

Attachment # 2

GRADE SPAN RESEARCH

Background Information

Grade Configuration:

Empirical evidence supporting one grade configuration over another is sparse and generally lacks the rigor to reach reasonable conclusions. From a practical perspective, we know that other factors have a far more significant influence on student achievement than a grade level configuration can possibly have. School buildings do not teach students; teachers teach students. With these notions in mind, any school organization that has effective leadership, effective teachers and community support can be successful.

A common sense approach to school organization has generally taken place in communities. Factors that most often influence grade configuration choices are:

- The cost and length of student travel
- A possible increase or decrease in parent involvement
- The number of students at each grade level at the school
- The impact on neighborhood schools
- The number of school transitions
- The opportunities for interaction among age groups
- The influence of older students on younger students
- The design and capacities of existing school facilities
- The impact of school setting on student learning and achievement

Robert Marzano¹ has analyzed and consolidated a plethora of research studies and has identified those factors that most significantly relate to student performance. Marzano makes the following assertions:

“The research on effectiveness of schools considered as a whole paints a very positive image of their impact on student achievement.”²

“The schools that are highly effective produce results that almost entirely overcome the effects of student background.”³

Marzano has categorized the researched-based factors affecting student achievement into three clusters. (1) School level factors are primarily a function of school policy and school-wide decision initiatives. (2) Teacher-level factors are primarily under the control of individual teachers. (3) Student-level factors are generally associated with student background. The following table expands these ideas.

¹ Robert Marzano, What Works in Schools: Translating Research into Action, ASCD, 2003.
ISBN # 0-87120-717-6.

² Ibid., p.6.

³ Ibid., p.7.

Factors Affecting Student Achievement⁴

Factor	Component
School	<ul style="list-style-type: none">• Guaranteed and viable curriculum• Challenging goals and effective feedback• Parent and community involvement• Safe and orderly environment• Collegiality and professionalism
Teacher	<ul style="list-style-type: none">• Instructional strategies• Classroom management• Classroom curriculum design
Student	<ul style="list-style-type: none">• Home atmosphere• Learned intelligence and background knowledge• Motivation

Grade configuration can be a factor in student performance to the extent that it enhances or impedes implementation of those school and teacher level practices known to be effective. Who is in the classroom, what is being taught and how it is being taught are the most important issues related to student achievement. How a school district manages transitions from one school level to another is also important in maintaining the impetus for successful teaching and learning.

There are numerous studies and publications that report on the characteristics of high performing schools. These documents generally report the following characteristics as being present:⁵

1. A clear and shared focus; a focus on learning
2. High standards and expectations for ALL students
3. Effective school leadership
4. High levels of collaboration and communication
5. Curriculum, instruction and assessments aligned with state standards
6. Frequent monitoring of learning and teaching
7. Focused professional development
8. A supportive learning environment
9. High levels of parent and community involvement
10. A culture of continuous improvement

No particular sequence of grade spans is perfect or in itself guarantees student achievement and social adjustment. The key is to focus on developing the positive potential within any grade configuration.

A study by Charlene Tucker and Gilbert Andrada (1997)⁶ comparing the Connecticut Mastery Test results for three types of school organizations (Type I schools

⁴ More info available at:

http://www.mcrel.org/PDF/PolicyBriefs/50321PI_PBSchoolTeacherLeaderBrief.pdf

⁵ More info at: http://maine.gov/education/nclb/school_improvement/ninecharact.pdf

= K-5, and 6-8; Type II schools = K-6 and 7-8; Type III schools = K-8) attempted to discern whether students attending schools with a K-5 span performed as well as their K-6 cohorts. The results indicated that in all subject areas the performance of sixth-grade students at the Type II schools was better than the performance of students from Type I schools. Tucker and Andrada pose three possible explanations for this outcome.

1. There was less incentive for the school administering the sixth-grade portion of the test to prepare Type I students (who had just arrived at the school) for the CMT because the administering school would not receive credit for the students' performance.
2. Type I schools had no incentive to prepare fifth grade students for the sixth-grade portion of the CMT because those schools were not being held accountable for their graduates' performance at the administering school.
3. Information about the nature and importance of the sixth-grade portion of the CMT was not being made available to students and teachers in Type I schools; therefore, the teachers were not familiar with the best methods for preparing their fifth grade students adequately for the CMT.

The authors claim that their study results demonstrate the subtle ways in which grade span can work for or against student learning within a particular school system. School level policies can vary dramatically depending on the grade span used within schools. Since the CMT testing schedule was altered to a spring administration and the issue of grade level accountability seems to have been resolved. (*Note: Smarter-Balanced Assessments will replace the CMT in 2014*).

There is an accumulating body of research to suggest that K-8 schools, primarily in urban and rural areas, do demonstrate reduced disciplinary referrals and improvement in mathematics achievement. Behavioral improvement of students is often tied to improved home-school cooperation because of the "neighborhood" location of schools and the accessibility of the school to parents/guardians, and the continuity of relationships between faculty, parents, and students over the grade span. Fewer middle level students in the school also facilitate an increased culture of responsibility for older children. Academic gains are often attributed to improved teacher communication about students' needs across the grades. More research is needed to validate initial results and enable conclusions about the specific factors contributing to these gains. Often the K-8 school cannot provide the same range of exploratory experiences in unified arts as the middle school because of facility and staffing limitations.

Conclusion:

Research has provided no definitive answer on the most effective grade configuration. The results of educational research that provide support for practices that influence student success have greater implications, including the notion that the classroom teacher [and the instructional practices used on a daily basis] has the greatest impact on student learning and achievement. It is also essential that school leadership,

⁶ Tucker and Andrada, "Accountability Works: Analysis of Performance by Grade Span of School," Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, 1997. Available from ERIC Document Reproduction Services, Suite 110, Springfield, VA 22153-2852 or 800-443-3742. Web site = www.edrs.com/default.cfm

faculty and staff partner with parents and the community to develop a culture that supports the grade levels in a building and are committed to addressing the needs of the students attending the schools – no matter what the grade configuration.

K-8 schools in urban settings show promise of improving school climate and student achievement.

The following beliefs/guidelines may serve as a rationale for distinguishing and deciding on various grade configuration options.

1. Structured transitions to support students' social and emotional growth should be in place.
2. Parent and community involvement should be facilitated by the number and accessibility of schools serving an attendance zones
3. Grade configuration should be designed to promote curriculum articulation and alignment to ensure academic success.
4. The developmental needs of students must be considered, as well as multi-aged opportunities.
5. Research supports the idea that the **fewer transitions** that students have, the better. To ameliorate situations where several transitions exist, it is necessary to ensure the transitions to new schools are positive for all students and families.

School Facilities:

School facilities can have an impact on student attendance, behavior, health and academic performance. There is a growing body of research suggesting that certain building features do affect student learning, either directly or indirectly. When considering changes in school organization or the possibility of closing a school, these factors should be a part of the deliberations and decision making. The factors usually cited are:

1. Indoor air quality, ventilation, and thermal comfort
 - Poor air quality can cause irritated eyes, nose and throat, upper respiratory infections, nausea, and dizziness
 - Lack of proper ventilation (fresh air) can cause a build-up of carbon dioxide resulting in drowsiness, headaches and inability to concentrate
 - People perform best at the lower end of temperature and humidity zones; humidity levels of 40-70% and moderate temperatures between 68-74 percent enable children to perform best; caution about mold due to excessive humidity and heat can cause allergic reactions in some children and teachers
2. Acoustics
 - Higher student performance is associated with schools having less external noise
 - Excessive classroom noise can have a deleterious cumulative effect; students with hearing impairments are more acutely affected
 - Background noises associated with HVAC systems can make listening and learning difficult for students
3. Lighting
 - Appropriate lighting improves test scores, reduces off-task behavior, and plays a significant role in student achievement
 - Daylight fosters higher student achievement

4. Building age, quality, and aesthetics
 - Newer and better schools contribute to higher student scores on standardized tests
 - Renovated schools also have a positive effect on student learning; although, performance seems to dip during the renovation phase
 - Student discipline is better in newer schools
 - There is generally better teaching in higher quality school facilities
5. School size
 - Some literature does link smaller size schools (300-400 students for elementary schools; less than 1,000 students for high schools) to better achievement
 - Evidence is still accumulating about the effects of house plans or schools within school plans that create smaller learning communities in larger schools
 - Smaller schools often have greater parent involvement
 - About half the student achievement research finds no difference between smaller and larger schools; the other half shows better achievement in smaller schools
 - Smaller schools lead to improved student achievement in poorer communities
 - About 2/3 of parents surveyed prefer smaller high schools
 - Parents using vouchers do so for smaller schools, among other reasons
6. Class size
 - Class size is a critical factor in determining the overall facility requirements of a school
 - 70% of teachers surveyed by Public Agenda claim smaller class size is more important than school size
 - Research has been unable to resolve the class size debate; common sense needs to prevail at present to ensure the number of students assigned to a classroom can be reasonably managed and taught by the teacher and other features of school facilities described previously (acoustics, air quality, lighting, thermal comfort, etc.) are properly managed

Teachers are affected by the same factors that affect student achievement. It is clear that the teacher is probably the most critical factor in student learning. If teachers are adversely affected by school conditions, their students will not likely receive the best that teacher is capable of offering the class. The impact of poor school conditions is thus compounded by teachers and students not able to perform optimally.

Grade Configuration Options:

The following “pros and cons” tables provide a starting point for discussion the viability of some options that seem appropriate for consideration in Brookfield. More options are certainly possible and, depending upon community support, should be explored and debated.

A New Grades PK-4 School

Pros	Cons
<i>Provides a modern school for all elementary school students</i>	<i>Cost pf building a new school; need a central location to optimize savings</i>
<i>Safety & efficiency</i>	<i>Sentimentality about existing schools</i>
<i>Lower operating costs (eliminate redundant costs)</i>	<i>Keeps grade five at the middle school</i>
<i>Others....</i>	<i>Others...</i>

A New Grades PK-5 School

Pros	Cons
<i>Provides a modern school for all elementary school students</i>	<i>Large school; mitigated by lower PK-2_& upper (3-5) houses</i>
<i>Safety & efficiency</i>	<i>Cost pf building a new school; need a central location to optimize savings</i>
<i>Lower operating costs (eliminate redundant costs)</i>	<i>Sentimentality about existing schools</i>
<i>Moves grade five to elementary level; relieves space pressure at the middle school</i>	
<i>Others....</i>	<i>Others...</i>

Renovate Existing Elementary Schools

(No organizational change)

Pros	Cons
<i>Stability in school organization; no change from present</i>	<i>Substantial renovations needed while operating the schools</i>
<i>Renovate to new provides up-to-date operating systems</i>	<i>New construction required to accommodate program/service needs</i>
	<i>Transitions between grades 1 & 2; 4 & 5</i>
	<i>Redundant operating costs</i>
<i>Other...</i>	<i>Other....</i>

Renovate One Elementary School

(School designed to serve either PK-4 or PK-5)

Pros	Cons
<i>Land exists</i>	<i>Substantial additions and renovations required while operating the school</i>
<i>See above for additions “pros”</i>	<i>See above for additional “cons”</i>

<i>A large addition will enable swing space while dealing with renovations</i>	
Other...	Other...

Grades 5-8 Middle School

Pros	Cons
<i>Stability in school organization</i>	<i>Space will be under pressure until enrollment declines after the turn of this decade</i>
<i>Central location for grade five</i>	<i>Some parents resistant to keep grade five in the middle school</i>
Other...	Other...

Grades 6-8 Middle School

Pros	Cons
<i>Smaller middle school</i>	<i>Requires additions to one or both elementary school</i>
<i>Space for program enhancement</i>	
<i>Eliminates need for modular classrooms</i>	
<i>Some parents favor moving grade five from the middle school environment</i>	
Other...	Other...