

Annotated Research Notes for the Interim Education Planning Subcommittee Report

The following are quotes and summarized points from pertinent research. We recognize that this is just a beginning.

I. Alternative Classroom Configurations

A. Multi-age classrooms - Classrooms set up to accommodate a great range of skills. "Rather than passing or failing at the end of the year, children make continuous progress through curriculum at their own individual rate."

1. The Benefits of Multi-age Groupings (quoted directly from the [undated] Iowa DE/AEA Childhood Network Fact Sheet):

- "Accommodates individual differences in learning rates and styles.
- Fosters self-esteem, [academic] risk taking, and decision making.
- Develops leadership abilities in older children.
- Fosters development of pro-social behaviors: reduced aggression, increased harmony, and nurturance within [and] among students.
- Fosters positive attitudes toward school.
- Reduces retention rates. Improves teacher-student interaction, and increases positive parent attitudes toward school.
- Provides time for students to become more involved and engaged in learning.
- Allows teachers to use what they have learned about the child/family in the first year for planning learning experiences the next year."

2. Many multi-age classrooms assume learning is progressive and non-competitive (and hence non-graded), and provide more flexibility and continuity in the learning climate. For a description of how to set up see:

<http://www.odu.edu/educ/act/journal/vol16no1/evanshen.pdf#search=%22multiaged%20groupings%20for%elementary%22>.

3. Long, helpful study on challenges/benefits of multiage classrooms when set up intentionally and fully supported.

<http://wsd.waupaca.k12.wi.us/wlc/primary/multi/multigrad.html>

B. Multi-grade Classrooms – include two or more graded curriculums in a classroom.

1. "In terms of academic achievement, there were no significant differences between single-grade and multi-grade classes, but in terms of emotional factors, results favored multi-grade classes. Students...had more positive attitudes toward school and toward themselves, and more positive social relationships."(Miller, B.A. 1989), "The multi-grade classroom: A resource handbook for small rural schools" Portland: Northwest Regional Educational Lab. (ERIC Document ED320719).

2. Keys to successful multi-grade classroom instruction:

- Principal's leadership, teacher beliefs, school climate, sufficient time and money to set up and implement (Vincent, Susan. "The Multi-grade classroom: A resource handbook for small rural schools", Book 1. Publications available online at <http://www.rivrel.org/ruraled/index.html#multigradepubs>.

- Teachers well organized, receive special multi-age training; use cross-age tutoring; special instruction for social studies and science; apt materials; individualized teaching; teacher incentives. (Miller, B.A. (1991), "A Review of Qualitative Research in Multi-grade Instruction" (ERIC Document ED342563).

C. **Looping** – Students are grouped with the same teacher for two grades or years.

1. Benefits

- Teachers do not start from scratch every year.
- More time spent on effective instruction.
- Greater stability and sense of community for the student.
- Reduces anxiety and increases confidence of students.

2. Challenges

- Parental concern—could have same ineffective teacher for two years.
- Hard on newcomers to join the second year. (Gaustad, J. "Implementing Looping", ERIC Digest 123-Dec. 1998, "Looping: Supporting Student Learning Through Long Term Relationships", LAB at Brown University, 1997).

D. For other effective instructional practices see Jimerson, L., "The Hobbit Effect: Why Small Works in Public Schools", Rural Trust Policy Brief Series on Rural Education, Aug. 2006.

II. **Related Arts**

A. Strong correlation between availability/participation in related arts and academic achievement. Many strong studies:

1. Deasy, Richard J., *Critical Links: Learning in the Arts and Student Academic and Social Development, Arts*, Washington D.C.: Arts Education Partnership, 2002. (ERIC #: ED466413, ERIC Full Text (3414K). This volume cites "recent, strong studies of the academic and social effects of learning in the arts" in Pre-K through college, and ways to further develop learning experiences in and through arts education.

- Winner, Ellen and Hetland, Lois (Editors). (Fall/Winter 2000). The Arts and Academic Achievement: What the Evidence Shows. Double issue of the *Journal of Aesthetic Education*. This landmark issue, according to the publisher, "synthesizes 50 years of research on the relationship between arts education and academic achievement. The articles include examinations of the research testing the relationship between arts and test scores, music and spatial ability, music and math, drama and verbal skills, and various art forms and reading."
- This is a summary by Elliot Eisner, one of the leading arts educators and prolific researcher/writer on this topic. Eisner, E. (2002). *The Arts and the Creation of Mind*, In Chapter 4, "What the Arts Teach and How It Shows. (pp. 70-92). Yale University Press. Available from NAEA Publications. Accessible online at <http://www.naea-reston.org/tenlessons.html>: Designed as a poster, all ten lessons are quoted below because it encapsulates the significant but intangible reasons the arts are essential to learning. (Bold type is Eisner's.)

Ten Lessons the Arts Teach By Elliot Eisner

The arts teach children to make good judgments about qualitative relationships. Unlike much of the curriculum in which correct answers and rules prevail, in the arts, it is judgment rather than rules that prevail.

The arts teach children that problems can have more than one solution and that questions can have more than one answer.

The arts celebrate multiple perspectives.

One of their large lessons is that there are many ways to see and interpret the world.

The arts teach children that in complex forms of problem solving purposes are seldom fixed, but change with circumstance and opportunity. Learning in the arts requires the ability and a willingness to surrender to the unanticipated possibilities of the work as it unfolds.

The arts make vivid the fact that neither words in their literal form nor number exhaust what we can know. The limits of our language do not define the limits of our cognition.

The arts teach students that small differences can have large effects. The arts traffic in subtleties.

The arts teach students to think through and within a material. All art forms employ some means through which images become real.

The arts help children learn to say what cannot be said. When children are invited to disclose what a work of art helps them feel, they must reach into their poetic capacities to find the words that will do the job.

The arts enable us to have experience we can have from no other source and through such experience to discover the range and variety of what we are capable of feeling.

The arts' position in the school curriculum symbolizes to the young what adults believe is important.

B. Other educational values of participation in related arts:

- Increased student retention/graduation rate.
- Increased number of those attending college.
- Increased student engagement and satisfaction.
- Increased parental/community support for and involvement in schools.

C. Cuts/elimination of related arts leads to out-migration of students. See *The Greenfield Recorder* articles re Athol's and Greenfield's experiences.

III. School Configurations—Research on the best grade configurations is inconclusive. Research cited below has not tried to duplicate SWOT analyses, but provide additional sources of information.

A. Factors to consider in deciding a school’s grade span

1. In “Grade Configuration in K-12 Schools”, 2002 (Last Updated May 2005), [<http://ceep.cre.uiuc.edu/poptopics/gradeconfig.html>], N. McEntire suggests:

- Cost and length of student travel
- Possible increase or decrease in parental involvement.
- Number of students at each grade level and its effect on groupings/offerings.
- Effect of school setting on achievement, especially for grades 6-9.
- Neighborhood schools to remain closed or open.
- Number of school transitions for students (less is better).
- Opportunities for interaction of age groups.
- Influence of older students on younger students.
- Building design—is it suitable for a few or several grades?

2. **Transitions between schools**—how many and how well planned/supported?

See <http://eric.uoregon.edu/trendsissues/organization/gradespan.html>

- Research shows the less transitions students make the easier and better. As the number of transitions in grades 6-10 increase, performance decreases. (Mullins, E. & Irvin, J. “What Research Says-Transition into Middle School”, *Middle School Journal*, Jan.2000.)
- Test scores often show a decline the first year in the new environment, and students need additional support to make the transitions smoothly.
- Students moving to a 7-12 grade had an easier time and a lower drop out rate than those transitioning in 9th grade.
- Students in a K-8 showed higher test scores in 7th and 8th than those moving from a K-6 to a 7-8.
- K-8 model 7th graders have significantly higher GPAs than Middle School 7th graders. (Mullins, E. & Irvin, J. “What Research Says-Transition into Middle School”, *Middle School Journal*, Jan.2000.)
- The self-esteem of 12 year olds, and especially girls, is lower in Junior High School than a 12 year old in an elementary school setting. (Mullins & Irvin, 2000.)
- Girls of low socioeconomic status are at greatest risk.
- Students who transition into teams perform better than those that transition to departmentalized schools. (Mullins & Irvin, 2000)
- Transitions at 10th grade were the most difficult time and had the highest drop-out rate.

See also Mullins, E. & Irvin, J., “What Research Says—Transitions into Middle School”, *Middle School Journal*, Jan. 2000, and discussion of middle schools later in this report.

B. School within a school—

- “...one strategy for reducing school size...It is appropriate only to make use of an existing large high school building...SWAS (School within a school) should not be seen by the public as the best way to create small schools.” (Lawrence,

B., "Dollars & Sense: The cost effectiveness of small schools", Knowledge Works Foundation, 2002, p.8. Can be retrieved from The Rural School and Community Trust Web site: <http://www.ruraledu.org/docs/dollars.htm>). Since these schools often share facilities, "it is important to ensure that students have equal access to these and other specialized facilities. In particular, students who are not obviously gifted and talented must be given access to facilities and opportunities to develop skills" (Ibid, p. 8).

- "If size is a structural phenomenon, however, caution is warranted in approaching the simulation of small size through mechanisms as a 'school-within-schools' and 'house plans.'" (Howley, C., "Ongoing dilemmas of School Size: A Short Story, ERIC Digest", ERIC Clearinghouse on Rural Education and SMALL Schools, Charleston WV, Dec., 1996.)
- Simulating small size, research is very limited (Howley, 1996.)
- Separate leadership and independent authority [for each school] are required. (Howley, 1996.)

C. K-12

1. Characteristics of K-12 schools

- Usually located in an agricultural region.
- Students had lower socioeconomic status than national average.
- Average school enrollment was 414 (K-12).
- Satellite and internet systems the most prevalent forms of distance learning technologies in use.
- Single unit schools spent 50% more per pupil than multi-school districts.
- Employed cooperative strategies for maximizing resources such as joining regional service agencies or cooperating with other districts.

2. Superintendents of these single K-12 school districts report:

- Higher rates of above-average test scores.
- Greater number of students completed high school.
- Higher numbers go on to post-secondary education.

(Howley, C. &Hobart, H., "K-12 Unit Schooling in Rural America: A First (Description Paper presented at the Annual Meeting of the National Rural Education Association, Oct. 14, 1996.)

(Picard, Cecil J. (2003). *Small school districts and economies of scale*. Presented to the State Board of Elementary and Secondary Education at the May 2003 Strategic Planning Study Group Committee. Louisiana Department of Education.)

D. Middle School Issues—

1. What students need during this period of rapid developmental changes.

Bill Ivey, the middle school dean at Stoneleigh-Burnham School (and Buckland resident) pointed out in a recent **Recorder** op-ed piece, "Supporting our students: Understanding who they are, what works (Oct. 12, 2006, p. 7):

- "...everything about middle school is important. Young adolescents are in a stage of incredibly rapid development (the second most rapid of our lives outside of babyhood) intellectually, socially, emotionally and physically. Each aspect of their development is in constant flux, and affects and is affected by the other aspects. So when students are learning about English literature, they do not leave behind their physical, social and emotional selves. The pressure

on their growth plates builds and they feel they just have to move around (every 20 minutes, on average.)

- “They are surrounded by their friends...”
- “In the words of John Lounsbury, one of the founders of the middle school movement, ‘Middle School learners by nature learn best with their hands on and their mouths open.’”
- After discussing the importance of advisors, visual and performing arts, and team sports, he comments on the controversy about building configuration: “research consistently shows that, whether in a K-8, 6-8, 7-12, or other configuration, it matters far more to the development of middle school students what is going on in the classroom than who is in the surrounding classrooms.”

2. How the middle school environment itself changes (although more true for 6-8 and 7-8 than for K-8).

John W. Alspaugh, in his article “Achievement loss associated with the transition to middle school and high school” (*The Journal of Educational Research*, Vol., 92, 1998) notes that:

- “The goals of elementary schools tend to be task oriented, whereas the goals of middle schools tend to focus on performance (Midgley, Anderman, & Hicks, 1995).”
- “Middle school teachers tend to have many students for short periods of time hence, the student-teacher relationship changes from elementary to middle school (Feldlaufer, Midgley, & Eccles, 1988).”
- “Associated with the change in student-teacher relationships is a change from small-group and individual instruction to whole-class instruction in the intermediate-level schools.”
- “Researchers have found declines in student self-perception associated with the transition from elementary school to intermediate-level school (Seidman, Allen, Abet, Mitchell, & Feinman, 1994; Wigfield, Eccles, MacIver, Reuman, & Midgley, 1991). Seidman et al found the decline in self-perception to be independent of age, grade level, and ability level.”

3. Although the various middle school configurations approach these changes differently, effective schools in each model:

- Identify where students are developmentally and create the environment that accommodates varying emotional, physical and intellectual stages within each individual and
- Provide a safe, nurturing environment for the students to make the transitions in the most seamless way possible.
- Help students shift from teacher- centered to student centered classroom-learning models.
- Provide an environment which allows for more physical activity and social interaction with their peers, and some separate space and additional responsibilities.
- Provide more challenging academic, artistic, linguistic, and athletic opportunities.
- Ecker gives the example of a school district that offered families a choice of a K-8 model or a middle school model after their children finished 5th grade. They looked into dissolving their current K-8, but after community backlash and research propounding the merits of a K-8, they chose to keep both options with

the district. (Ecker, M., "Middle Schools still matter: As new school configurations grow, unique needs of young adolescents deserve attention—function of middle schools in scholastic, social development of students", *School Administrator*, March 2002.)

E. Middle School Alternative Configurations

Developmental research shows that, particularly at the middle school level, one size doesn't fit all.

1. Grades 6-8 or 7-8

- Some children are ready for middle school, some are not. "Where Does Sixth Grade Belong?" (*Education World*, originally published 1998, last updated 2006. http://www.education-world.com/a_admin/admin060.shtml) lists what makes transition difficult, and interventions that would make transition smoother, including keeping some 6th graders separate from the 7th and 8th graders.
- Advanced students can benefit from access to subject specialists, and advanced language, and related arts opportunities.
- However, "12 year old self-esteem is lower in junior H.S. than a 12 year old in elementary school setting, especially girls." (Mullins, E & Irvin, J., "What Research Says—Transition into Middle School", *Middle School Journal*, Jan. 2000.)
- Fewer sixth grade boys seem ready academically for middle school.
- Coladarci, T. & Hancock, J., "Grade Span Configurations: The (Limited) Evidence Regarding Effects on Academic Achievement", Occasional Paper No. 41, Sept. 2002, shows:
 - *Continuity of experience has an effect on achievement; grade level achievement is highest when the grade being tested is at the upper end of the school's grade span (i.e. 6th graders score better on standardized tests in a K-6 than a 6- 8 school.)
 - *Transition has a negative affect on performance, motivation, self-esteem.
 - *Have in place "articulation & transition activities to lessen adverse effects on students of school to school transitions."

2. Grades K-8 (Advantages)

- A. Look in "The Great K-8 Debate" (<http://www.philaedfund.org/notebook/TheGreatK8Debate.htm>) lists several advantages of K-8 schools:
 - *Safer
 - *Continued parent involvement through middle school
 - *K-8 siblings travel together; similar schedule.
 - * School staff more connected to community.
 - * More students well-known by adults, so less fall through cracks.
 - * Easier to fill vacancies in the middle grades
 - * Research shows 7th and 8th graders in K-8 better on grades and achievement tests, (although middle schoolers catch up by 10th grade) and make smoother transition to high school.
 - * Can accommodate differing maturity levels more easily because of closer knit elementary school structure.
- Denis W. Moore compared students from nine K-8 and nine 7-8 junior high schools in City School District of NYC. K-8 significantly better on all 5 criteria: reading, attitude toward school, self-esteem, pupil's perceptions of teacher's control methods, etc. (Moore, Denis, "Impact of School Grade-Organization

Patterns on Seventh and Eighth Grade Students in K-8 and Junior High Schools”, 1984. Eric # ED245346.)

- Ecker gives the example of a school district that offered families a choice of a K-8 model or a middle school model after their children finished 5th grade. They looked into dissolving their current K-8, but after community backlash and research propounding the merits of a K-8, they chose to keep both options with the district. (Ecker, M., “Middle Schools still matter: As new school configurations grow, unique needs of young adolescents deserve attention—function of middle schools in scholastic, social development of students”, *School Administrator*, March 2002.)
- Cleveland, Ohio successfully changed their 25 middle schools which were too big, with high absence and suspension rates to K-8. See Pardini, Prescilla, “Revival of the K-8 school: Criticism of middle schools fuels renewed interest in a school configuration of yesteryear”, *School Administrator*, March 1, 2002 (<http://www.highbeam.com/DocPrint.aspx?DocId=1G1:83698550>)
- See Memo from North Adams which is also changing their middle schools to K-8.
- K-8 [schools] are positive as long as teachers and administrators believe in them. (Hough, D., “The Case for the Elemiddle School”, *Middle Matters*, Winter 2003.)

3. Disadvantages of K-8

- If try to save money by not giving additional administration and counselor support for issues spanning 9 years.
- K-8 elementary often funded at lower level than middle school.
- Harder to get foreign language and competitive sports and music.

F. PreK - 2 local, grades 3-6 consolidated.

1. The Committee talked about this configuration as a possibility because:
 - It would allow the youngest students, who research shows are most effected by long bus rides, to spend PreK-2 closer to home at a local school with a more familiar and secure environment and more time for family and recreation.
 - It might allow PreK-2 to have smaller, perhaps multi-age classes or even the same teacher or team of teachers for several years during a crucial (first grade) learning year – years when the research shows small (15 and under) classes make the most difference.
 - It could retain at least part of a school in every town, hence maintaining a school in each community. The town benefits having a school “center” and the school benefits from additional parent and community involvement.
2. **The educational disadvantages of this model:**
 - Adds an extra transition year (from grades 2 to 3) for the students. Research shows that transitional years are academically more difficult.
 - Prevents cross-age mentoring between the older and the primary students.
 - Breaks up the teaching staff, making daily exchange of ideas and cross-grade coordination more difficult.
 - More difficult to share SPED professionals and equipment, related arts specialists and other professionals.
 - Makes logistics harder for families of multiple elementary-age children, thus weakening family-school bonds.

- Incurs the additional expense of maintaining additional bus routes and two facilities (even if the primary school is in a smaller or rental space.), and duplicating some playground, cafeteria and related arts spaces and equipment.

G. **K-6 (local)**. See enhancement models below.

IV. Size

A. Class Size

1. Definitions of “small classes” vary, but many studies point to the benefit of small class size.

- “Since research shows that children in the primary grades and – especially— minority and low-income children benefit most from smaller classes, it makes sense to direct resources particularly toward these children.” (McRobbie, J., Finn, J., Harman, P., “Class Size Reduction: Lessons Learned from Experience”, West Ed Policy Brief No. 23, Aug. 1998, p. 11).
- Small class sizes (15:1 or less) generate the greatest gains in grades K and 1. (Molnar, A., “Smaller Classes Not Vouchers Increase Student Achievement”, ERIC DIGEST #ED44825, June, 1998). Pennsylvania used these and other studies to reduce class sizes in K-3.
- “No one knows what the optimal class size is...the most dramatic gains accrue when class size shrinks to 15 or below” [for primary grades]. (McRobbie, J. et al, West Ed Policy Brief No. 23, Aug. 1998, p. 4)
- Some educators suggest that when small is not possible, some gains can be made through making smaller classes in literacy and math, balanced by larger classes in social studies/science at the grade school level.

2. Reduction in class sizes (average of 18, <20) is especially important in early grades (K-3). (Biddle, B.J. & Berliner, D.C., “What Research says about small classes and their effects”. Education Policy Reports Projects. EPSL-0202-101-EPRP. Tempe, AZ: Arizona State University, 2002.)

a. Initial advantages:

- Interaction between teachers and students improved.
- Reduces distractions
- More time to devote to each child. Teacher can learn about the individual students and their needs, adjust instruction accordingly.
- Teachers have higher morale; leads to a more supportive learning environment.
- Students in a better environment to learn the following “standard classroom culture” or basic skills that are used throughout school and work:
 - *pay attention
 - *carrying out tasks
 - *learn to interact with others in a working situation
 - *learn to cooperate with others
 - *learn to learn
 - *generally get oriented to being a student
 - *less competitive; encouraged to form supportive relationships

b. Long term advantages – Students who have experienced consistently small class sizes in grades K-3 experience the following in the higher grades:

- Better grades on average
- Fewer dropped out

- Fewer held back a grade
- In high school these students are more likely to take foreign languages, advanced placement classes, and were in the upper 25% of their classes.
- Higher high school graduation rate
- More likely to voluntarily take SAT and APT exams
- c. The above advantages are more pronounced in students who are educationally disadvantaged otherwise.
- d. No other educational reform has yet been studied that provides such striking benefits.
- e. Average students who attended small classes consecutive years from grades K-3, when tested in 8th grade, were months ahead of those from standard classes for each topic assessed, even after returning to standard sized classes at 4th grade. (Dollars & Sense, 2002.)
- 4.1 months ahead in reading
- 3.4 months ahead in math
- 4.3 months ahead in science
- 4.8 months ahead in social science

B. School Size

1. Definitions of school size vary. The majority of research agrees that large is not educationally good and small is better. There's more variance in what the upper limits of small is and the contrasts between small and average. Some studies show that average class sizes in a smaller school are better than small classes in a larger school. They also find that a larger span of grades, with fewer students at each grade is preferable to many students at a few grade levels. The research is most in agreement about the value of small classes at K and 1, and to a lesser extent at second to fourth grades. A number of studies agree find that defining size according to enrollment per grade, rather than just total school enrollment is useful. Because of the range of definitions of size, and the variety of findings, a range of studies are included:

- One study found that "school size, not classroom size, was the key to student performance. Children performed better in schools where the principal knew their names. Schools with fewer than 300 students showed the best performance, even though class size in these schools was higher than the national average (RCAE, 1994).
- A Columbia University study found that "small schools had strength of smallness not evident in large schools (Nachtigal, Paul, (Ed) (1982). *In search of a better way.* Boulder, CO: Westview Press." These strengths included: more children involved in extracurricular activities, a higher number of students taking academic classes, more teacher attention, a closer connection to the community, and higher graduation rates.
- Additional strengths of smaller schools: safer; lower drop out rates; increased graduation and higher education rates; less vandalism, better attendance, greater student and parent/community participation, increased teacher collaboration and team teaching. (See multiple studies cited in "*Dollars & Sense: The cost effectiveness of small schools,*" 2002, pp. 8-12.)
- First graders gained somewhat fewer literacy skills in large schools (>800) and gained somewhat more literacy skills in small schools (<275). (Ready, D., Lee, V., "Optimal Elementary School Size For Effectiveness and Equity: Disentangling the Effects of Class Size and School Size", May 2006)

- “Small schools (<400 students) are favored compared with medium-sized or larger schools. Teachers have a more positive attitude about their responsibility for students’ learning and students learn more. (Lee, V., Loeb, S., “School Size in Chicago Elementary Schools: Effects on Teachers’ Attitudes and Students’ Achievement”, *American Educational Research Journal*, Vol. 37, No. 1, Spring 2000)
- As school size increases over 300 students, discipline problems (student bullying, student verbal abuse of teachers, disorder in classroom, acts of disrespect toward teacher, gang/cult activities) increase as well. (“Indicators of School Crime & Safety”: 2005, National Center for Educational Statistics, Table 8.1)
- Vermont recognized the value of small schools, and passed legislation “that helps ensure their viability. In 1998, a report by the Vermont Department of Education found that small schools in Vermont are worth the investment because of the value they add to student learning and community cohesion,’ and suggested that the legislature increase funding of its small schools program, which it did (Vermont Department of Education, 1998, p.4).” (Quoted in *Dollars & Sense: The Cost Effectiveness of Small Schools*, 2002, p.7.)
- Only large schools are shown to lead to reduced learning. Size defined as: small schools (<275 children); medium-small schools (276-400); medium-sized schools (401-600); medium-large schools (601-800); and large schools (>800). There is little to no difference for student performance in small to middle sized classrooms or small to middle sized schools. Although elementary school size is marginally related to student learning.
- “While much of the featured research on school size during the past decade has touted smaller schools, the issue has not been fully resolved, at least from a research perspective. Combination of class size, student daily attendance, and school size together accounted for only 3% of the variation in student performance. The strongest predictor of student test achievement was the percentage of students on free and reduced lunch at a school” (Stevenson, K., “School Size and its relationship to Student Outcomes and School Climate”, National Clearinghouse for Educational Facilities, Washington D.C., April 2006).
- One study (reported in *Dollars & Sense*, 2002, p. 7), gives the following **upper limits of small size** for schools with conventionally wide grade spans, even while acknowledging that “One size does not fit all.”

- *High schools (9-12): 75 students per grade level (300 total enrollment)
- *Middle schools (5-8): 50 students per grade level (200 total enrollment)
- *Middle schools (5-8): 50 students per grade level (200 total enrollment)
- *Elementary schools (1-8): 25 students per grade level (200 enrollment)
- *Elementary schools (1-6): 25 students per grade level (150 total enrollment).

- “Can good schools be smaller...there should be more public high schools enrolling 200 students and more elementary schools enrolling 100 students.” (*Dollars & Sense*, 2002)
- “Other research reviews suggest a maximum of 300-400 students for elementary schools and 400-800 for secondary schools. If the study focused on social and emotional aspects of success, then the research indicated that no school should be larger than 500.” Bard, J. et al, “Rural School Consolidation Report,” 2005).

- The ranges for district size given by the above report are as follows: “Lawrence et al. (2002) indicated that a district should have an enrollment of 4000 to 5000 students as a maximum. Imerman and Otto (2003) recommended that school districts should not fall below an enrollment of 750 students. Most of the studies cited were based on per pupil costs. Augenblick and Myers (2001) reported that in order to offer a safe and nurturing environment, an appropriate curriculum, and extracurricular activities, a district should have an enrollment between 260 and 2,925 students.”
- “Examination of ten years of state data” revealed a small but significant positive relationship between school student enrollment and number of times elementary schools have won the Incentive Award. “While the average size among the 598 South Carolina public elementary schools was 513 students, schools that had won the recognition all ten years averaged 818 students”.

V. Busing and its impact on rural education

In the research, anything over 30 minutes is considered a long bus ride. Given the rural nature and size of our district, our committee concluded that bus rides over 45 minutes were unacceptable. Researchers further distinguish between suburban bus rides and rural bus rides (which tend to be longer and more arduous because of road and weather conditions.)

A. Effects of longer bus rides:

- Achievement scores reduced by 2.6 points for 4th graders for every hour spent riding a bus (Lu, Y. & Tweeten, L. (1973). “The impact of busing on student achievement.” *Growth and Change*, 4 (4), pp. 44-46.) Note: although this is an old study, it is frequently cited because no more recent studies of this kind are available.
- High school students’ scores not as adversely affected by longer bus rides (National Rural Education Association, 2005, p. 10).
- Long bus rides have negative impact on extra-curricular activities (Lewis, Jim (2004). *The long and winding road: Consolidation – the separation of school and community*. See Challenge West Virginia Web site: <http://www.challengewv.org>).
- “Students who spend less time on the bus are able to spend more time with family and friends, in community activities, and even on homework” (*Dollars & Sense*, 2002, p. 13).
- Bus ride >30 had negative influence on parental involvement.
- Children’s time on long rides has *economic* value not accounted for in consolidation plans (Howley, C., “The Experience of Rural School Bus Rides”, Paper presented at the annual meeting of the American Educational Research Association, Seattle, WA, April 10, 2001):
 - *decreased sleep time
 - *decreased homework time
 - *decreased recreational time
- The wait times for the buses further extend the school day. As Howley points out (Howley, Aimee; Howley, Craig, “Rural School Busing”, ERIC Digest, 2001, ERIC Identifier; ED459969), the average rural student’s wait time daily was 27 minutes (14 in the morning, and 13 in the afternoon.).

B. Questions to consider (Zars, B., "Long Rides, Tough Hides: Enduring Long School Bus Rides", Rural Trust Policy Program, 1998):

- What is the impact of long bus rides (>30 minutes) on children's success?
- Do long bus rides have greater impact on children in impoverished communities? (Howley believes they may.)
- What is the effect of long bus rides on family's quality time and family life?
- What are the true costs to the district?
- What is the true cost of the school bus system at the school, district, and state level?

C. Other studies and district parents have asked—Are there other ways to shorten children's transportation time?

- Subsidized car pools?
- Realigned bus routes?
- Shortened school weeks? (Independent study or work in one's own home or community one day per week, or one day every other week?)

VI. School Climate and Safety

These subjects need more research. They are touched upon in several areas in this report, and summarized here:

A. Research shows **School Climate** is better:

- In small schools where principal and teachers know every child's name (RCAE, 1994).
- In schools that have no more than two classes for every grade (a wider span of grades is preferable to more students per grade).
- In schools where children have many ways to express/develop/receive recognition for a wide range of talents/skills. (Gardner, Howard. *Frames of Mind: The Theory of Multiple Intelligences*. Basic Books, 1985.)
- In schools where teachers and students feel safe and appreciated, and parents feel welcome.
- In schools where there is enough physical room.
- In schools where there is a stable cohesive staff.
- When "the best small schools offer an environment where teachers, students, and parents see themselves as part of a community, and deal with issues of learning, diversity, governance, and building community on an intimate level." (*Dollars & Sense*, 2002, p.9)

B. **School Safety**

- According to the research, (as reported in *Dollars & Sense*, 2002, p. 9), School Safety is directly correlated to (but not solely determined by) school size. According to the National Center for Education Statistics (March, 1998), the "Incidence of Crime and Violence by Size of School", violence increases markedly with increase in school size. "While 38% of small schools (<300) reported any incidents, 69% of medium-sized schools (300-999) and 89% of large schools reported criminal incidents. Serious violent crime was more likely to be reported by the largest schools (>1000).
- Studies also show that lesser crimes (graffiti, bullying, etc) increases with size of school population size, particularly with more students per grade, decrease in space per student, lack of related art/ vocational education classes, and less student and parent identification with the school community.

VII. Local Schools (See also community and pilot schools under enhancements.)

A. Benefits of

1. Many arguments for keeping schools local are the benefits of a local school's 'smallness'. (Jimerson, L., "The Hobbit Effect: Why Small Works in Public Schools", Rural School and Community Trust, August 2006).

- Students are academically more successful than in larger schools
- Higher graduation rates
- Are more likely to take advanced level courses
- Are more likely to participate in extracurricular activities

2. Other advantages of local schools are similar to those of community schools (Blank, M., "Making the Difference: Research and Practice in Community Schools", Coalition for Community Schools).

- Higher academic and non-academic achievement
- Greater family and community involvement
- Stronger parent/teacher relationship
- More positive school environment/climate
- Greater community support

3. Some advantages are common-sense, mentioned in the research only with what will be lost with threatened school closings. These advantages include:

- Children are known as individuals by more people, and so are less likely to "fall through the cracks."
- They maintain a stronger tie to their community through the school, sometimes for generations (and even if they do not have children.)
- They learn more of the community's priorities, traditions, history, identity and values.
- They are perceived as safer because they are closer to home and to the familiar, and hence can remain children longer.
- The differences among children are more readily accepted by those who have known them and their families longer.
- The "average" student is more likely to find their niche or be able to develop their skills because they have more opportunities and is known and appreciated.

4. Local public schools have a beneficial impact on the local economy ("Weiss, J., "Public Schools & Economic Development—What the Research Shows", Knowledge Works Foundation.)

- Schools educate the local labor force and can also increase an area's quality of life in order to attract skilled workers to it.
- Homes in high-performing school districts sell for more than homes in low-performing schools districts.
- Public school facilities themselves impact economic development, particularly in distressed areas. School facilities that are small, local, and community-oriented can particularly affect local development.
- Local schools contribute to real estate values and business development.
- In a rural community, the school is often the largest employer. (Illvento, T.W, 1990)
- "The relationship between schools and economic well-being was particularly strong for isolated communities far from urban centers." (Barkley, 1996 quoted in *Dollars & Sense*, 2002, p. 16).

- B. Potential **consequences to a community when a local school closes:**
- “Villages that lose their schools lose more than a building; they lose their collective cultural and civic center.” (Jimerson, L., “The Hobbit Effect: Why Small Works in Public Schools”, Rural School and Community Trust, August 2006).
 - “‘Loss of Community identity’ or ‘loss of community attachment’” is cited by five different studies according to the Rural Consolidation Report (Bard, J., Gardener, C., Wieland, R., 2005, p.3).
 - Consolidation” has dramatically reduced citizen participation in the governance of the nation’s education system. Between 1930 and today, the number of people serving on school boards fell from 1 million to fewer than 200,000 (while U.S. population doubled). (*Dollars & Sense*, 2002, p. 17.)
 - “After a school closure, out migration, population decline, and neighborhood deterioration are set in motion, and support for public education diminishes” (“Rural School Consolidation Report”, Bard, J., NREA Consolidation Task Force, April, 2005).
 - Property values diminish, and the community is less attractive to companies or families with school-age children.
 - “The closure of a school can be particularly hard on retail stores. Sales from students and teachers evaporate, while parents do more of their shopping near their children’s new school.” (*Dollars & Sense*, 2002, p. 16)

- C. Actual experiences of towns losing schools (*Dollars & Sense*, 2002, p. 15-17)
- In Lund, Nevada, where one-third of all community activities took place at the school, retail sales dropped 8 % after the high school closed.
 - In North Dakota, towns which lost schools in the 1990s were surveyed. Most residents believed retail sales down and fewer active businesses. Two of the towns lost their grocery stores.
 - “A larger number of Midwestern towns that had lost their schools to consolidation were losing population and at a faster rate than those towns that had maintained their local school. (William Dreier and Willis Goudy (1991).
 - “In rural North Dakota, researchers surveyed residents of eight small towns. Those that had lost their school to consolidation reported declining participation in local organizations and activities. They also rated their quality of life significantly lower than did residents of communities that had retained their local schools.” (Sell et al., 1996).

VIII. Consolidation

- A. Consolidation, as defined by Fitzwater (1953) is “the merging of two or more attendance areas to form a larger school.” (Cited by Bard, J. et al, “Rural School Consolidation Report”, 2005).
- Consolidation “has cut the number of U.S. school ‘districts’ by 91 percent since about 1930, and the number of ‘schools’ by 67 percent, while the number of ‘students’ has simultaneously increased by 83 percent (Snyder & Hoffman, 2001), quoted by Howley, (2001, p. 1).

B. Factors to consider (Bard, J., “Rural School Consolidation Report”, NREA Consolidation Task Force, April 2005):

- “Size” does not guarantee success. Effective schools come in all sizes.
- The larger a district becomes, the more resources are devoted to secondary or non-essential activities.
- “Local school officials should be wary of merging several smaller elementary schools, at least if the goal is improved performance.”
- “After a school closure, out-migration, population decline, and neighborhood deterioration are set in motion, and support for public education diminishes.”
- “There is no solid foundation for the belief that eliminating school districts will improve education, enhance cost effectiveness or promote equality.”
- “Students from low income areas have better achievement in small schools.”

C Actual Savings/Results

- “The Rural School and Community Trust (as quoted in the 2005 Rural School Consolidation Report, p.4) concluded: ‘School consolidation produces less fiscal benefit and greater fiscal cost than it promises. While some costs, particularly administrative costs, may decline in the short run, they are replaced by other expenditures, especially transportation and more specialized staff. The loss of a school also negatively affects the tax base and fiscal capacity of the district. These costs are often borne disproportionately by low-income and minority communities.’”
- Dale Ballou (University of Massachusetts) reported that increasing the average size of a school within a district by 100 students could produce a cost savings of 3/10 of 1% of current spending.” (Laplante, J., “School Consolidation: An Ineffective Way of Improving Education”, Flint Hills Center for Public Policy. Dec. 7, 2005.)

D. Alternatives to Consolidation

- Increase distance learning/virtual charter school
- Further consolidate services
- Expand role of competition

E. Best practices if consolidation becomes necessary

- “The most important factor in easing the process of consolidation was holding public meetings,” according to a study of eight North Dakota communities who had consolidated their schools. (Sell, Randall S., Leitstritz, F. Larry, Thompson, JoAnn M., *Socio-economic impact of school consolidation on host and vacated communities*, Agricultural Economics Report No. 347, Fargo, North Dakota, Agricultural Experimental Station, 1996.)
- “Most successful consolidations between districts have maintained a school in each town involved. In many cases, the high school has been located in one town while the elementary and/or middle/junior high was located in the town of the second consolidated district.” (Rural School Consolidation Report, 2005, p.5.)

IX. Potential Enhancements – ways to improve or “enhance” our existing schools.

A. EIC Model – “using the Environment as an Integrating Context for improving student learning. The EIC Model interconnects ‘best practices’ in education into an instructional tapestry that improves student achievement by using local natural and

community surroundings as a context for learning.” (State Education & Environment Roundtable”, last update 1/6/06. Retrieved November 6, 2006, from <http://www.seer.org>). This model has already been adopted by one of our elementary schools.

B. A public Montessori School – “Montessori is not a system for training children in academic studies; nor is it a label to be put on educational materials. It is a revolutionary method of observing and supporting the natural development of children. Montessori educational practice helps children develop creativity, problem solving, social, and time-management skills, to contribute to society and the environment, and to become fulfilled persons in their particular time and place on Earth. The basis of Montessori practice in the classroom is respected individual choice of research and work, and uninterrupted concentration rather than group lessons led by an adult.” MONTESSORI, The International Montessori Index, last updated 10/18/2006. Retrieved November 6, 2006, from <http://www.montessori.edu/index.html>. (For a description of a public Montessori K-8 in Springfield, MA, see also <http://www.sps.springfield.ma.us/magnet/zanetti/zanetti.htm>)

C. Alternative K-8 -- More than half the committee was interested in exploring the possibility of a small, alternative K-8, (not as a replacement for the current middle school, but as an additional alternative option). Possibly part of an existing elementary school, it was suggested as an enhancement model which might be of interest to home schoolers, potential school of choice students, those who are looking for a K-8 setting (with one less transition), and others who currently look outside the district after sixth grade, or who feel their child needs an alternative setting within the district and those in our district who currently seek alternative schooling after the sixth grade. (For additional information on the K-8 educational model, see K-8, and Middle School Research Notes.)

D. Sixth Grade/.Post Sixth Grade Program – A small alternative program that was considered by an elementary school in our district last year as an option for students looking for a more hands-on, community-project- based year, or as a bridge or transition year from home schooling or other programs into the middle school. (It could eventually have another alternate year between grade 8 and 9 and grade 10 and 11.) This program has a similar clientele to the alternative K-8 school.

E. Science/Math Magnet School -- a subject-focused curriculum which draws students interested in developing their academic skills while focusing on a particular academic discipline or disciplines. This is the approach taken by a school district in Hartford Connecticut. They offer several different magnet schools. For more information, see <http://www.crec.org/magnetschools/>

F. High School Community Arts and Trades Apprenticeship Concentration within the current high school. This alternative program would allow high school students who wished to work with, and learn from, selected mentors and community artists/tradesmen, to develop their hands-on skills, and create a portfolio of work, or certificate of basic skills in addition to, or conjunction with, their academic work. It could highlight and make use of the longstanding West County tradition of skilled artists, artisans and tradesmen and women in our community (and attract the children of these and other artisans and artists).

G. Community School—

1. Background—Community Schools are one approach to the task of improving student learning. Everyone in the community works in partnership to educate children. Bringing school and community assets together helps young people succeed in school and life, and makes their families and communities stronger.

2. The community approach is based on 5 conditions for learning that each community tailors to its own needs:

- “The school has a core instructional program with qualified teachers, a challenging curriculum, and high standards and expectations for students.
- Students are motivated and engaged in learning – both in school and in community settings --during and after school.
- Basic physical, mental, and emotional health needs of young people and their families are recognized and addressed. [Frequently at the school site.]
- Mutual respect and effective collaboration exists among parents, families, and school staff.
- Community engagement, together with school efforts, promotes a school climate that is safe, supportive, and respectful, and that connects students to a broader learning community.”

3. The “21st Century Community Learning Centers Program”, a federal initiative, with substantial funding (\$1 billion in fiscal year 2002), has brought increased visibility to the community schools movement and renewed the federal government’s support for a strengthened community role in public education.

4. Passage in 2002 of the No Child Left Behind Act legislation incorporates many elements that historically have been essential components of community schools; elements that have not been emphasized as much as the accountability and choice provision of the law. These include:

- parent involvement
- after-school programs
- violence prevention
- service learning
- coordination and integration of existing public and private service

5. See “Making the Difference: Research and Practice in Community Schools-Appendix A., p. 73-95 for profiles of Specific Community schools and their reports of learning related outcomes and accomplishments at <http://www.communityschools.org>

H. Pilot School—Based on a model used by 20 public schools in the Boston area. For a list of the Boston Pilot/Horace Mann Schools Network see <http://www.ccebos.org/pilotschools/schools.html>

I. Background --Retrieved 11/6/06 from the Mission Hill School website: <http://www.missionhillschool.org/mod.php?mod=userpage&menu=...> “The Boston Pilot Schools began in 1995 as a research and development arm of the Boston Public Schools, to develop best practices and to be a catalyst for change that could be transferred to the rest of the system. Pilot schools, by agreement between the Boston Public Schools and the Boston Teacher’s Union, have greater freedom and

flexibility with regard to how they spend their per capita funds, how and whom they can hire, as well as in areas of curriculum, assessment, and scheduling.

“The Pilot schools focus on creating communities of learners, providing rigorous and meaningful curriculum, and ensuring that all students are successful. The Boston Pilot Schools Network engages in:

- Leadership development for directors, teachers, students, and parents with a focus on creating democratic and shared decision making governance models.
- Shared accountability, to assist schools in assessing their progress and in developing models of authentic assessment for both students and staff.
- Political advocacy, that includes documentation and publicity of the pilot schools’ accomplishments, to ensure the support and resources for the Pilot schools that is necessary for them to be successful
- Community organizing, with the goal of broadening the constituency of the Pilot schools and strengthening our voice and support.”

J. A public elementary school based on the philosophy of the Coalition of Essential Schools—“a national network of schools and regional centers which embrace the same common principles of education. Some of these principles include small school size, authentic assessment, equitable education, and democratic governance.” Retrieved 11/6/06 from the Mission Hill School website:

<http://www.missionhillschool.org/mod.php?mod=userpage&menu=...>

For more information on the approach of the Coalition of Essential Schools (CES) see: <http://www.essentialschools.org/>

J. Vocational Education—The committee recognizes that our students need vocational classes relevant to the 21st century’s economy, and more of them.

As Daniel Wood’s recent (10/12/2006) vocational education article, “Suddenly, vocational training back in vogue: Enrollment soars in ‘career technical ed,’ as demand grows for workers with specific skills” points out:

- Job training is needed to meet the new demands of technology and the global economy.
- Nationally, technical education enrollment has “soared by 57 percent—from 9.6 million students in 1999 to 15.1 students in 2004—the US Department of Education reported to Congress.”
- “The once-standard offerings of technical education – wood shop, metal shop, machining—don’t cut it in today’s economy either...Fields of study today are likely to include more forward-looking careers: crime forensics, composite-plastic fuselage design, robotics, nanotechnology, radiological diagnostics, 3-D animation, and the burgeoning field of ‘industrial maintenance technology’ (keeping the high-tech systems in a modern industrial building up and running.”
- For additional information on the new needs (like 2 years of community college and more math), the restructuring of vocational education, and an extended reference list of relevant articles, see Lynch, Richard L., “High School Career and Technical Education for the First Decade of the 21st Century, *Journal of Vocational Education Research*, Vol. 25, Issue 2, 2000.
- For information on the math that is needed for Voc-Ed and ways that math can be learned more readily when integrated into vocational education classes, see the University of Minnesota study, “Students in Vocational Education Classes with Enhanced Math Perform Better on Tests” (October 30,

2006). Retrieved November 6, 2006 , from
<http://www.sciencedaily.com/releases/2006/10/061017164307.htm>

XI. Factors that Improve Student Achievement

A. "Darling-Hamond as early as 1998 concluded that four factors affect student achievement:

- smaller school size (300 to 500 students);
- smaller class size, especially in elementary schools;
- challenging curriculum,
- more highly qualified teachers"

(Picard, Cecil J. (2003). *Small school districts and economies of scale*. Presented to the State Board of Elementary and Secondary Education at the May 2003 Strategic Planning Study Group Committee. Louisiana Department of Education.)

B. Other factors cited in research

- Positive school climate where students feel safe, nurtured, and feel they belong and can make a difference and teachers have a sense of collegiality.
- Related Arts and service opportunities.

C. Regardless of the educational model chosen, according to K. Look ("The Great K-8 Debate", <http://www.philaedfund.org/notebook/TheGreatK8Debate.htm>) every model needs:

- Skilled teachers
- Visionary Leaders
- Equitable fiscal resources

D. A district-wide or regional community that is unified in its desire to create and support an excellent, sustainable educational model or models available to all the students in our district and supportive of our communities and the education of all our students.

With "solutions that are:

- Educationally driven
- Financially and environmentally sustainable
- Contribute to the economic viability and the cultural vitality of the West County and its communities."

(Strategic Planning Meeting Notes, July 26, 2006)