TOWN OF MANSFIELD/MANSFIELD PUBLIC SCHOOLS

Proposed New Community PreK-4 Elementary School and
Mansfield Middle School Project

SCHOOL BUILDING COMMITTEE REPORT

Space Needs Assessment ▫ Code Compliance ▫ Infrastructure Improvements

School Buildings Project

New Community PK-4 Elementary School & Mansfield Middle School

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TABLE OF CONTENTS

Table of Contents i
Introduction 1
Analysis and Findings 2
Next Steps 5
Attachment I, *Optimal Student Enrollment* 6
Attachment II, *School Size, Why Smaller May Not Be the Answer* 10
Attachment III, *Four Building Project Answers and Questions* 12
Attachment IV, *Families of Options* 16
Attachment V, *Estimated Cost Comparisons* 17

INTRODUCTION

The Mansfield School Building Committee is pleased to present its proposed "New Community PreK-4 Elementary School and Mansfield Middle School Project" to the board of education and the town council. In this report, the committee will provide a brief background and history of its work, review its analysis and discuss what it sees as next steps for this important initiative.

The Mansfield School Building Committee was established in September 2005 following a resolution by the board requesting that the town council "establish a school building committee to review the capacity and condition of the town's four school buildings, with respect to current needs and future expansion." The council directed the building committee to specifically review various key issues, including security concerns, roof replacements and other basic facility needs in addition to enhancing the library/media centers in the elementary schools.

Consistent with the council's original charge, the building committee's membership remains comprised of the mayor, the board chair, the town manager, the superintendent of schools, two parent representatives and one community member. The committee has studied the issues in significant detail over the past 4.5 years and has been ably assisted by town and school staff, as well as various outside experts.

In early 2006, the committee commenced its efforts by hiring school consultant Thomas Jokubaitis to conduct an initial school facility review. Mr. Jokubaitis presented his report in June 2006, which provided some initial guidance to the committee regarding facility needs and the school renovation process. Following a competitive selection process, in April 2007 the committee hired the firm of Lawrence Associates (Rick Lawrence, principal) doing business with DRA Architects (James Barrett, principal). The project architects met with school staff to conduct programming and building evaluations and later facilitated a series of community workshops in the spring of 2007 to identify various construction options. In March 2008, the building committee selected Newfield Construction, with Thomas DiMauro as project principal, to serve as construction manager.

Working closely with its project architects and construction manager, the committee learned during the winter and spring of 2008 that the cost estimates for its preliminary options were much higher than anticipated. In particular, the estimate for the extensive upgrade to the three elementary schools and Mansfield Middle School as originally contemplated totaled over $90 million. At this point, the committee identified the concept of a new, consolidated elementary school to provide the community with an upgraded facility and the opportunity to leverage state grant reimbursement at a much lower cost to Mansfield taxpayers. (Following a staff review of municipal, state and privately-owned properties in Mansfield, the Southeast School site was later identified as the preferred site to host the consolidated school.) The committee also refined its work on the three other project options, and presented all four scenarios to the community at a public workshop in September 2008 and to the board of education and the town council at a joint meeting held in February 2009.

At the February 2009 meeting, the board and the council directed the committee to further analyze the consolidated school option, including a review of the feasibility of land at Southeast Elementary School to be used as the site of a single PreK-4 elementary school. More specifically, the committee was asked to examine the square footage that would be required for a consolidated school, the water/septic requirements and the impact of leaving and/or removing the current Southeast Elementary School at the conclusion of the project. The board and the council also instructed the committee to visit a number of

elementary schools that were constructed recently and are approximately the same size as Mansfield's projected PreK-4 enrollment, to identify advantages and disadvantages to a single district school site with an emphasis on the instructional program (regular, special subjects, support services), staffing (certified and non-certified), classroom facilities (regular, special subjects, support services), library/media and information technology services, equipment, transportation, food service, storage, custodial/maintenance and energy systems.

Over the past year, the building committee has reviewed the issues highlighted by the board of education and the town council. The committee has conducted a preliminary architectural and engineering analysis, which indicates that the Southeast School site is suitable to host a consolidated elementary school of approximately 700 students. Also, the building committee has studied the literature regarding optimal school size and visited consolidated schools of comparable size in Colchester and Glastonbury, Connecticut and Bedford and Sudbury, Massachusetts. The committee's site visit teams were impressed with the quality and design of each of the schools that it researched. (See Attachments I and II for articles regarding school size.)

Lastly, this past January and February the board of education hosted tours and presentations at each of the four schools. At these sessions, committee members and the project architect reviewed each of the four options and conducted a question and answer period for those in attendance. The building committee has prepared a comprehensive response to the questions and issues raised at these sessions and has posted this information on the town's website (see Attachment III, *Project Answers and Questions*).

ANALYSIS AND FINDINGS

As discussed, the committee has diligently studied four project options. An overview of the four options is presented in Attachment IV, *Families of Options*. Please note that the instructional program (including class size) remains constant across all four options.

The proposed scope of work for the elementary schools varies across the four options, as described in Attachment IV. For the Mansfield Middle School, it is important to note that under Option A the proposed improvements are limited to anticipated maintenance, including roof replacement, window replacement, a new elevator, other building repairs and the addition of solar panels. The planned renovations to the middle school are the same for Options B, C and D – this work is more extensive and would include the repairs listed in Option A as well as heavier renovations such as the construction of an administrative section at the building entrance to house the main office and nurses area, and the construction of four additional classrooms to replace the portable building.

After extensive study, research and analysis, the building committee is pleased to endorse Option D, which calls for the construction of a new, consolidated PreK-4 school at the Southeast School site and includes planned repairs and maintenance and the heavier renovations to the Mansfield Middle School. The committee has titled Option D as the "New Community PreK-4 Elementary School and Mansfield Middle School Project" (the "Project"). In the committee's view, the first three options are less desirable and would not offer the same advantages as Option D, the recommended option. Under Option A, for example, the committee would be unable to accomplish many of its key objectives, such as enhancements to building security or the construction of true library media centers at the elementary schools. In addition, with Option A the community would be left with 50-year school buildings in constant need of

repair. Also, Options B and C would prove more onerous to the taxpayer; particularly during an era of declining municipal revenues (see Attachment IV for more detail regarding the pros and cons of Options A-C).

The school building committee's recommendation in support of the Project is based on the following:

1) **The Project would accomplish all of the committee's objectives related to improvements to the school facilities.**

   The Project includes the planned upgrades to the Mansfield Middle School and a new elementary school facility. Among other features, the new elementary school would contain a separate cafeteria and gymnasium, a state-of-the-art library media center and a modern energy management system and security system. Classroom sizes would be uniform for all grades with optimal space and storage capacity. The floor plan would be designed to maximize instructional square footage and to accommodate and welcome the use of the facility by community organizations.

2) **The Project would provide the best opportunity to enhance the district's instructional program.**

   While the building committee's charge is primarily focused on improvements to school facilities, the members did discuss the instructional program in a limited detail. The facilities offered at a new, consolidated elementary school would provide many opportunities, such as in the area of science, to enhance the existing curriculum and to expand offerings district-wide at a single location. The Project would create larger, more uniform classroom sizes to enhance the learning environment – this is significant as two-thirds of a student's day is spent in the classroom. A consolidated PreK-4 school would also facilitate district-wide planning for all instructional programs and promote the maximum use of classroom teachers and support services staff to best meet the individual needs of all learners. In addition, special subject teachers would be better able to coordinate and plan unit activities with colleagues on a regular basis. Furthermore, as detailed below, the Project presents the most affordable option to the community, both in terms of debt issuance and ongoing education expenditures. The anticipated savings associated with operating one new school would provide the district with the best opportunity to maintain its class size guidelines and its current instructional program as well as the potential to invest these savings in additional areas or services.

3) **The Project would provide the best opportunity to leverage state grant funds, minimizing the cost to Mansfield taxpayers.**

   The estimated construction cost of the Project totals approximately $46 million, with an anticipated cost of $16 million to Mansfield taxpayers. (This cost does not include funds to make repairs or renovations to the existing three elementary schools.) The total project cost and the anticipated state reimbursement compare favorably to the other three options considered. The high rate of reimbursement for the Project is largely due to the nature of the state grant formula, which provides a premium on new construction and is limited by a square footage to student ratio that Mansfield's present elementary schools exceed.

4) **The Project would promote sustainability and the most efficient use of resources.**

Improvements to the infrastructure at the Mansfield Middle School and the construction of a new, energy-efficient elementary school would allow the district to save money on energy costs while reducing emissions. Currently, at the three elementary schools the district uses 706,343 kWh of electricity and 10.7 billion BTU of oil/gas, at a cost of $260,000 per year. At the completion of the Project, the building committee estimates that the energy usage for the elementary school program would reduce by approximately 75 percent or $195,000 per year. The Project would also create efficiencies in program purchases and reduce the need for certain administrative staff resources, which would provide additional savings. All of these cost factors – the higher reimbursement rate and lower operating expenses – would reduce the cost of the Project for the average household. In short, the anticipated savings would enable the district to focus its investment on the instructional program and curriculum as opposed to administration. (Please see Attachment V, *Estimated Costs Comparisons*, for more information on these topics.)

5) **The Project would minimize disruption to the learning environment.**

The construction of a new school, when compared to the renovation of existing facilities, would minimize the disruption to the learning environment and mitigate any negative impact on PreK-4 students. Options A-C would involve at least two years of construction, with some disruption, at each of the elementary schools. Under any of the project options, the improvements to Mansfield Middle School would have some impact to the learning environment. Staff and the administration at the middle school would work to minimize this disruption to the extent possible.

6) **The Project would enhance the district's sense of community.**

The proposed Project would provide the district with two years to plan a community opening for the consolidated PreK-4 school, which would incorporate the best ideas, activities, traditions and customs of the three current elementary schools. A consolidated elementary school would also promote community diversity, which could be experienced and shared equally at one location. The district would continue to provide before and after-school care onsite with transportation to outside facilities such as the Mansfield Community Center where parents/guardians have made arrangements. Furthermore, for the average student a consolidated PreK-4 school would help facilitate a smooth transition to the Mansfield Middle School.

There are a few other items that the building committee wishes to highlight for board and council review. During the committee's public workshops, there has been some discussion regarding the potential use of the three elementary schools as well as traffic and neighborhood impacts to the residential areas adjacent to Southeast School. While a complete analysis of these issues is outside of the building committee's purview, the committee has discussed these subjects in a preliminary fashion.

- With respect to the potential reuse of the elementary schools, our project architect has also provided examples of how Mansfield and other communities have converted former school buildings to other uses. In Mansfield, for instance, the town has converted both the Storrs Grammar School (municipal building) and the Buchanan School (Mansfield Public Library) to other municipal uses. The building committee specifically recommends that the existing Southeast School building remain under the town's control and be used for an educationally

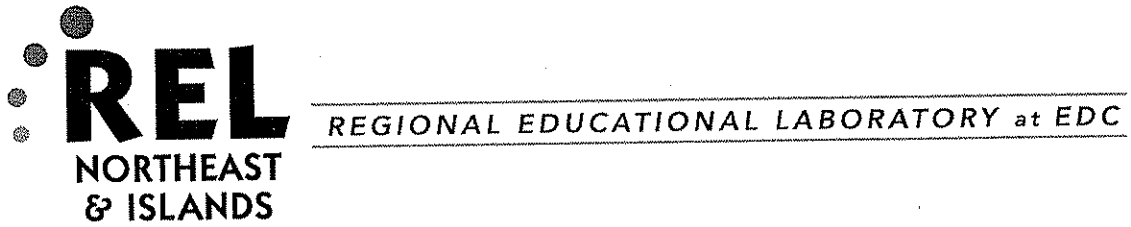
compatible purpose; for example, at least part of the existing Southeast School could be used to host before and after-school care. The town council would need to make any decisions regarding the reuse of the existing elementary school facilities.

- In regards to traffic, the town would need to specifically study existing and anticipated traffic volumes and appropriately address all anticipated impacts to meet applicable approval criteria established by the Connecticut Department of Transportation and Mansfield Planning and Zoning Commission. This analysis would include both vehicular and pedestrian traffic. The Mansfield Traffic Authority expects that traffic associated with a consolidated elementary school would be similar to cumulative traffic now related to the three existing elementary schools and to the traffic associated with the Middle School, which has approximately the number of students that are planned for the consolidated school. Based on a preliminary review, Mansfield's Traffic Authority anticipates that Warrenville Road and affected intersections with nearby state and local roads would have capacity to accommodate a consolidated school at this site. The traffic authority expects the primary traffic issue would prove to be the management of on-site traffic associated with school busses and parent pickups. The traffic authority's preliminary analysis indicates that it would be able to adequately address all anticipated traffic impacts.
- Concerning other potential neighborhood impacts, the committee's preliminary engineering analysis indicates that the Project would have a negligible impact on the community and private wells serving the area. The building committee considered the Pinewoods Lane community well in association with a septic suitability analysis conducted in 2009 by Anchor Engineering Services, Inc. This preliminary analysis indicates that ground water flows from the proposed site would not flow towards the community well. Based on this preliminary study, the building committee does not expect that a septic system for a new school would impact the Pinewoods Lane community well. The State Department of Environmental Protection's permit process for the new septic system is very detailed and the agency would require the town to further study this potential impact issue. Furthermore, a new school would require an additional well and all Connecticut Department of Public Health permit requirements would have to be addressed. The site is within a designated stratified drift aquifer area and the preliminary analysis indicates that the district could obtain the needed volume of potable water without affecting the yield of the Pinewoods Lane community well.

NEXT STEPS

On March 15, 2010 the school building committee will conduct a public information meeting to present the proposed New Community PreK-4 Elementary School and Mansfield Middle School Project. Under the timeline that the committee has outlined, the committee suggests that the board of education recommend its preferred option to the town council by May 24, 2010. The town council will need some time to review the board's recommendation, and the building committee has proposed that the council conduct a public hearing on June 14, 2010 to solicit additional public comment on the proposed Project. The building committee has further recommended that by June 26, 2010 the town council make a decision on whether to place a proposed school building project on the November 2010 ballot.

In the interim, the school building committee remains available to address questions and concerns and to otherwise assist the board of education and the town council with their review of the committee's recommendation.



Optimal Student Enrollment

Description of Request:

The requestor is interested in finding out more about the "criteria" school districts are using to determine "optimal student enrollment" in elementary, middle and high schools, as well as, the basis for this determination.

Question:

1. What criteria are school districts using to determine "optimal student enrollment" in elementary, middle and high schools and what is the basis for this determination?

Report:

Following an established REL-NEI Reference Desk research protocol, we conducted a search for research reports as well as descriptive and policy-oriented briefs and articles in this area. The sources included federally funded organizations, additional research institutions, several educational research databases, and a general Internet search using Google and other search engines. We also searched for appropriate organizations that may act as resources on this issue. We have not done an evaluation of these organizations or the resources themselves, but offer this list to you for your information only.

Researchers thought it would be of use to provide a context to the ongoing dialogue around appropriate and optimal school size. Institute for Education Sciences (IES), in their Education Indicators series, articulates the tension between larger and smaller sized schools: "though smaller schools may have a stronger sense of community, larger schools often can provide broader curricular offerings" (IES website. *Education Indicators: An International Perspective:* http://nces.ed.gov/surveys/international/intlindicators/)

Our researchers have found no evidence indicating what criteria districts are using to determine "optimal student enrollment" in elementary, middle and high schools or the basis for the determination. However, researchers were able to locate literature that provided research-based ranges of "optimal student enrollment" in elementary and high schools. One study found that "there is some evidence that moderately sized elementary schools (300–500 students) and high schools (600–900 students) may optimally balance economies of size with the potential negative effects of large schools" (Andrews, 2002; see resource below). Another study suggested that while, "Elementary schools [with students of disadvantaged social and economic backgrounds] should be limited in size to not more than about 300 students; those serving economically and socially heterogeneous or relatively advantaged students should be limited in size to about 500 students. Secondary schools serving exclusively or largely diverse and/or disadvantaged students should be limited in size to about 600 students or fewer, while those secondary schools serving economically and socially heterogeneous or relatively advantaged students should be limited in size to about 1,000 students" (Leithwood, 2009; see resource below). Still another study's results suggested that "the ideal high school, defined in terms of effectiveness (i.e., learning), enrolls between 600 and 900 students. In schools smaller than this, students learn less; those in large high schools (especially over 2,100) learn considerably less" (Lee, 1997; see resource below). In terms of cost effectiveness, "The best of the cost function studies suggest that sizeable potential cost savings in instructional and administrative costs may exist by moving from a very small district (500 or fewer pupils) to a district with approximately 2,000–4,000 pupils. The findings from production function studies of schools are less consistent, but there is some evidence that moderately sized elementary schools (300–500 students) and high schools (600–900 students) may optimally balance economies of size with the potential negative effects of large schools" (Andrews, 2002; see resource below).

We focused on identifying resources that specifically addressed optimal school size for elementary, middle and high schools, but to supplement the research findings that directly address the questions, we have also included a selection of articles reviewing the effect of school size on school performance and the effect a high school's size has on the school's budget.

Question:

1. **What criteria are school districts using to determine "optimal student enrollment" in elementary, middle and high schools?**

   1.1. Revisiting Economies of Size in American Education: Are We Any Closer to a Consensus?
   Andrews, M., Duncombe, W. & Yinger, J.; June 2002, Economics of Education Review Volume 21, Issue 3, Pages 245-262.
   Source: General internet search using Google.
   (http://cpr.maxwell.syr.edu/efap/Publications/Revisiting_Economies.pdf)
   From the abstract: "Consolidation remains a common policy recommendation of state governments looking to improve efficiency, especially in rural school districts. However, state policies encouraging consolidation have increasingly been challenged as fostering learning environments that hurt student performance. Does the empirical research on economies of size support for this policy? The objective of this paper is to define the factors affecting economies of size and update the literature since 1980. The best of the cost function studies suggest that sizeable potential cost savings in instructional and administrative costs may exist by moving from a very small district (500 or fewer pupils) to a district with approxiamtely 2,000–4,000 pupils. The findings from production function studies of schools are less consistent, but there is some evidence that moderately sized elementary schools (300–500 students) and high schools (600–900 students) may optimally balance economies of size with the potential negative effects of large schools. Since program evaluation research on school consolidation is limited, it is time for researchers on both sides of this debate to make good evaluation research on consolidation a high priority."

   1.2. A Review of Empirical Evidence About School Size Effects: A Policy Perspective.
   Leithwood K. & Jantzi D.; 2009; Review of Educational Research, Vol. 79, No. 1, pages 464-490.
   Source: General internet search using Google Scholar
   (http://rer.sagepub.com/cgi/reprint/79/1/464)
   From the abstract: "This review examined 57 post-1990 empirical studies of school size effects on a variety of student and organizational outcomes. The weight of evidence provided by this research clearly favors smaller schools. Students who traditionally struggle at school and students from disadvantaged social and economic backgrounds are the major benefactors of smaller schools. Elementary schools with large proportions of such students should be limited in size to not more than about 300 students; those serving economically and socially heterogeneous or relatively advantaged students should be limited in size to about 500 students. Secondary schools serving exclusively or largely diverse and/or disadvantaged students should be limited in size to about 600 students or fewer, while those secondary schools serving economically and socially heterogeneous or relatively advantaged students should be limited in size to about 1,000 students."

   1.3. High School Size: Which Works Best and for Whom? *Lee, V.E. & Smith, J.B.; 1997; Educational Evaluation and Policy Analysis, Vol. 19, No. 3, p. 205-227.*
   Source: ERIC (#ED396888)
   (http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/14/96/a2.pdf)
   From the abstract: "The study described in this article investigates the relationship between high school size and student learning. We used three waves of data from NELS:88 and hierarchical linear modeling (HLM) methods to examine how students' achievement growth in two subjects (reading and mathematics) over the high school years is influenced by the size of the high school they attend. Three research questions guided the study: (a) Which size high school is most effective for students' learning?, (b) In which size high school is learning most equitably distributed?, and (c) Are size effects consistent across high schools defined by their social compositions? Results suggest that the ideal high school, defined in terms of effectiveness (i.e., learning), enrolls between 600 and 900 students. In schools smaller than this, students learn less;

those in large high schools (especially over 2,100) learn considerably less. Learning is more equitable in very small schools, with equity defined by the relationship between learning and student socioeconomic status (SES). An important finding from the study is that the influence of school size on learning is different in schools that enroll students of varying SES and in schools with differing proportions of minorities. Enrollment size has a stronger effect on learning in schools with lower-SES students and also in schools with high concentrations of minority students. Implications for educational policy are discussed."

1.4. **School Reform and the No-Man's-Land of High School Size.** *Gregory, T.; December, 2000;Indiana University. Portions of this paper are adapted from an unpublished paper, "School Size, School Reform, and the Moral Conversation," delivered at the Journal of Curriculum Theorizing Conference (Bloomington, IN, October 18, 1997).*
Source: ERIC (#ED451981)
(http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/16/f5/6d.pdf)
From the abstract: "The paper explores the ways in which research and practice have shaped how we think about the proper size of the high school. Since 1970, essentially all research tends to favor the creation of small high schools. Four forces seem to have come into play much more strongly, often in concert with each other, since our conception of the high school was established; the information age, the emergence of an adolescent culture, the students' rights movement, and our changing views of the proper functioning of organizations all threaten to render the large, comprehensive high school obsolete. Two reform responses to these conditions have emerged: break existing big high schools up into small schools within schools (SWASs) and create new, small high schools. The two alternatives represent very different models of schooling with very different cultures. Successful examples of the SWAS approach are rare, perhaps non-existent. Five types of error are often committed in designing them: errors of size, of continuity, of autonomy, of time, and of control. Creating new, small high schools is an effective approach but their effectiveness begins to diminish when they get much larger than 200 students. SWASs also seem to hit a size barrier when they try to get much smaller than 400 students. This no-man's-land of high school size is discussed and its implications for reform efforts are considered. The analysis attempts to explain why so little of our widespread effort to reform the high school has been successful and it suggests remedies, uncomfortable as they may be, that hold the promise of rectifying the situation."

Resources on "Optimal School Size" in General

- **Research about School Size and School Performance in Impoverished Communities.** *Howley, C., Strange, M., & Bickel, R.; December, 2000, ERIC Clearinghouse on Rural Education and Small Schools.*
Source: ERIC (#ED448968)
(http://eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED448968)
From the abstract: "Many experts have endorsed small schools as educationally effective, often adding parenthetically that smaller size is especially beneficial for impoverished students. A recent series of studies, the "Matthew Project," bolsters these claims. This digest reviews recent thinking about small school size, describes the Matthew Project studies, and summarizes findings. Summaries of research on school size make various recommendations on optimal size. Researchers and policy analysts most concerned with "community" tend to recommend the smallest schools for everyone; those concerned with student outcomes advise small schools for some communities; and those concerned with inputs recommend larger sizes. From 1966 to 2000, only 22 research reports addressed the interaction of school size and poverty as a major concern, although poverty typically has a strong negative influence on achievement. The Matthew Project is based on the work of N. Friedkin and J. Necochea (1988), who found that school performance benefited from smaller school size in impoverished California communities and from larger school size in affluent communities. A 1996 replication using West Virginia data found similar results. The Matthew Project pursued the issue in Ohio, Texas, Georgia, and Montana and found remarkably strong and consistent equity effects of size. Across states, the relationship between achievement and socioeconomic status was substantially weaker in smaller schools than larger schools. Findings for each state are discussed."

- **High School Size: Effects on Budgets and Performance in New York City.** *Stiefel L., Berne R., Iatarola P., & Fruchter N.; 2000; Educational Evaluation and Policy Analysis, Vol. 22, No. 1, p.27-39.*
  Source: ERIC (#EJ607454)
  (http://epa.sagepub.com/cgi/reprint/22/1/27)
  From the abstract: "Combines budget and performance information to study the effects of high school size. Suggests that since small high schools are more effective for minority and poor students, and the budget per student is found to be similar for small and large schools, policymakers might support the creation of more small high schools."

Key words and search strings used in the search:

Optimal + school size; school size; effect of school size on student achievement; school size + student achievement

Search databases and websites:

Institute for Education Science Sites: Regional Educational Laboratory Program (REL); What Works Clearinghouse (WWC); Doing What Works (DWW); National Center for Education Statistics (NCES); Institute for Education Sciences (IES); IES Practice Guides

Additional Data Resources: The Campbell Collaboration; Data Quality Campaign; Education Development Center; WestEd; The Education Trust; SRI International; ERIC; http://www.googlescholar.com; http://www.google.com; general internet search

Criteria for inclusion:

When Reference Desk Researchers review resources, they consider, among other things, four factors:

1. **Date of the publication:** The most current information is included unless in the case of nationally known seminal resources
2. **Source and funder of the report/study/brief/article:** Priority is given to IES, nationally funded, and certain other vetted sources known for strict attention to research protocols;
3. **Methodology**: i.e. Random control trial studies, surveys, self-assessments, literature reviews, policy briefs, etc. Priority for inclusion is given generally to random control trial study findings; however, the reader should note at least the following factors when basing decisions on these resources: Numbers of participants (just a few? Thousands?); Selection (did the participants volunteer in the study, or were they chosen?); Representation (were findings generalized from a homogeneous or a diverse pool of participants? Was the study sample representative of the population as a whole?
4. **Existing knowledge base:** Although we strive to include vetted resources, there are times when the research base is slim or non-existent. In these cases we have included the best resources we could find, which may include newspaper articles, interviews with content specialists, organization websites, etc.

REL Northeast and Islands
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School Size: Why "Smaller" May Not Be the Answer

Kenneth R. Stevenson

School districts, and even states, striving to identify optimal school size are confounded more often than not by the conflicting research findings and theoretical arguments presented throughout the literature. Some writers adamantly declare that smaller schools are a "must" if educational opportunity is to be optimized. Others argue that school size itself has little impact on student performance, suggesting that other variables "masked" in school size are the real factors affecting student success. Yet others imply that smaller schools may make a difference in student performance, but the excessive cost to move in that direction is not warranted. They postulate that similar, if not better, results may be produced at less expense through enhanced technology, better instructional materials, and further professionalizing the teaching corps. Finally, some researchers studying school size indicate that, if school size does affect learning, its influence may vary greatly, depending upon the clientele served.

The truth is, however, that the real effects of school size, if any, are not yet fully known—and may never be. While the topic has been studied extensively, the findings have been mixed, and often contradictory. Part of the reason for such varied results rests with differences in research methodologies. However, there are also some other common sense explanations as to why school size research findings diverge, sometimes significantly. This article is an inventory of factors that affect school size research findings, along with suggested implications for districts and states making decisions about how many students their schools should house.

School Outcomes Are Greatly Affected by Factors Outside the Direct Control of Educational Institutions

While the quality of the educational process in a school makes a difference in how children learn and who they become, some of the most significant contributors to a student's success rest elsewhere. For example, in a series of studies on the relationship of school size to student outcomes in South Carolina, a majority of the variability in student performance from school to school on state achievement tests was associated with the level of poverty of the children served (Carpenter, 2006; Durbin, 2001; Kaczor, 2006; McCathern, 2004; Roberts, 2002). Across these studies, the findings repeatedly indicated that the higher the poverty index of a school (proportion of children qualifying for free or reduced lunch or qualifying for Medicaid), the fewer the percentage of pupils scoring proficient or advanced on the Palmetto Achievement Challenge Test (PACT).

Findings that family socioeconomic and demographic factors are major contributors to how students perform in school are not limited to one state, nor are they a new concept. An earlier Rand study (Grissmer, Kirby, Berends, & Williamson, 1994) using national databases concluded the following:

> The most significant family characteristics associated with test scores are parental education levels, family income, family size, and age of mother at child's birth. Other things equal, higher levels of parental education and family income are associated with significantly higher test scores. (p. 105)

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The study further indicated that as family environments are enhanced, students can be expected to perform at a higher level academically. The report states that in the United States over time:

> two highly significant—but often overlooked—changes in family characteristics have had positive effects on test scores: the very large increase in parental education levels and the significant reduction in family size. (Grissmer et al., 1994, p. 106)

Nor are the effects of variables outside school control limited to this country. A 2006 study of the relationships between nonschool factors and student academic performance across 20 countries found that, regardless of country, parent education and job type correlated to students' performance (Hampden-Thompson & Johnston, 2006). The study points out that: (a) "on average, in all 20 countries, 15-year-old students with at least one postsecondary-educated parent performed better than students whose parents were educated to the secondary level or below" (p. 4) and (b) "having parents of high occupational status is associated with higher student mathematics literacy performance on average in all 20 countries included in the study" (p. 4).

Unless the bonds of poverty are broken before formal schooling ever commences, children of poverty will struggle with, and often be unsuccessful in, the educational process.

Thus, statewide, national, and international research studies have continued to indicate that factors outside the control of schools are associated with some of the most significant differences in how children achieve while in educational institutions. It is not surprising, therefore, that researchers probing for the impact of school-based variables on learning have produced mixed results. For studies that have not found significant relationships between school size and student achievement, at least part of the reason may rest with the fact that nonschool variables are so pervasive and intense that they overwhelm the smaller effects of school-related variables such as school size. Similarly, in those studies that have found significant relationships between the size of schools and student academic success, if the impact of nonschool variables like the poverty level of children served or educational level of parents have not been carefully controlled, the results may be deceptive. What appears to be a relationship between school size and student achievement may in fact be a situation where the effects of poverty have been "masked."

Lessons for Educational Decision Makers

The lesson here is that existing research can inform decision making regarding school size, but the factors affecting the learning process are so broad and complex that the relatively simple design of most studies cannot provide the final answer. Of particular importance is to realize that schooling does not operate in a vacuum defined by bricks and mortar. External factors do affect student performance, and must be considered in analyzing the potential impact of larger or smaller schools. Further, policy makers seeking to improve student achievement must look beyond the formal place called school. Instead of using limited resources to make schools smaller, the wise decision may be one that channels resources into appropriate pre-school experiences, and/or even prenatal care initiatives. Evidence indicates that, unless the bonds of poverty are broken before formal schooling ever commences, children of poverty will struggle with, and often be unsuccessful in, the educational process.

Educationally Related Factors Other Than School Size Are More Central to Differences in Student Success

Few practitioners or researchers will argue that school size is the most important variable in what makes one school more successful than another. In fact, studies have indicated that factors related more directly to the classroom have some of the strongest relationships with level of student success. Clark (2002), after a study involving four distinct samples, concluded that:

> The achievement gap between students from different races and social classes largely may be most directly associated with variations in the time-use habits of students...and with the involvement of parents, teachers, and adult mentors in students' activities. (p. 12)

In a separate work, Linda Darling-Hammond (2003), after years of studying what makes some schools more productive than others, concludes that teacher expertise is the primary determinant of student academic success. She states:

> teachers with a combination of attributes—knowing how to instruct, motivate, manage and assess diverse students, strong verbal ability, sound subject matter, and knowledge of effective methods for teaching that subject matter—hold the greatest promise for producing student learning. (p. 11)

In effect, the literature on student achievement regularly has supported the idea that the classroom and the teacher within, more so than the school as a whole, are the

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Four School Building Project
Questions and Answers

1. Does the cost of renovating to new the three elementary schools include operating costs?
   The Project Costs and Cost to Mansfield indicated in the Family of Options matrix do not include operating costs. However, the anticipated operating costs are included in the Average Yearly Cost/Household under the column titled Financial Impact.

2. Has the committee considered implications of a larger school?
   Yes, a group consisting of Mansfield Public Schools' teaching & administrative staff and parents visited 4 elementary schools of similar size.

3. What are the projected class sizes?
   The Mansfield Board of Education established class size guidelines in 1999. These guidelines will continue to be followed regardless of the selected option and are as follows:

K-3	**14-18**
4-5	**16-20**
6-8	**21-23**

4. How will the location impact traffic?
   The subject project will have some impact on vehicular and pedestrian traffic along Warrenville Road (Route 89) and along local and state roads leading to Warrenville Road. In association with required applications to the Connecticut Department of Transportation and Mansfield Planning and Zoning Commission, existing and anticipated traffic volumes will have to be specifically studied and all anticipated impacts would have to be appropriately addressed to meet applicable approval criteria. Both vehicular and pedestrian traffic will need to be considered. Based on a preliminary analysis, all anticipated traffic impacts would be able to be addressed.

   Traffic associated with a consolidated elementary school is expected to be similar to cumulative traffic now associated with the three existing elementary schools and to the traffic associated with the Middle School, which has approximately the number of students that are planned for the consolidated school. Based on a preliminary review by Mansfield's Traffic Authority, Warrenville Road and affected intersections with nearby state and local roads are expected to have capacity to accommodate a consolidated school at this site, The primary traffic issue is anticipated to be the management of on-site traffic associated with school busses and parent pickups. Onsite traffic management will need to be specifically addressed in any site design submitted for PZC approval.

5. Will the cost of busing increase?
   There should be no increase in cost due to the change in location from 3 to either two schools (Option C) or one school (Option D).

6. Will it impact students' time on the bus?
   We will continue to follow State of Connecticut law which limits the amount of time a child is on a bus to one hour. Buses will be scheduled to leave the Mansfield Middle School at approximately 8:00am and arrive at the elementary location(s) at 8:45am.

7. What will happen to the SE athletic fields?
   The athletic fields will remain as is.

8. Will acoustics in the gym be considered?
   Yes. Options to maximize space and acoustics will be reviewed with the teaching staff.

9. How is the feel at the larger elementary schools the committee visited?
   The schools we visited had a warm open feeling.

10. For the 3 new schools option (Option B), what does the cafeteria do compared to state reimbursement options?
    All of the schools exceed the maximum square footage allowed for reimbursement based on projected student enrollment so the cafeteria will increase the total building's square footage and will not be eligible for reimbursement.

11. If the 3 new schools option (Option B) was chosen, does Southeast need the extra classrooms and what is the cost of those if changed back to old district lines before the last re-districting?
    If Option B were chosen, each of the three schools would have comparable capacity which would be permanent in nature rather than relocatables, using our current district boundaries. This is not to say that district lines could not be redrawn at some point in the future.

12. Why not decouple the Middle School from the options?
    The four schools were reviewed together so that the town could plan for needed additions and/or renovations as a complete group.

13. What are the predictions for energy savings?
    A new school will be LEED certified, which should save approximately $200,000 per year.

14. How will one school solution effect the ratio of special education staff vs. special needs students?
    The Mansfield Public Schools will continue to support special needs students in accordance with their IEP.

15. Has there been a cost comparison?
    Yes, details are on the School Building Committee website at www.mansfieldct.org.

16. How would the neighborhood school feeling be attained?
    The school administration would work with staff and parents to create a warm, friendly environment.

17. What happens if referendum fails?
    The Mansfield Town Council in collaboration with the Mansfield Board of Education would analyze the referendum results and develop a plan of action.

18. Over how long a period of time is the financing package?
    Twenty years

19. What are the enrollment projections for the one school option?
    An enrollment projection study is posted on the School Building Committee website.

20. How do larger schools handle moving children up, ie. friends with friends?

In a similar way our schools do now. Administrators review class placement with teachers and make decision based on feedback.

21. If there is one new school, would it be air conditioned?
Yes, the current plan for option D included air conditioning.

22. How many classrooms at per grade level are there now?
Currently we have K-7, Gr. 1-7, Gr. 2-8, Gr. 3-8, and Gr. 4-8.

23. Why is the cost difference so large between Options C & D?
The cost difference is large because in Option C the renovations and additions total approximately 114,000 square feet between the two schools as compared to constructing a new 100,000 square foot school (Option D). Also, the anticipated state reimbursement is much less for Option C because the proposed square footage exceeds the State maximum eligible for reimbursement by 35% - 40% as compared to approximately 10% for Option D. Thus the reimbursement "penalty" for Option C is estimated at $14.3 million versus $2.5 million for Option D.
This is why the net cost for Opt. D ($37mil) is approximately 43% of Opt. C ($16mil). This amounts to an annual difference of approx. $2.2mil in debt service payments. That combined with a reduction in maintenance costs of approx. $405,000 and a small reduction in school staffing costs of $70,000 means a difference of $2,680,000 annually or the equivalent of 2.89 mills.

24. If the State approves the plan, will we get the money they have committed?
Project and funding approval process is as follows:
School District submits the project to the Governor and General Assembly for consideration during the subsequent regularly scheduled session by June 30, 2011
State Dept of Education will notify the School District of the assigned Priority Category by Oct. 1, 2011.
State Dept of Education submits the Priority List to the Governor and Education Committee by Dec. 15, 2011.
Education Committee submits approved or modified Priority List to Governor and General Assembly by Feb. 1, 2012 of the following year with a request for authorization to enter into grant commitments.
Grant commitments become effective only after such projects have been approved by the General Assembly and the bill has been signed by the Governor.

25. Has there been any consideration of the effect on the community well on Pinewoods Lane?
The Pinewoods Lane community well was considered in association with a septic suitability analysis conducted in 2009 by Anchor Engineering Services, Inc. This preliminary analysis concluded that ground water flows were not toward the community well. Accordingly, the Pinewoods Lane well is not expected to be impacted by a septic system for the new school. The State Department of Environmental Protection Agency permit process for the new septic system is very detailed and this potential impact issue will be studied further.

The new school will need to have an additional well and all Connecticut Department of Public Health permit requirements will have to be addressed. The site is within a designated stratified drift aquifer area and preliminary analysis indicated that the needed volume of potable water could be obtained without affecting the yield of the Pinewoods Lane community well.

26. If one school is built, would the Board consider adding preschool classes and a family resource center in the current Southeast Building?
If one school is built, any plans for the future use of the current Southeast building would be determined after study by the Town Council.

27. How will one school continue to offer the after school programs that are offered at the three elementary schools?
Programs on a variety of topics would continue to be offered by both certified and non-certified staff, as well as outside presenters to all students at a particular grade level(s) as determined by available funding.

28. What if there was an unexpected population boom?
We will continue to monitor birth rates in town, obtain enrollment projection studies, and plan for an increase/decrease in enrollment.

29. Was adding a library media center, cafeteria and gym to Option A considered?
Because the square footage of our elementary schools is already over the State reimbursement maximum, adding to each school would be non-reimbursable.

30. Did the committee do a cost comparison to building 3 brand new schools?
To get State reimbursement, the three new schools would have to be smaller than the existing schools which would not be recommended and the cost to Mansfield would be considerably higher than a single school (Option D).

31. Has the committee considered impact on Southeast students while new school is being built?
The contractors would do everything possible to have as little impact as possible but in all of the options there will be some impact.

32. Have you considered parent pick-up at a larger school?
We have discussed with larger schools how parent/student drop-off and pick-up are handled and would incorporate it into the planning.

Families of Options

PROJECT SCOPE: MIDDLE SCHOOL	PROJECT SCOPE: ELEMENTARY SCHOOLS	REVISED 01/15/2010		
		Project Cost	Cost to Mansfield	Financial Impact
Repair and maintain. Roof and window replacements, solar panels, fire alarm systems, ADA and technology upgrades. New ADA compliant elevator.	Repair and maintain all schools. Roof and window replacements, solar panels, fire alarm systems, ADA and technology upgrades. New heating and ventilating systems, new gym floors and gym folding partitions.	ES 22,996,069 MS 7,384,405 TOTAL 30,380,474	22M 22,170,571	Mill Rate: + 0.77 AVG. YRLY. COST INCREASE/ HOUSEHOLD: $129
Additions, window replacement, roof replacement, solar panels, selective heavy renovations.	Three elementary schools- Media center and computer room additions, completely renovate, window replacement, roof replacement, solar panels, addition at Southeast to replace modulars.	ES 64,041,861 MS 12,609,801 TOTAL 76,651,662	41M 41,429,298	Mill Rate: + 4.24 AVG. YRLY. COST INCREASE/ HOUSEHOLD: $712
Additions, window replacement, roof replacement, solar panels, selective heavy renovations.	Two elementary schools. Additions, roof replacement, completely renovate two elementary schools, close one elementary school.	ES 55,547,704 MS 12,609,801 TOTAL 68,157,505	37M 36,545,739	Mill Rate: + 3.15 AVG. YRLY. COST INCREASE/ HOUSEHOLD: $530
Additions, window replacement, roof replacement, solar panels, selective heavy renovations.	One new elementary school. Close existing elementary schools.	ES 34,043,970 MS 11,941,083 TOTAL 45,985,053	16M 15,962,244	Mill Rate: + 0.42 AVG. YRLY. COST INCREASE/ HOUSEHOLD: $71

Attachment IV

Mansfield School Building Committee
Estimated Cost Comparisons Recap
March 11, 2010

	Annual Budget				
	2009/10	Option A	Option B	Option C	Option D
Total Project Construction Cost		$ 30,380,000	$ 76,652,000	$ 68,157,000	$ 45,985,000
Total Estimated Net Construction Cost		$ 22,000,000	$ 41,000,000	$ 37,000,000	$ 16,000,000
Estimated Reimbursement Rate		27.6%	46.5%	45.7%	65.2%
Estimated Annual Costs:					
Capital Improvements/20 yrs	-	1,100,000			
Debt Service Payment/20 yrs			4,311,250	3,891,250	1,680,000
Salaries & Benefits - All schools	15,849,654	15,654,654	15,654,654	15,100,654	15,030,654
Maintenance Costs (Incl Salaries) *	1,882,106	1,689,106	1,689,106	1,661,606	1,410,646
Net Annual Cost	17,731,760	18,443,760	21,655,010	20,653,510	18,121,300
Percentage Increase		4.0%	22.1%	16.5%	2.2%
Taxable Grand List	926,094,925	926,094,925	926,094,925	926,094,925	926,094,925
Mill Rate Equivalent	19.15	19.92	23.38	22.30	19.57
Mill Rate Increase/(Decrease)		**0.77**	**4.24**	**3.15**	**0.42**
Average Cost per Household	3,217	3,346	3,928	3,747	3,287
(Median assessed value of $168,000)					
Average Cost per Household Increase/Decrease		**129**	**712**	**530**	**71**

* Option D assumes building a fully LEED certified building w/specific modifications for cleaning & maintenance efficiency.

Note: Debt Service Payments reflect the estimated first full year of principal and interest payments. Debt service payments will decline as annual principal payments are made.

Attachment V