (McLeod) for construction staging and overflow parking. With the temporary building, this diamond, as well as the fields at the school under construction (Hillside or Mitchell), would not be in use through the construction time period. As a permanent school, the 90' diamond would be replaced at the completion of the 6th grade school and would need the required growing season(s) before use. The creation of a 6th grade school at DeFazio Park would allow for the High Rock School to be used as an elementary school (as it was designed) and the repurposing of the Hillside School which would no longer be needed as an elementary school.

Cost impacts and considerations include:

1. The proposed location of the 6th grade school or the temporary modular school is not under the jurisdiction of the School Committee and requires a legal process to transfer the jurisdiction. In addition to a schedule impact, the transfer of this property, even for a temporary school, may require funds that would not be reimbursable by the MSBA.
2. There will be an impact on athletic fields, parking and the general use of the site; protection of the fields, parking area walkways and driveways, and the wetlands will have an impact on cost and perhaps on the schedule;
3. A cost premium for site development and adherence to NPDES requirements was cited in addition to the improvement of the narrow access point off of Dedham Avenue;
4. There is a potential cost for wetland replication;

5. Redistricting would have a town-wide impact; transportation would be affected (the cost of this impact has not been fully studied);
6. The loss of playing fields may require the sports teams to go outside the district to rent field space from other towns.

Planning Assumptions - Forming the Basis for Conceptual Option Development

The Visioning Workshop highlights were presented to the Permanent Public Building Committee (PPBC) and the School Committee who, through a series of meetings and discussion, arrived at a consensus of Values or Goals. These became the benchmark and basis for the development of the Concept Design Options.

The Goals are as follows:

- Focus on addressing the Hillside and Mitchell School space and facility concerns;
- Develop concept options based on 21 students/classroom and the MSBA guidelines as the basis for planning purposes;
- Use current enrollments for future capacity consideration;
- Develop concepts for elementary schools based on providing 3-4 Sections per grade;
3 sections per grade = 18 classrooms @ 21 students / cl = 378
4 sections per grade = 24 classrooms @ 21 students / cl = 504
- Schools should be designed for a population range of 400-500 students with appropriate space for special education;
- Neighborhood-based;
- Reduce transportation requirements;
- Minimize Redistricting;
- Ability to offer full-day kindergarten to all families;
- Minimize cost that will not be reimbursed or are considered temporary cost (i.e. modular classrooms).

Concepts and Options

Several possible conceptual design options were developed and presented to the Working Group. These options and concepts were based on the information outlined in the Comprehensive Facilities Assessment report completed in August 2011, the Enrollment Projections prepared by the Future School Needs Committee completed in November 2011, and the Educational Framework Workshop, held in February 2012 as well as the Goals

Pre-Feasibility Study

developed and outlined above. Through a process that involved several meetings with the Working Group and Sub Committee, four primary options were considered for further development. These primary options are outlined below and included sub options that developed as additional factors were applied to each of the primary options.

OPTION 1A: Two Separate Sites with Balanced EnrollmentsHillside & Mitchell School Solutions on Two Sites

503 students at Mitchell: a 4 section per grade school

487 students at Hillside: a 4 section per grade school

1A.1 Mitchell Additions/Renovations (with temporary modular classrooms on-site)
Hillside Additions/ Renovations (with temporary modular classrooms off-site)

1A.2a: Mitchell New School
Hillside New School (with temporary modular classrooms off-site)

1A.2b: Mitchell New School
Hillside New School (uses the existing Mitchell School as swing space for Hillside students after the construction of the new Mitchell school –places 990 students on Mitchell site for the duration of construction of New Hillside School)

1A.2c: Mitchell New School (with temporary modular classrooms on-site)
Hillside New School (with temporary modular classrooms off site)

1A.3: Mitchell School Additions/Renovations OR New Mitchell School
Cricket Field – New School (replaces Hillside School & the Hillside School Site will be used to replace the play fields currently located at Cricket Field).

OPTION 1B: Two Separate Sites, Resize PopulationsHillside & Mitchell School Solutions on Two Sites

612 students at Mitchell: a 5 section school per grade school

378 students at Hillside: a 3 section school per grade school

*A reduced Hillside School population of 252 students (2 sections per grade) was considered for Hillside, and as a result, the Mitchell School population was increased to 738 students, creating a six section school on the Mitchell School Site. This option was removed from further consideration because it did not meet the goals of the School Committee.

1B.1 Mitchell Additions/Renovations (with temporary modular classrooms on-site)
Hillside Additions/ Renovations (with temporary modular classrooms off-site)

1B.2a Mitchell New School
Hillside New School (with temporary modular classrooms off-site)

1B.2b: Mitchell New School
Hillside New School (uses the existing Mitchell School as swing space for Hillside students after the construction of the new Mitchell school –places 990 students on Mitchell site for the duration of construction of New Hillside School)

OPTION 2: Hillside & Mitchell School Solutions on One Site

990 students permanently on the Mitchell School Site

This option was eliminated by the Working Group, PPBC & School Committee due to the large number of students that would be on the Mitchell School site permanently.

OPTION 3: New 6th Grade Center, High Rock becomes Elementary School

New or Renovation/Additions to Mitchell School & Repurpose Hillside School

This option eliminates Hillside School as an elementary school and requires the redistricting across the district. Full-Day Kindergarten is available at each school.

438 students at New 6th Grade School

420 students at High Rock Elementary School: 3 section per grade school + 4 K

651 students at Newman Elementary School: 5 section per grade school + 6 K

525 students at Broadmeadow Elementary School: 4 section per grade school

420 students at Eliot Elementary School: 3 section per grade school + 4 K

546 students at Mitchell: 5 section school per grade school

3A: New 6th Grade Center at DeFazio Park

3B: New 6th Grade Center at Pollard School Site
(Option eliminated from consideration by PPBC and School Committee due to site constraints on the Pollard School site)

OPTION 4: Create K-4 Schools & Provide District-Wide Grade Reconfiguration

1. Create K-4 Elementary Schools across district
2. Add Full-Day K to Each Elementary School
3. Build a New 5 / 6 School at DeFazio Park
4. Pollard remains a 7/8 School

(Option eliminated from consideration by PPBC and School Committee)

Many considerations were developed for each of the above Concept Options, and each of these was compared against the values and goals established by the Working Group, PPBC and School Committee. These considerations are highlighted in the Options Review following this section. Through this Study and the development of the Conceptual Options, the PPBC and School Committee reached a consensus that the following options did not match the needs, goals or values of the district. Those options are:

- **Option 2:** A permanent 990 student school does not meet the educational programming goals of the district. A two school solution of 450 students each on the Mitchell site was also proposed. It was determined that the Mitchell School site was not appropriate for 990 students. The parking, site circulation, and reduction of sports fields and play space were important factors in this decision and this option was removed from the list of potential options for further consideration.
- **Option 3:** This Option included the study of a new Grade 6 school at two potential locations DeFazio Park (3A.1) and the Pollard School Site (3A.2). In reviewing the Pollard Middle School site, the proximity to wetlands and steep grade limited the placement of the new building parking and drive areas. The increased parking requirements, additional site circulation and traffic issues created additional issues and removed all open space from the site. The Pollard School site was removed from this option.
- **Option 4:** This option proposed the reconfiguration of grades across the district, combining 5th and 6th grades in a new building to be located at DeFazio Park and providing full day Kindergarten through 4th grade at Newman, Broadmeadow, Mitchell, Eliot, and High Rock Schools. The existing Hillside School would no longer be needed as an elementary school and could be eliminated or repurposed. The school committee and other members of the community who were involved in the Visioning Session noted the success of the 6th Grade School and the difficulty in redistricting and grade regrouping. This option also left the Hillside community without a neighborhood school.