Moving From Good to Great in Wisconsin: Funding Schools Adequately And Doubling Student Performance

Prepared for

Wisconsin State and Local Policymakers, Educators and Citizens

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THE WISCONSIN SCHOOL FINANCE ADEQUACY INITIATIVE

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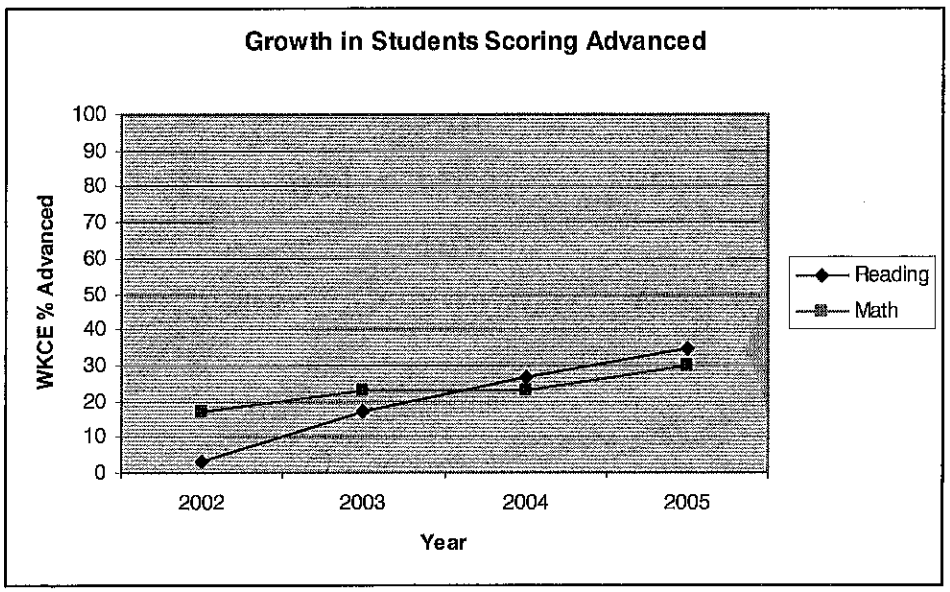
Figure 5



Columbus school improvement process. For Columbus Elementary, the combination of the fear of being labeled a school in need of improvement and the vigor of the new principal set in motion a process that would turn the school around.

When the new principal learned that the school was in danger of being labeled a school in need of improvement, she contacted Wisconsin's Department of Public Instruction for assistance with a needs assessment. She and a district administrator worked with DPI to analyze the school's test score data and the alignment of its curriculum with state standards. This process identified the following five needs:

1. Coordinate existing programs and resources to maximize student learning.
2. Revise the school schedule to maximize instructional time.
3. Link assessment to instruction; students will not be able to perform well on a test if they are not taught the material the test covers.
4. Have higher expectations of all students and their ability to develop higher order thinking skills.
5. Coordinate staff development so that it is linked to what teachers need to improve instruction.

The principal decided that to accomplish these tasks, the school would need resources to finance the improvement process. She applied for a comprehensive school reform grant in January of 1999, and the grant was awarded in July of that same year. This grant provided the

2. Applying the Evidence-Based Approach in Wisconsin

This section of the report presents a school finance adequacy study. Since 1990, the school finance community has developed a number of alternative methods for determining school finance adequacy. These are summarized in Odden (2003), an article that identifies strengths and weaknesses of each approach. We believe that the most substantively sound methodology is the Evidence–Based approach.

The Evidence-Based approach identifies a set of school-level components that are required to deliver a comprehensive and high-quality instructional program within a school and the evidence on their effectiveness, and then determines an adequate expenditure level by placing a price (e.g. an appropriate salary level for personnel) on each component and aggregating the components to a total cost. More explicitly, this approach is based on evidence from three sources:

1. Research with randomized assignment to the treatment (the "gold standard" of evidence)
2. Research with other types of controls or statistical procedures that can help separate the impact of a treatment
3. Best practices either as codified in a comprehensive school design (e.g., Stringfield, Ross & Smith, 1996) or from studies of impact at the local district or school level.

The Evidence-Based approach to determining school finance adequacy defers to evidence on the level of resources needed to meet pre-determined performance goals much more strongly than on the professional judgment of educators, though professional educator input is solicited.

The following sections of the report take this approach, with which the lead for this study, Professor Allan Odden in the Department of Educational Leadership and Policy Analysis in the School of Education at the University of Wisconsin-Madison and his colleague Professor Lawrence O. Picus at the University of Southern California have been associated for several years (Odden, Picus, Fermanich & Goetz, 2004, Odden, Picus & Fermanich, 2003; Picus, Odden & Fermanich, 2003; Odden, 2000). It describes how this approach would be used to identify the core educational resource needs of prototypical elementary, middle and high schools in Wisconsin, resources that would be adequate for schools to educate their students to state performance standards. It concludes with Table 1 that identifies an initial set of adequate resources for Wisconsin elementary, middle and high schools. Appendix A summarizes proposals from professional judgment panels in a few other selected states, which are sometimes referenced in the report.

Definition of Adequacy

Before proceeding, we should note that we have proposed a definition of education adequacy, and that definition serves as a basis for identifying the resources required for adequate funding. The definition of educational adequacy is:

a. The expectations included in Wisconsin's Academic Standards, which define what all Wisconsin's students are to be taught.
b. The standards included in the state's testing system, which include a definition of what would be considered a proficient score for each test. The goal is to have all, or all but the students with the most severe and profound disabilities, perform at or above proficiency on these tests (with the proficiency standard calibrated overtime to those of the NAEP), and to boost the percentage of those performing at the advanced levels – particularly in mathematics and science.
c. The standards implied by the state's accountability system, and the federal No Child Left Behind law, which further require improvement for students at all levels in the achievement range, for all income levels, for all ethnicities, and which also aspire to enhance the learning of the top scoring students as well.
d. Sufficient funding to provide the resources identified in the resource matrix contained in Table 1 of this report.

Full implementation of this definition of an adequate education program with the proposed resources will require that each school rethink, if not restructure, its entire educational program and reallocate all current and any new resources to this restructured and more effective educational program. Such a system also will work best if it is accompanied by a clear accountability and monitoring program.

Evidence Based

GENERAL RECOMMENDATIONS

This section covers pre-school, counting students, full day kindergarten and school size.

PreSchool

Current Wisconsin policy. Wisconsin does not have a comprehensive preschool policy. It provides a variety of subsidies for early child care and has developed standards for such programs, but most preschool services are locally or privately funded and operated.

The evidence. Research shows that high quality preschool, particularly for students from lower income backgrounds, significantly affects future student academic achievement as well as other desired social and community outcomes (Barnett, 1995, 1996, 1998, 2000; Karoly et al., 1998; Reynolds, et al., 2001; Slavin, Karweit & Wasik, 1994). Indeed, these longitudinal studies show that students from lower income backgrounds who experience a high quality, full-day preschool program perform better in learning basic skills in elementary school, score higher on academic goals in middle and high school, attend college at a greater rate, and as adults, earn higher incomes and engage in less socially-undesirable behavior. The research shows that there is a return over time of *eight to ten dollars* for every one dollar invested in high quality preschool programs.

A published study of state-financed pre-school programs in six states – California, Georgia, Illinois, Kentucky, New York and Ohio – found, similar to the above studies, that children from lower income families start catching up to their middle income peers when they attend a pre-school program (Jacobson, 2003).

For the High/Scope Perry Preschool Program, the most recent long term study of preschool program impacts, found that adults at age 40 who had the preschool program had higher earnings, were more likely to hold a job, had committed fewer crimes, and were more likely to have graduated from high school than adults who did not have preschool (Schweinhart, 2005).

Recommendation. Given these research findings, we recommend that the state fully fund full-day preschool for 3 and 4 year olds, at least for children from families with an income at or below 200 percent of the poverty level. According to the National Association for the Education of Young Children, preschool standards generally call for one teacher and one teacher assistant for each pre-school group of 15 students. Furthermore, there is increasing recognition that preschool should be provided for all students; research shows that this strategy produces significant gains for children from middle class backgrounds and even larger impacts for students from lower income backgrounds (Barnett, Brown & Shore, 2004). Over time, Wisconsin should consider this possibility.

Because preschool quality is linked to impact, and quality is largely a function of staff (Whitebrook, 2004), including preschool students in a district's pupil count for state aid purposes is the most straight forward way to fund preschool services and would require preschool providers to pay a salary according to the salary schedule in the district in which the preschool program is provided, or consistent with the state's average teacher salary. In this way, preschool providers would be able to recruit highly-qualified teachers for all preschool programs. At the same time, if this funding and salary approach were followed, districts should be required to allow multiple institutions and organizations to provide preschool services, not just the public schools.

Since students eligible for preschool are not covered in the state's education clause, *we will not include preschool costs in our analyses of the costs of our recommendations.* The cost figures will pertain to students in kindergarten through grade 12 only. However, *we will retain the state's current four year old kindergarten program in our costing the recommendations.*

Student Count for Calculating State Aid

Current Wisconsin policy. Students are counted on a Full Time Equivalency (FTE) basis for the current Wisconsin school finance formula, and the formula actually uses a variety of student counts in calculating state aids. The basic student count is determined from the September and January student count dates and a summer school FTE adjustment. Further, the state uses a count of resident students in determining the pupil counts used for state aid calculations. However, in calculating the revenue limit, the FTE count actually used is the average of the current and two previous years' FTE, in order to cushion the impact of declining enrollments.

The evidence. An FTE (or average daily membership in other states) count of students increasingly is the pupil count used by most states in their school finance formulas. A Full Time Equivalency count is the best approximation of the number of students actually needing education services in schools and districts.

With choice programs such as Wisconsin's Open enrollment, however, using a resident student count makes state aid calculations complex, particularly when an additional administrative system is then needed to move dollars across districts when students choose to attend a school in a district outside of their actual residence. The easiest way to address student choice of school and appropriate flow of funds is simply to count each student in the school (and district) that they attend. This ensures that dollars follow the student and it eliminates the need for a separate administrative system for transferring funds across districts to accommodate student choice of school.

During Task Force discussion of this issue, there seemed to be some misunderstanding of how school finance formulas work, and whether an attendance count of students would actually transfer just the state aid, or the local per pupil amount, or how exactly how a attendance count of students would work in terms of moving money around. The purpose of this side-note is to help clarify the situation to ensure full understanding whatever one's position on the issue.

For simplicity, this note will use a foundation formula. The results would be the same with a guaranteed tax base formula, such as that used in Wisconsin, but the calculations would be much more complicated.

Take two districts, each with 1,000 students. Assume District A's assessed valuation per pupil is $600,000, which would give it total valuation of $600,000,000, and District B's assessed valuation per pupil is $400,000, which would give it total valuation of $400,000,000. Assume the required tax rate for the foundation formula is 5 mills and that the foundation expenditure per pupil level is $8,000 a student.

There are two ways to calculate the revenues.

For District A:

On a per pupil basis, state aid per pupil = $8,000 – (5 mills x $600,000)
= $8,000 – ($3,000) = $5,000 per pupil.

So <u>total state aid</u> would be <u>$5,000,000</u> (1,000 students times $5,000 in per pupil state aid). And total local revenues would be $3,000,000 (1,000 students times $3,000 in local revenues per child).

The second way to calculate <u>total state aid</u> would be:
Foundation expenditure per pupil level x # students – (required tax rate x total local valuation)
$8,000 x 1,000 – (5 mills x $600,000,000)
$8,000,000 – 3,000,000 = <u>$5,000,000</u>, the same amount identified above.
Total local revenues stay at $3,000,000.

Now, let's say District A lost 5 students to District B.

The attendance count of students would be 995 in District A.

Using the second, and simpler method of calculating state aid, the calculations would be:
$8,000 x 995 – (5 mills x $600,000,000)
$7,960,000 – 3,000,000 = $4,960,000, or $40,000 less state aid.
This reduction in state aid is the same as the number of students lost, 5, times the foundation expenditure per pupil amount of $8,000, or $40,000.

In short, if the attendance pupil count is used, it changes the amount of aid by the full foundation expenditure per pupil level. It doesn't make any difference what the local or state revenue per pupil portion was; an attendance pupil count moves the full amount of the foundation expenditure level.

This happens even if we would calculate the state aid on a per pupil basis.
First, the total valuation of $600,000,000 is now divided by 995 students to get a valuation per pupil; the new number would be $603,015.
On a per pupil basis, state aid per pupil = $8,000 – (5 mills x $603,015)
= $8,000 – ($3,015) = $4,985 per pupil.
So total state aid would be $4,960,000 (995 students times $4,985 in per pupil state aid), or the same $40,000 less by the previous method of calculation.
And total local revenues would be the same $3,000,000 (995 students times $3,015 in local revenues per kid).

Now, let's do the calculations **for District B:**
On a per pupil basis, state aid per pupil = $8,000 – (5 mills x $400,000)
= $8,000 – ($2,000) = $6,000 per pupil.
So total state aid would be $6,000,000 (1,000 students times $6,000 in per pupil state aid). And total local revenues would be $2,000,000 (1,000 students times $2,000 in local revenues per child).

The second way to calculate total state aid would be:
Foundation expenditure per pupil level x # students – (required tax rate x total local valuation)
$8,000 x 1,000 – (5 mills x $400,000,000)
$8,000,000 – 2,000,000 = $6,000,000, the same state amount identified above.
Total local revenues stay at $2,000,000.

Now, District B gains 5 students from District A.

The attendance count of students would be 1,005.

Using the second, and simpler, method of calculating state aid, the calculations would be:
$8,000 x 1,005 – (5 mills x $400,000,000)
$8,040,000 – 2,000,000 = $6,040,000, or $40,000 more state aid.
This increase in state aid is the same as the number of students gained, 5, times the foundation expenditure per pupil amount of $8,000, or $40,000.

In short, if the attendance pupil count is used, it changes the amount of aid by the full foundation expenditure per pupil level. It does not make any difference what the local or state revenue per pupil portion was; an attendance pupil count moves the money, and moves the money whether the district loses or gains students.

This happens even if we would calculate the state aid on a per pupil basis.
First, the total valuation of $400,000,000 is now divided by 1,005 students to get a valuation per pupil; the new number would be $398,010.
On a per pupil basis, state aid per pupil = $8,000 – (5 mills x $398,010)
= $8,000 – ($1,990) = $6,010 per pupil.
So total state aid would be $6,040,000 (1,005 students x $6,010 in per pupil state aid), or the same $40,000 more as by the previous method of calculation.
And total local revenues would be the same $2,000,000 (1,005 students times $1,990 in local revenues per kid).

We should also note that no local dollars move; in all examples, the local amount spent on education does not change. So whether a district gains or loses students, if the attendance count of students is used, the local contribution remains the same and it is changes in state aid that moves the funding to or from the districts that gain or lose students.

Of course in Wisconsin, choice students do not receive the full foundation, or secondary guarantee amount; they receive less. So an administrative transfer system has been created. We would argue that if a choice program exists, it should support the full fiscal cost of the movement of student by providing the full foundation amount. And in that case, using an attendance count of students does the job and no administrative revenue transfer system is needed. Further, under an adequacy policy, it would not make sense to provide less money for a choice student than a student that did not choose to attend a school outside of the district of residence. Still, this is a policy issue Wisconsin would have to address.

So apart from whether one supports an open enrollment policy, the point of this note is to show that the easiest way to transfer the funds is to use an attendance count of students; it itself moves the money and no administrative transfer system is needed.

Finally, using a three year rolling average student count to cushion the fiscal impact of declining student numbers is a common practice across the country. This was an approach recommended by Cavin, Murnane & Brown (1985) in a study of this issue in Michigan.

However, a rolling three year average was generally not intended for use in all schools, especially those schools experiencing enrollment growth, even though there are fewer rising enrollment than falling enrollment schools in Wisconsin. Schools with rising enrollments should be able to use their actual student count so they have the resources to expand educational services as they grow in student FTE.

Recommendation. We recommend that Wisconsin continue to use an FTE student count for the aid formula. We also recommend that the state use one pupil count for all elements of the program including determining property wealth per pupil, calculating state aid, and calculating the revenue limit if one remains. We also recommend that the state simplify the student counting system and use a count of students in the school and district where they actually attend school. We believe that most of the members of the Task Force do not agree with this recommendation. Finally, since it is more appropriate to use a rolling three year average FTE count when student decline exists, but the actual FTE for schools with stable or rising student counts, we recommend that the FTE count for the formula be the average of the current and past two years' FTE or the current year's FTE, whichever is larger.

Given the current data the state collects, however, we will not be able to fully implement the recommendation to use an attendance count of students in our costing analyses. The state collects FTE resident counts at the district level, but only headcounts of students actually attending a school by grade level. What is needed is an FTE count at the school by district. Since we need grade level numbers for the costing analysis, we will use the school level headcounts to indicate grade level enrollments, but adjust the totals to equal the number of FTE students at the district level. Thus, in reality, our costing will use an FTE count of resident students.

Full Day Kindergarten

Current Wisconsin policy. Currently, Wisconsin allows districts to count a student attending a full or half-day 5-year old kindergarten as 1.0 or 0.5 student, respectively, for state aid purposes. Further, the state also allows districts to count 4-year old students who attend full or half-day programs, but each such student is counted as no more than 0.5 student for aid purposes (0.6 student if the program includes outreach activities) even if the program is full-day. In addition, the state allows districts to count a 3 year-old, who is enrolled in a program for children with disabilities, as 0.5 pupil.

The evidence. Research shows that full-day kindergarten, particularly for students from low-income backgrounds, has significant, positive effects on student learning in the early elementary grades (Fusaro, 1997; Gulo, 2000; Slavin, Karweit & Wasik, 1994). Children participating in such programs do better in learning the basic skills of reading, writing, and mathematics in the primary grades of elementary school than children who receive only a half-day program or no kindergarten at all. The most recent study of such effects was released in mid-2003 by the National Center for Education Research (Denton, West & Walston, 2003). This nationally-representative, longitudinal study showed that children who attended full-day kindergarten had a greater ability to demonstrate reading knowledge and skill than their peers in half-day programs, across the range of family backgrounds. This study also found that the more children were exposed to literacy activities in the home, the more likely they were to perform well in both kindergarten and first grade. Funding full day kindergarten for 5 year-olds as well as for 4 year-olds is an increasingly common practice among the states (Kauerz, 2005).

The effectiveness of full-day kindergarten on student achievement is well established. In the most recent meta-analysis of 23 studies comparing the achievement effect of full-day

kindergarten to half-day kindergarten programs, Fusaro (1997) found an average **effect size** of **0.77**, which is quite substantial.

Recommendation. We support continuing Wisconsin's commitment to full-day kindergarten programs. Since recent research suggests that children from all backgrounds can benefit from full-day kindergarten programs, we recommend that the state continue its support for a full day program for all students, at least for those parents who want their child to have such a program.

The most direct way to implement this recommendation is to have the state school finance system allow each district to count each student in a full day kindergarten program as a full 1.0 student in the formula in order to fully fund a full-day kindergarten program.

We also recommend that Wisconsin at least retain its current policy of allowing districts to include 4 year-olds and disabled 3 year-olds in each district's pupil count.

School Size

Current Wisconsin policy. Wisconsin has no specific school policy on school size. And school sizes differ substantially across the state. We will be developing resources for prototypical elementary, middle and high schools, and need to suggest a size in order for the prototypes to indicate the relative level of resources in the schools. Thus we will make recommendations on the most effective school sizes. When the recommendations are for sizes smaller than currently existing school sites, we will propose that schools divide themselves into schools-within-schools (SWS), and have each SWS operate as semi-independent units. We will not recommend that the state replace all school sites with smaller buildings.

The evidence. Research on school size is clearer than research on class size. Most of the research on school size addresses the question of whether large schools, those significantly over 1,000 students, are both more efficient and more effective than smaller school units (schools of 300 to 500), and whether cost savings and performance improvements can be identified for consolidating small schools or districts into larger entities. The research generally shows that school units of roughly 400-600 elementary students and between 500 and 1,000 secondary students are the most effective and most efficient.

The following is a quote from the third edition of the school finance text of Odden and Picus on this issue (Odden & Picus, 2004, Chapter 6):

> Analysts, however, argue that the expected cost savings from the massive school and district consolidation have not been realized (Guthrie, 1979; O'Neill, 1996; Ornstein, 1990) and that consolidation might actually harm student performance in rural schools (Sher & Tompkins, 1977) as well as have broad negative effects on rural communities (Coeyman, 1998; Seal & Harmon, 1995). If small schools or districts indeed cost more, but consolidation reduces performance and disrupts communities, the better policy choice might be to resist consolidation and provide special adjustments to compensate for the higher costs.

The research on diseconomies of small and large scale generally does not support a consolidation policy. From an economic perspective, the concept of diseconomies of scale includes both costs and outputs. The issue is whether costs per unit of output are higher in small schools or districts, or put differently, whether costs can be reduced while maintaining output as size rises. In an extensive review of the literature, Fox (1981) concluded that little research had analyzed output in combination with input and size variables, and Monk (1990) concluded after assessing the meager extant research that there was little support for either school or district consolidation.

For elementary schools, research knowledge is thin, but data suggest that size economies that reduce costs by more than one dollar per pupil exist up to but not beyond 200 pupils (Riew, 1986). Thus, very small schools experience diseconomies of small size and, except in isolated rural areas, potentially could be merged into larger ones. But the real opportunities for cost savings from school consolidation from these small sizes are not great, precisely because many such schools are located in isolated rural areas and there are no other schools nearby with which to consolidate.

At the secondary level, the data are more mixed. Few studies exist that simultaneously assess both size and output, so scale diseconomies have not been adequately studied. Riew (1986) found that there were cost savings, below one dollar per pupil, for middle schools with enrollments above 500; again, many middle schools already enroll more than this number. In analyzing whether larger secondary schools actually provided more comprehensive programs, an argument for larger size, Monk (1987) concluded in a study of New York that program comprehensiveness increased consistently in secondary schools only for size increases up to but not beyond about 400 students. In subsequent research, Haller, Monk, Spotted Bear, Griffith, & Moss (1990) found that while larger schools offered more comprehensive programs, there was wide variation among both smaller and larger schools, and there was no clear [size] point that guarantees program comprehensiveness. Further, Hamilton (1983) shows that social development is better in small high schools.

Studies of district size generally analyze expenditures per pupil as a function of size without an output variable, such as student achievement (Fox, 1981). To document diseconomies of district size, however, expenditures, size, and output need to be analyzed simultaneously, since the goal is to determine if costs per unit of output decrease as the number of students in the district increases. Again, in reviewing the literature, Monk (1990) concluded that definitive statements could not be made about district consolidation.

In the most recent review of scale economies and diseconomies, Andrews, Duncombe & Yinger (2002) assessed both cost function and production function research. The studies reviewed generally assessed costs in tandem with student achievement outputs. The authors concluded that there were potential but modest cost savings that could be realized by consolidating districts smaller than 500 students into districts with 2,000-4,000 students; of course this would be an option only for small districts a short distance from

each other and not for rural, isolated small districts. The authors also found that the optimum size for elementary schools was in the 300-500 pupil range, and for high schools was in the 600-900 range (see also, Lee & Smith, 1997, on high school size). Both findings suggest that our very large urban districts and schools are far beyond the optimum size and need to be somehow downsized.

In other words, research suggests that elementary school *units* be in the range of 400-500 students and that secondary school *units* be in the range of 500-1,000 students (Lee & Smith, 1997; Raywid, 1997/1998). Evidence from comprehensive school designs, however, generally suggests school sizes of about 500 students for both elementary and secondary schools, which we would argue falls within the range of the research findings (Odden, 1997; Stringfield, Ross & Smith, 1996). Such school designers also suggest that larger schools be divided into "sub-schools," and run as "schools within schools." So a secondary school with 2,000 students would be organized into two, 1,000-student or four 500-student "sub-schools," each with a separate student body, separate principal and separate entrance, if possible (see also Murphy, Beck, Crawford, Hodges & McGaughy, 2001). Teaming within larger schools is another way to enhance personalization of the social and academic environment for students.

Though some of the research on "schools within a school" is mixed, the bulk of research shows that when such efforts *are implemented well*, student performance and other outcomes do rise. The recent Borman, Hewes, Overman and Brown (2003) meta-analysis of comprehensive school designs, many of which are implemented as schools within school buildings, is one body of evidence and documents significant positive impacts for fully implement programs. A policy brief by Wonacott (2002) from the Career and Technical Education National Dissemination Center provides an overview of the impacts of smaller learning communities generally and specifically for secondary career academies. The small-school initiative of the GATES foundation is another support for smaller schools; indeed; GATES is providing tens of millions of dollars all around the country for large high schools to break themselves into small school units (see Dobbs, 2003, for example). Wisconsin has several excellent examples of effective schools-within-schools, and its two largest city districts – Milwaukee and Madison – are in the process of creating SWS within their larger high school buildings.

Astute readers would have noted that the above conclusions were for school units, not necessarily school buildings. And many Wisconsin districts already have built numerous school buildings larger than the above numbers. Evidence on effectiveness would suggest that the districts build smaller school buildings, but this would increase the cost of education facilities. Further, some parents and students prefer large school buildings, believing such schools offer a larger variety of courses, and more extra curricular activities. At the same time, some districts in Wisconsin have built school buildings of a variety of sizes, reflecting the above research findings. Finally, for those who want students to attend school in small buildings, Wisconsin also offers the charter school approach.

Going forward, we would recommend that districts build smaller buildings when new schools, especially secondary schools, are needed. We also suggest that districts divide some but not all of their current large school sites into smaller school-units, thus providing smaller, and more personalized learning environments for some students. And we further suggest that parents

and students be allowed to attend their school of choice: a large comprehensive high school, a school within a larger school building, or a charter school. In this way, Wisconsin could provide parents and children options for the "size" of the educational environment in which students are educated.

Although we recognize that the above level of school choice may not in fact exist in sparse, rural areas, and that in lower income areas, parents often do not have the time or resources to avail themselves of choice were it to be provided, we believe these conclusions about the issue of school size are sound, nevertheless.

In addition, for secondary schools, research also finds that curriculum offerings should emphasize a solid core of academic classes for all students (Bryk, Lee & Holland, 1993; Lee, Croninger & Smith, 1997; Newmann & Associates, 1996). This research shows that the most effective strategy for having all students perform to proficiency on state standards and to close the achievement gap between minorities and non-minorities is for high schools to offer a strong set of core academic courses in mathematics, science, language arts, history/social science and foreign language and require all students to take the bulk of their courses from this core (Clune & White, 1992; Lee, Croninger & Smith, 1997; Madigan, 1997; Public Agenda, 1997; Steinberg, 1997), excluding altogether such low-level classes as general and consumer math. Indeed, the Education Trust argues that one of the top two strategies for closing the achievement gap between low-income students and students of color from other adolescent Americans is having high schools prepare all students for college, i.e., to take a core of solid academics (Education Trust, 2003; ACT and Education Trust, 2004).[14] As implied by the introduction to this report, this is the kind of secondary education required for full participation in any and all post-high school activities, whether it is taking a job, enrolling in a two-year post secondary institution, or attending a college or university.

Recommendation. To indicate the relative level of resources in schools, we will use prototypic school units of 432 elementary students (grades K-5), 450 middle school students (grades 6-8) and 600 high school students (grades 9-12). As discussed in the class size section below, these numbers allow for a whole number of teachers (as opposed to partial FTEs) and facilitate staffing discussions for schools fewer students. Though these numbers are larger than many of the "small" high school programs that are developing across the county, they more accurately reflect the research on the most effective school sizes (Iatarola, 2005). In other reports, we have used prototypical school sizes of 500 for all schools. An explanation for the change in proposed school unit size is presented in the next section.

[14] The other strategy is to provide a quality teacher in every classroom, a topic addressed later in this report.

RECOMMENDATIONS FOR THE PERSONNEL ELEMENTS IN PROTOTYPICAL SCHOOLS

This section covers all personnel recommendations: core teachers, specialist teachers, teachers for struggling students – tutors, English language learners (ELL), extended day and summer school, pupil support professionals, librarians, administrators, and secretaries.

1. Core Teachers/Class Size

Current Wisconsin policy. Wisconsin does not have a statewide policy on class size for all grades. However, the Student Achievement Guarantee in Education (SAGE) program provides school districts $2,000 for every student in grades K-3 who is eligible for free- and reduced-price lunch in a school if the school and its district commits to use those and other funds to reduce class sizes to 15 in grades K-3. Other than this focused categorical program, the school finance formula does not assume or support specific class sizes.

In staffing schools and classrooms, however, superintendents and principals must make decisions on class sizes for core teachers – the grade (or multi-grade) teacher in elementary schools, and the core subject (e.g., mathematics, science, reading/English/language arts, and social studies) teachers in middle and high schools.

The Evidence. Research on class size shows that small classes of 15 (not a class of 30 with an instructional aide or two teachers) in kindergarten through grade 3 have significant, positive impacts on student achievement in mathematics and reading (Achilles, 1999; American Educational Research Association, 2003; Gerber, Finn, Achilles & Boyd-Zaharias, 2001; Grissmer, 1999; Mishel & Rothstein, 2002; Molnar, 1999; Nye, Hedges & Konstantopoulos, 2002). It is commonly also concluded that the impact of small class size is even larger for students from low-income and minority backgrounds (Finn & Achilles, 1999; Krueger & Whitmore, 2001). The current Wisconsin practice of limiting financial support for class size reduction to schools with the highest concentrations of low income/minority students reflects the evidence that the impact of small classes in the early grades is the largest for this group. But because a small class policy would benefit all children, we view the evidence as supporting a policy to provide class sizes of 15 in all the state's classrooms for kindergarten through grade 3.

Over time, different analysts have reached different conclusions on the role of resources generally and specifically the role of class size on student achievement. In a late 1970s meta-analysis of the class size research, Glass and Smith (1979) concluded that class sizes needed to be reduced to at most 15 students before an impact on achievement could be produced. However, in a re-analysis of that research, Odden (1990) noted that Glass and Smith had no sample studies of class sizes of 14-17 that actually improved student achievement, and that the class size of 15 finding was a statistical artifact of little if any impact of class size of any size until individual tutoring was provided. And Hanushek (2002) has always questioned the efficacy of small class sizes.

But research in the late 1980s and early 1990s provided new evidence of the impact of class size on achievement. The "gold" standard of educational research is randomized experiments, which provide scientific evidence on the impact of a certain treatment (Mosteller,

1995). Thus, the primary evidence on the impact of small classes today is the Tennessee STAR study, which was a large scale, randomized experiment of class sizes of 15 for kindergarten through grade 3 (AERA, 2003; Finn and Achilles, 1999; Word, et al., 1990). The results showed that students in the small classes achieved at a significantly higher level (**effect size** of about **0.25** standard deviations) than those in regular class sizes, and that the impacts were even larger(**effect size** of about **0.50**) for low income and minority students (Achilles, 1999; Finn, 2002; Grissmer, 1999; Krueger, 2002). The same research showed that a regular class of 24-25 with a teacher and an instructional aide *did not* produce a discernible positive impact on student achievement, a finding that undercuts proposals and wide spread practices that place instructional aides in elementary classrooms (Gerber, Achilles, & Boyd-Zaharias, 2001).

Subsequent research showed that the positive impacts of the small classes in the Tennessee study persisted into middle and high school years, and even the years beyond high school (Finn, Gerger, Achilles & Zaharias, 2001; Krueger, 2002; Mishel & Rothstein, 2002; Nye, Hedges & Konstantopoulos, 2001a, 2001b). Thus, although differences in analytic methods and conclusions characterize some of the debate over class size (see Hanushek, 2002 and Krueger, 2002), we side with those concluding that class size does make a difference. Specifically, we conclude that the research shows only that class sizes of 15 students and only for kindergarten through grade 3 boost student performance (Achilles, 1999; Finn, 2002; Grissmer, 1999; Krueger, 2002).

Similar research supporting the above findings on the effect of class size of 15 for students in kindergarten through grade 3 was produced by Project Prime in Indiana (Chase, Mueller & Walden, 1986) and, as cited above, Wisconsin's SAGE program (Molnar, 1999).

Following California's experience, we would urge the state to phase-in these smaller class sizes to ensure that quality teachers are available to staff those classes; California discovered that a fast phase-in required many districts, particularly the large urban districts, to staff class with unqualified teachers, which detracted from the efficacy of the small class size.

Two main mechanisms have been proposed through which class size reduction effects may operate. Some have suggested that teachers may alter their instructional methods in smaller classes, making greater use of small groups, for example, or assigning more writing. However, several studies including those tied to Project STAR have failed to find consistent teaching differences related to class size (e.g., Betts & Shkolnik, 1999; Evertson & Randolph, 1989; Rice, 1999). A more likely operating mechanism is that students respond better to the same instruction in smaller classes. With fewer students per teacher, less time is needed for disciplinary matters and students may be more engaged (Betts & Shkolnik, 1999; Finn & Achilles, 1999; Finn, Pannozzo & Achilles, 2003). Particularly in the early elementary grades, smaller classes facilitate forming social relationships among teachers, students, and their families that may be essential for school success.

Evidence on the most effective class sizes in grades 4-12 is harder to find. Most of the research on class size reduction has been conducted at the elementary level. Thus, we look for evidence on the most appropriate secondary class size from typical and best practices to make a recommendation for class sizes for these grades. First, the national average class size in middle

and high schools is about 25. Second, nearly all comprehensive school reform models are developed on the basis of a class size of 25 (Odden, 1997; Odden & Picus, 2000; Stringfield, Ross & Smith, 1996), a conclusion on class size reached by the dozens of experts who created these whole-school design models. Although many professional judgment panels in other states have recommended secondary class sizes of 20, none cited research or best practices to support such a proposal. Thus, we use evidence of best practice to recommend that class sizes in grades 4-12 should be no larger than an average of 25.[15]

Recommendation. We recommend that schools be resourced for class sizes of 15 for grades K-3 and 25 for grades 4-12.

With these class size recommendations, a K-5 elementary school would have an average class size of 18. With this resourcing formula, an elementary school of 432 students would receive 24 teachers (4 teachers for each of six grade levels), a middle school of 450 students would receive 18 core teachers, and a high school of 600 students would receive 24 core teachers. *These core teachers would not be the only teaching staff in these schools. Several of the following sections recommend a variety of additional teachers for all school levels.*

Fractional teacher units and grouping students for instruction. An issue that often emerges is how to calculate the number of teachers when the number of students in a school, grade level or class is not so neatly divided by 15, 25 or 18, particularly at each grade level for a school. For example, if an elementary grade had 18 students, a 1.0 FTE teacher position is provided. But what would happen if there were 19 students? Would that trigger an additional full FTE teacher, or just a small fraction of an additional teacher? We would suggest that the formula would trigger just the additional fraction, and that all teacher FTE would need to be considered when organizing a school's instructional program. In other states, individuals have suggested a "rounding up" of each calculation so that any small fraction would produce an additional 1.0 FTE teacher; this would allow an elementary grade with 19 students to trigger 2.0 FTE teacher positions. But many view such an approach as too generous – that the additional teacher should be triggered at 22 or 24. That approach would create the "step" function, as the state would need to distinguish clearly between a grade with 21 students that triggered just 1.0 FTE teacher and a grade with 22 students that triggered 2.0 FTE positions. A formula that simply calculated FTE teachers to the nearest tenth (or hundredth) by dividing the student count by 18 (or 25 for middle and high schools) would solve the "step" function problem, but not the numbers of students in the class problem.

The issue here, as well as for very small elementary schools, is how students are grouped for instruction. If students are grouped by grade level, the fact that each grade level does not have a number of students evenly divided by 15, 18 or 25 produces an issue of student placement and numbers of teachers. On the other hand, if schools adopt a multi-age approach, and in

[15] Many in Wisconsin and other states have argued not to bump class size from 15 in grade 3 to 25 in grade 4 and subsequent grades, and that class sizes in those grades should be closer to 20. We would encourage the state to sponsor some experiments with various class sizes in grades 4-12 to see if smaller sizes would indeed impact student performance. Whatever the results, the conclusions could provide stronger evidence for what size classes should be at those grade levels.

elementary schools, for example, create K-1, 1-2, 2-3, 3-4, and 4-5 classes[16] then it would be much easier to create classrooms of approximately 18 students, regardless of the specific number of students in each grade. This approach also would allow for differential placement of students according to their developmental progress, since it is a truism that there is great variability among elementary students in their academic development, even when they are of similar ages, a phenomenon that grade level grouping of students ignores.

Furthermore, research shows that multi-aging of students in elementary classrooms actually is better for students; students in multi-age classrooms achieve at least as much as students in age-grouped classes and usually learn more with **effect sizes** ranging from 0.0 **to 0.5** (Gutierrez & Slavin, 1992; Mason & Burns, 1996; Madon & Stimson, 1996; Pavan, 1992; Veenman, 1995). The reasons for increased student achievement are at least twofold. First, as just stated, classes can be organized so that the academic development of children in each class is more homogeneous. This allows teachers to provide more whole group instruction, which allows teachers to provide more instruction during each day. Second, if teachers stay with a student group over a two-year time period, a process called "looping," then the teacher knows the student for the second year and less time is lost in starting the school year, determining how to organize and manage the class, and learning the academic achievement status of each student. Moreover, a recent report from the Rural School and Community Trust on school finance adequacy (Malhoit, 2005) lists the prevalence of multi-age classrooms in rural schools as one of several advantages that small, rural schools provide.

Multi-aging, though, works best if the teacher instructs the entire class as a group and essentially has a two-year curriculum that all students are taught over a two-year time period. Multi-age classrooms run as "combination" or "multi-grade" classes, in which the teacher provides half a day of instruction for one grade, and instruction for the other half of the day to the other grade, can be a detriment to student learning, in part because each student might receive only a half day instead of a full day of instruction, with effect sizes ranging from -0.1 to 0.0. In short, the way multi-age classrooms are taught impacts whether they are more or less effective for students.

Some states, such as Kentucky, use this research and actually mandate the use of multi-age grouping of students in elementary schools. Though we are not hinting that Wisconsin should mandate multi-age classrooms, we are stating that such an approach is a very effective way to group students for instruction and addresses the fact that the resourcing formulas will not produce a "whole" number of teachers, thus making age grouping of students problematic. We are suggesting that the answer is multi-age grouping of students, not providing more teacher resources, and that this solution has ancillary benefits.

2. Specialist Teachers and Planning and Preparation Time/Collaborative Professional Development

Current Wisconsin policy. There is no specific provision for such staff in Wisconsin education or school finance policy. It is a personnel resource that districts and schools can and do buy with local and state equalization dollars in the general fund.

[16] Or in the case of smaller schools, groupings such as K-1, 2-3 and 4-5.

The evidence. Teachers need some time during the regular school day for collaborative planning, job-embedded professional development, and ongoing curriculum development and review. Schools also need to teach art, music, library skills, vocational and physical education, implicitly required by the adequacy standard in Wisconsin Supreme Court's 2000 *Vincent* v *Voight* decision. Providing each teacher one period a day for collaborative planning and professional development focused on the school's curriculum requires an additional 20 percent allocation of specialist teachers needed to provide those planning periods while maintaining the above class sizes. These teachers could teach the above or other specialist content classes.

The 20 percent additional staff is adequate for elementary and middle schools, but a different argument could be made for high schools. If the goal is to have more high school students take a core set of rigorous academic courses, and learn that material at a high level of thinking and problem solving, one could argue that a block schedule that allows for longer class periods would be a better way to organize the instructional time of the school. A typical block schedule for high schools requires an additional 33 percent of specialist teachers, as the school creates a four 90-minute block schedule, with teachers providing instruction for just three of those 90-minute blocks and having one block – or 90 minutes – for planning and preparation each day. This type of block schedule could be operated with students taking four courses each semester attending the same classes each day, or with students taking eight courses each semester while attending different classes every other day. Such a schedule could also entail some "skinny" blocks for some classes. Each of theses specific ways of structuring a block schedule, however, would require an additional 33 percent of specialist teachers to provide the regular teacher with a "block" for planning and preparation each day.

Based on the findings from cognitive research on how kids learn complex materials (Bransford, Brown & Cocking, 1999; Donovan & Bransford, 2005a, 2005b, 2005c), which suggest longer, more concentrated times for learning, and the rigorous but needed performance expectations for high school students in Wisconsin, we would recommend such block scheduling for high schools, and thus more specialist teachers for high schools to permit this scheduling. Block schedules also would allow teachers of English and writing to give more writing assignments and have the time to provide detailed feedback to students, which is needed to help students write better, but is very time consuming with large numbers of students. We should note that a school could provide 60 minutes of this preparation time for planning, preparation and collaborative work with colleagues, and also require that teachers use 30 minutes of this time to provide additional help for struggling students, which could be organized in many different ways by a school.

We should also note that the primary way to provide job-embedded professional development is to provide for and use a significant portion of planning and preparation time within the normal school day for this purpose (see Odden and Archibald, 2001 for examples). This means that the planning and preparation time needs to be provided as 45-60 minutes of uninterrupted time, not 15-30 minutes at different times during the day. Such professional development should provide between 100 and 200 hours of professional development annually for each teacher (we would recommend closer to 200 hours), include extensive coaching in the teacher's classroom (provided by the site-based instructional facilitators/coaches/mentors

discussed above), incorporate all faculty and administrators in a school, focus heavily on the content and curriculum that each teacher teaches, and be aligned with state/district content standards and student tests (Birman, Desimone, Porter & Garet, 2000; Cohen & Hill, 2001; Desimone, Porter, Garet, Yoon, & Birman, 2002, Desimone, Porter, Birman, Garet & Yoon, 2002; Garet, Birman, Porter, Desimone & Herman, 1999). Again, we expand on the structure and costs of effective professional development below.

Recommendation. We recommend that elementary and middle schools receive an additional 20 percent of the number of core teachers for specialist teachers, and that high schools receive an additional 33 percent, in order to teach specialist classes and also to provide time for teachers to engage in collaborative planning and preparation as well as job-embedded professional development during the period when they do not teach. The 20 percent formula provides an additional 4.8 FTE positions for the prototypical 432 student elementary school, 3.6 FTE positions in the prototypical 450 student middle school, and the 33 percent formula provides an additional 8.0 positions in the prototypical 600 student high school.

In totaling the core plus the specialist teachers from the recommendations above, our recommended total teaching staff for prototypical schools are 28.8 for the prototypical 432 FTE elementary, 21.6 for the 450 FTE middle and 32 for the prototypical 600 FTE high school. *Again, we note that the next set of recommendations provide a variety of additional staff for all schools. These are not the only professional staff or the only teaching staff for each school.*

3. Instructional Facilitators/School-Based Coaches/Mentors

Current Wisconsin policy. There is no specific provision for such staff in Wisconsin education or school finance policy. It is a personnel resource that districts and schools can buy with local and state equalization dollars in the general fund.

The evidence. Most comprehensive school designs, and the evidence-based studies conducted in Kentucky (Odden, Fermanich & Picus 2003), Arkansas (Odden, Picus & Fermanich, 2003), and Arizona (Odden, Picus, Fermanich & Goetz, 2005), call for school-based instructional facilitators or instructional coaches (sometimes called mentors, site coaches, curriculum specialists, or lead teachers). The technology intensive designs also require a technology coordinator (see Stringfield, Ross & Smith, 1996). Further, several designs suggest that while one facilitator might be sufficient for the first year of implementation of a school-wide program, in subsequent years an additional 0.5 to 1.0 FTE facilitator is needed. Moreover, the technology designs recommend a full-time facilitator who spends at least half-time as the site's technology expert. Thus, drawing from all programs, we conclude that about 2.5 FTE instructional facilitators/technology coordinators are needed for each school unit of 500 students. This resourcing strategy works for elementary as well as middle and high schools.

These individuals would coordinate the instructional program but most importantly would provide the critical ongoing instructional coaching and mentoring that the professional development literature shows is necessary for teachers to improve their instructional practice (Garet, Porter, Desimone, Birman, &Yoon, 2001; Joyce & Showers, 2002). This means that they spend the bulk of their time in classrooms, modeling lessons, giving feedback to teachers, and

helping improve the instructional program. We expand on the rationale for these individuals in our section on professional development below, but include them here as they represent teacher positions. The technology staff would provide the technological expertise to fix small problems with the computer system, install all software, connect computer equipment so it can be used for both instructional and management purposes, and provide professional development to embed computer technologies into the curriculum at the school site.

The impact of coaches as part of the professional development program is very large. Joyce and Calhoun (1996) and Joyce and Showers (2002) found that when teachers had sufficient time to engage in professional development that was embedded in classrooms with the aid of instructional coaches, teacher practice changed significantly, with **effect sizes** of **1.68** in the transfer of training to classrooms, **1.25** for skill-level objectives, and **2.71** for knowledge-level objectives. Effects were almost negligible without the classroom-based coaching.

Recommendation. We conclude the evidence suggests allocating 2.5 FTE instructional coaches for a school of 500 students, or 1 instructional coach for every 200 students. Two of the facilitator positions would be for content coaches, and the allocation provides 0.1 FTE per 100 students or a total of 0.5 in the 500 student school for a technology coach. This would translate into 2.2 FTE facilitators for the 432 student prototypical elementary school, 2.25 FTE facilitators for the 450 student middle school, and 3.0 FTE facilitators for the 600 student high school. This formula would produce a 0.5 facilitator for a small 108 student elementary ($1/4^{th}$ the size of the prototype), and a 0.75 facilitator for a 150 student middle and high school ($1/3^{rd}$ the size of the middle school prototype and $1/6^{th}$ the size of the high school prototype).

Although these positions are identified here as FTE slots, schools could divide the responsibilities across several individual teachers. For example, the 2.2 positions in elementary schools could be structured for 4 teacher/instructional facilitators providing instruction 50 percent of the time, and functioning as a curriculum coach in reading, mathematics or technology for 50 percent of the time. The same allocation of functions across individuals could work for the middle and high schools.

Strategies for Struggling Students

Because not all students will learn to performance standards with just the core instructional program, districts and schools should design a powerful sequence of additional effective strategies for struggling students, *i.e.*, students who must work harder and who need more time and help to achieve to the state standards. Rather than simply provide a pot of dollars, or a pupil weight, we recommend a series of specific, cost-based extra-help programs for struggling students:

- Tutoring, i.e., immediate, intensive assistance to keep struggling students on track
- Sheltered English and ESL instruction for English Language Learner (ELL) students
- Extended day programs
- Summer school for struggling students still needing extra help to achieve to state standards, and
- A new approach to funding special education.

We want readers to know that these resources for students struggling to achieve to academic standards should be viewed in concert with resources for students with real disabilities. Because of the paucity of current resources for struggling students in Wisconsin, many agree that some students have been given a special education label to trigger extra resources that could be used to provide some extra help. Our goal in expanding resources for struggling students triggered by poverty and ELL counts is to provide adequate resources for all struggling students, with or without a diagnosed disability, and to reduce over identification in special education.

Finally, we note that we propose to provide *pupil support* resources for students based on poverty counts as well.

Current Wisconsin policy. Wisconsin has three major programs in this area, in addition to special education. The first is the SAGE program, discussed in a previous section, which is a program to lower class size in grades K-3 for schools with concentrations of students from low income backgrounds. First implemented in the 1996-97 school year, this program provides $2,000 for every grade K-3 student who qualifies for free and reduced-price lunch in an eligible school if the school, and its district, as a condition of receiving a SAGE grant, commits to lowering or maintaining class sizes in grades K-3 to no greater than 15 students; keeps the school open for extended hours and collaborates with community organizations; and provides a rigorous academic program and staff development activities . Initially, these competitive grants were provided to a maximum of one school per district (10 for Milwaukee Public Schools) whose poverty concentration, as measured by the free and reduced-price lunch count, was above 30 percent, provided that the district had at least one school with a low-income enrollment of at least 50 percent. These low-income percentage limitations were removed beginning with the 2000-01 school year. In 2004-05, 524 schools in 227 districts participated in SAGE. Under current law and because of funding limits, no new schools are permitted to participate in SAGE.

The second is a small program to provide special classes for students who come from a family in which English is not the primary language. Wisconsin's Bilingual-Bicultural Education program is for English language learners (ELL). Under current law, schools that enroll 10 or more ELL pupils from the same language group in grades K-3, or 20 or more pupils in grades 4-8 or grades 9-12 are required to provide special classes. School districts subject to this requirement are eligible to receive state aid on a flat percentage basis, which in 2004-05 reimbursed an estimated 12 percent of program costs. This compares to a state share of 33 percent in 1993-94. In 2004-05, the state program served an estimated 24,000 of the state's 37,000 ELL pupils.

The third is summer school. Through the general equalization aid formula, Wisconsin also shares in the cost of school district summer school programs, based on their cost and the number of full-time equivalent pupils attending summer school. To be eligible for equalization aid, summer school programs must be academic summer classes or laboratory periods that are necessary for academic purposes. The learning experience must be related or similar to instruction that is offered during the rest of the school year. Costs associated with summer school become part of the school district's shared cost for which equalization aid is paid. The amount of increased student count is determined as follows:

- Calculate the district's total summer school resident pupil membership minutes
- Divide that total by 48,600 and round to the nearest whole number.

That whole number represents the full-time equivalency (FTE) students for summer school, which is added to the school district's FTE for state aid.[17]

Wisconsin does not provide assistance for extended day programs.

The state also reimburses a portion of local expenditures for special education services. Wisconsin fully reimburses costs for children in hospitals and convalescent homes for children with orthopedic disabilities. Other eligible costs (generally the costs for school districts to provide special education programs and services) are reimbursed on a flat percentage basis. The estimated reimbursement rate for the 2004-05 school year was 29 percent. Similar to the trend in Bilingual-Bicultural aid, the state's share has declined from 45 percent in 1993-94.

Indicator of struggling students. In terms of an indicator of the presence of struggling students, Wisconsin currently collects data by school on the number of students who are eligible for free and reduced-price lunch, which nationally is the most used variable to indicate the number of struggling students in a school. We will use that student count to indicate the number of students who might need extra help to achieve to proficiency standards or above. However, it is well known that fewer high school students who are eligible for the federal free or reduced-price lunch program apply for such support than the totals that are eligible. Thus, we were encouraged by our Policy Analyst Group to adjust the high school figures to more accurately reflect the number of such students (eligible but not participating) in each school. We will do that by comparing the free and reduced-price lunch count to the poverty count, from the last Census, and use that relationship to adjust the high school free and reduced-price lunch count.

4. Tutors

Current Wisconsin policy. There is no specific provision for such staff in Wisconsin education or school finance policy. It is a personnel resource that districts and schools can buy with local and state equalization dollars in the general fund.

The evidence. The most powerful and effective strategy to help struggling students meet state standards is individual one-to-one tutoring provided by licensed teachers (Shanahan, 1998; Shanahan & Barr, 1995; Wasik & Slavin, 1993). Students who must work harder and need more assistance to achieve to proficiency levels (i.e. students who are ELL, low income, or have less severe disabilities) especially benefit from preventative tutoring (Cohen, Kulik, & Kulik, 1982). Tutoring program effect sizes vary by the components of the approach used, e.g. the nature and structure of the tutoring program, but **effect sizes** on student learning reported in meta-analyses range from **0.4 to 2.5** (Cohen, Raudenbush & Ball, 1982; Mathes & Fuchs, 1994; Shanahan,

[17] Technically, summer school FTE is considered FTE for the next academic year, so summer FTE for summer 2005 would be added to the district's FTE count for the 2005-2006 school year. Further, in calculating the revenue limit, only 40% of each district's allowed revenue limit per pupil is provided for summer school, generally under the assumption that summer school costs per pupil are approximately only 40% of costs over the entire school year.

1998; Shanahan & Barr, 1995; Wasik & Slavin,1993), with an average of about 0.75 (Wasik & Slavin, 1993).

The theory of action for why individual one-to-one tutoring, as well as other very small student groupings, boosts student learning follows. First, tutoring intervenes immediately when a student is trying to learn. Second, tutoring is explicitly tied to the specific learning problem. Third, when provided by a trained professional, tutoring provides the precise and appropriate substantive help the student needs to overcome the learning challenge. Fourth, tutoring should thus remedy short-term learning problems, and in many cases may not be needed on a continuing basis. In short, though potentially expensive, the ability of tutoring to intervene quickly, precisely and effectively to undo an individual's specific learning challenge gives it the potential to have large effects, particularly when the specific learning challenge or challenges are key concepts related to a student's learning the grade-level expectations for a specific content area.

The impact of tutoring programs depends on how they are structured. The alignment between what tutors do and the regular instructional program is important (Mantzicopoulos, Morrison, Stone, & Setrakian, 1992; Wheldall, Coleman, Wenban-Smith, Morgan & Quance, 1995). Who conducts the tutoring matters, as does the intensity of the tutoring (Shanahan, 1998). Poorly organized programs in which students lose instructional time moving between classrooms can limit tutoring effects (Cunningham & Allington, 1994). Researchers (Cohen, Kulik, & Kulik, 1982; Farkas, 1998; Mathes & Fuchs, 1994; Shanahan, 1998; Shanahan & Barr, 1995; Wasik & Slavin, 1993) have found greater effects when the tutoring includes the following mechanisms:

- Professional teachers as tutors
- Tutoring initially provided to students on a one-to-one basis
- Tutors trained in specific tutoring strategies
- Tutoring tightly aligned to the regular curriculum and to the specific learning challenges, with appropriate content specific scaffolding and modeling
- Sufficient time provided for the tutoring, and
- Highly structured programming, both substantively and organizationally.

An important issue is how many tutors to provide for schools with differing numbers of at-risk students. The standard of many comprehensive school designs is a ratio of one fully licensed teacher-tutor for every 100 students in poverty, with a minimum of one for every prototypical school. Using a Wisconsin count of the adjusted number of students eligible for free and reduced-price lunch, this standard would provide from one to over four professional teacher tutor positions for the prototypical elementary and middle schools, and up to six for the high school.

We note several characteristics of an effective one-to-one tutoring strategy. First, each tutor would tutor one student every 20 minutes, or three students per hour. This would allow one tutor position to tutor 18 students a day. (Since tutoring is such an intensive activity, individual teachers might spend only half their time tutoring; but a 1.0 FTE tutoring position would allow 18 students per day to receive 1-1 tutoring.). Four positions would allow 72 students to receive individual tutoring daily in the prototypical elementary and middle schools. Second, most

students do not require tutoring all year long; tutoring programs generally assess students quarterly and change tutoring arrangements. With modest changes such as these, close to half the student body of a 400 pupil school unit could receive individual tutoring during the year. Third, not all students who are from a low-income background require individual tutoring, so a portion of the allocation could be used for students in the school who might not be from a lower income family but nevertheless might have a learning issue that could be remedied by tutoring.

Though we have emphasized *individual* tutoring, schools could deploy these resources provided for intensive intervention in evidence-based ways other than just individual tutoring. In a detailed review of the evidence on how to structure a variety of early intervention supports to prevent reading failure, Torgeson (2004) shows how one-to-one tutoring, one-to-three tutoring, and one-to-five small group sessions can be combined for different students to enhance their chances of learning to read successfully. One-to-one tutoring would be reserved for the students with the most severe reading difficulties, scoring say, at or below the 20th or 25th percentile on a norm referenced test. Intensive instruction for groups of three-to-five students would then be provided for students above that level but below the proficiency level.

The instruction for all groupings, though, needs to be more explicit and sequenced than that for other students. Young children with weakness in knowledge of letters, letter sound relationships and phonemic awareness need explicit and systematic instruction to help them first decode and then learn to read and comprehend. As Torgeson (2004: 12) states:

> Explicit instruction is instruction that does not leave anything to chance and does not make assumptions about skills and knowledge that children will acquire on their own. For example, explicit instruction requires teachers to directly make connections between letters in print and the sounds of words, and it requires that these relationships be taught in a comprehensive fashion. Evidence for this is found in a recent study of preventive instruction given to a group of high at-risk children in kindergarten, first grade and second grade .....only the most [phonemically] explicit intervention produced a reliable increase in the growth of word-reading ability ... schools must be prepared to provide very explicit and systematic instruction in beginning word-reading skills to some of their students if they expect virtually all children to acquire work-reading skills at grade level by the third grade .... Further, explicit instruction also requires that the meanings of words be directly taught and be explicitly practiced so that they are accessible when children are reading text .... Finally, it requires not only direct practice to build fluency .... but also careful, sequential instruction and practice in the use of comprehension strategies to help construction meaning.

Torgeson (2004) goes on to state that meta-analyses consistently show the positive effects of reducing reading group size (Elbaum, Vaughn, Hughes & Moody, 1999) and identifies experiments with both one-to-three and one-to-five teacher-student groupings. While one-to-one tutoring works with 20 minutes of tutoring per student, a one-to-three or one-to-five grouping requires a longer instructional time for the small group of up to 45 minutes. The two latter

groupings, with 45 minutes of instruction, reduced the rate of reading failure to a miniscule percentage.

If the recommended numbers of tutors are used for such small groups, a one FTE reading position could teach 30 students a day in the one-to-three setting with 30 minutes of instruction per group, and 30+ students a day in the one-to-five setting with 45 minutes of instruction per group. Four FTE tutoring positions could then provide this type of intensive instruction for up to 120 students daily. In short, while we have emphasized 1-1 tutoring, and some students need 1-1 tutoring, other small group practices can also work, with the length of instruction for the small group increasing as the size of the group increases. The interventions only help students to learn to read if they provide the type of explicit instruction described above.

While Torgeson (2004) states that similar interventions can work with middle and high school students, the effect, unfortunately, is smaller as it is much more difficult to undo the lasting damage of not learning to read when students enter middle and high schools with severe reading deficiencies.

Overall, tutoring program **effect sizes** vary by the components of the approach used, e.g. the nature and structure of the tutoring program, but effect sizes on student learning reported in meta-analyses range from **0.4 to 2.5** (Cohen et al., 1982; Mathes & Fuchs, 1994; Shanahan, 1998; Wasik & Slavin,1993; Shanahan & Barr, 1995), with an average about **0.75** for one-to-one tutoring programs based on an meta-analysis of sixteen one-to-one tutoring programs (Wasik & Slavin, 1993).

Recommendation. We recommend that each prototypical school be provided one tutor FTE position for every 100 adjusted students eligible for free and reduced-price lunch, with a minimum of one in every prototypical school.

Given all of the above recommendations, we want to note the multiplicity of recommendations *so far* that are focused on getting students to read proficiently by the end of the third grade and to perform at proficiency levels after that:

- Full-day kindergarten
- Classes of 15-18 students for the first four years of school, K-3
    - Perhaps even smaller classes if schools had all licensed staff in an elementary school teach reading during a 90 minute reading block
- At least 90 minutes of regular reading instruction daily
- An evidence-based reading curriculum, with a balance of phonics, phonemic development, writing and comprehension
- More effective teachers with access to rigorous professional development
- Individual and small group tutoring if all of the above still leave the student struggling.

In sum, our initial recommendations for immediate and intensive extra help for students from lower income backgrounds and struggling to learn to standards comes "after" a series of other evidence-based strategies, all designed and proposed to help the student learn to proficiency.

As is clear below, these strategies are further augmented by some additional services for ELL students, extended-day programs, summer school for struggling students who need even more help to learn to state standards, ALE programs, additional assistance for students with disabilities, and extra pupil support and parent outreach resources based on poverty student counts.

5. English Language Learner (ELL) Students

Current Wisconsin policy. Wisconsin's policy for these students was described in the above section on struggling students.

The Evidence. Next to providing extra teachers for English as a second language instruction to students for whom English is not their primary language, research shows that ELL students need a solid and rigorous core curriculum as the basis from which to provide any extra services. For example, a recent study of what is needed to help English language learners achieve to high performance standards (Gandara, Rumberger, Maxwell-Jolly, & Callahan, 2003) suggested that what is in the core or base program is critically important. That study concluded that LES students need:

- Qualified teachers – a core goal of all the recommendations in the report
- Adequate instructional materials and good school conditions, included below for each prototypical school model
- Accurate assessments of ELL students so teachers know in detail their English language reading and other academic skills, and less segregation of ELL students
- Rigorous curriculum and courses for all ELL students, and affirmative counseling of such students to take those courses
- Professional development for all teachers, focusing on sheltered English teaching skills.

Research shows that it is the English language learners from lower income, and generally less educated, backgrounds who struggle in school and need extra help. Triggering tutoring resources on the basis of the economic background of students as previously recommended would provide some extra help resources needed for struggling English language learners. However, research, best practices and experience also show that when students are both from a low-income background and English language learners, some additional assistance is needed that include a combination of small classes, English as a second language classes, professional development for teachers to help them teach "sheltered English classes, and "reception" centers for districts with numbers of ELL students who arrive at different times during the school year.

Additional staff are needed to provide ELL students an ESL course in place of an elective course. For example, during one middle school's seven period daily schedule, the school was providing ESL, i.e., English as a second language, class to its ELL students instead of an alternative, elective class offering. Although initially we believed that strategy did not require any additional resources since ELL students were simply taking an ESL class rather than another class, we came to understand that additional resources for this strategy were necessary. Because the district has determined that the ELL students were best served through three levels of ESL classes (each taught during a different period of the day), enrollment in any one of those classes

was insufficient to enable the school to reduce the number of non-ESL classes in that time slot. Instead, between two and four ELL students were pulled from each class. ESL classes were organized to accommodate the number of students requiring service, and additional teacher resources were needed to meet this need.

Although there may be the potential to cancel some classes if sufficient numbers of the same class have enough numbers of ELL students pulled out, it was generally agreed that if the ELL formula triggered an additional 1.0 FTE position for every 100 ELL students, the staffing resources would be sufficient to allow the provision of the ESL classes. We should note that this school was providing structured English immersion for all ELL students, with ESL as an additional course, and not a bilingual education program. Thus, the pull-out class provided ELL students with an additional "dose" of English instruction, reinforcing the key goal of the program as having the ELL students learn English so they could continue their schooling in English language instruction classrooms. Bilingual transitional programs, though, require the same level of additional resources.

In a best-evidence synthesis of 17 studies on bilingual education, Slavin & Cheung (2005) found that ELL students in bilingual programs outperformed their non-bilingual program peers. Using studies focused primarily on reading achievement, the authors found an **effect size** of **0.45** for ELL students.

Recommendation. We recommend that the ELL formula provide an additional 1.0 FTE teacher positions for every 100 ELL students.

It bears repeating that these are not the only resources provided for ELL students. All ELL students from lower income backgrounds (most ELL students) are included in the free and reduced-price lunch counts, which trigger tutoring, extended day and summer school resources (see following discussion), so all of these resources would be available for ELL students too. For example, if a 100 poverty student count were comprised of just free and reduced-price lunch and no ELL students, it would trigger 1.0 tutor position, plus the extended day and summer school resources below. But if the 100 poverty student count consisted of ELL students, it would trigger the initial 1.0 tutor position, the extended day and summer school resources below, *plus an additional 1.0 teacher position.*

6. Extended-day programs

Current Wisconsin policy. Wisconsin has no specific policy on extended day programs.

The evidence. Beginning in elementary school and particularly in secondary schools, after-school or extended-day programs might be necessary for some students. After-school programs are created to provide a safe environment for children and adolescents to spend time after the school day ends, as well as to provide academic support. In a review of research, Vandell, Pierce and Dadisman (2005) found that well designed and administered after-school programs yield numerous improvements in academic and behavioral outcomes (see also, Baker & Witt, 1996; Dishion, McCord, & Poulin, 1999; Mahoney, Stattin, & Magnusson, 2001; Posner

Figure 3
Process and Content Features Characterizing Effective Extended Day Programs

PROCESS ISSUES	
Positive staff-child relationships	• Staff treat children/youth with warmth, acceptance and respect • Staff provide emotional support to children/youth • Staff communicate high expectations/positive norms for child/youth behavior and mastery • Staff set age-appropriate limits for children/youth • Staff affirm cultural identity
Positive peer relationships	• Staff promote tolerance, understanding, and appreciation of differences • Staff promote positive social interactions and communication among youth • Staff encourage inclusion and use strategies for building group identity and focusing group(s) of children/youth on common goals • Staff help youth to develop conflict resolution skills and strategies for addressing threatening/bullying behavior • Staff promote understanding of cultural identity and diversity
Connections with families and the community	• Staff communicate with family about youth experiences • Families are welcome to volunteer and visit the program • Activities for youth connect them with neighborhood resources and to community mentors and leaders
PROGRAM CONTENT AND ACTIVITIES	
Content-based learning opportunities that include a mix of academic and nonacademic skill-building activities	• Arts, aesthetics, culture • Homework and tutorial assistance • Community service • Interdisciplinary and applied content • Opportunities to use written and expressive language to convey ideas, perspectives, and interests in varied contexts • Opportunities to read and exchange ideas about books for varied purposes • Activities and games for practicing and applying everyday and school mathematics • Opportunities to develop planning, decision-making, information-seeking, and critical thinking
Physical/recreation activities	• Formal or informal sports/fitness activities • Recreational activities
DELIVERY STRATEGIES	
Structured and unstructured learning opportunities	• Coaching/tutoring/Co-learning/collaboration/cooperation • Active/hands-on and interactive activities and project-based learning • Discourse, debate, and discussion with peers and adults • Multimodal communication (language, writing, art, music, performance)
Mastery orientation	• Sustained activities and opportunities for practice and skill development • Goal setting, reflection, self-evaluation • Culminating activities
Opportunities for autonomy, choice, and leadership	• Opportunities for making choices, solving problems, setting priorities • Formal and informal leadership opportunities

Effect Sizes of Major Recommendations

Throughout the report, we have identified "effect sizes" of the programmatic proposals. Effect size is the amount of a standard deviation in higher performance that the program produces for students who participate in the program versus students who did not. An effect size of 1.0 would indicate that the average student's performance would move from the 50th to the 83rd percentile. The research field generally recognizes effect sizes greater than 0.25 as significant and greater than 0.50 as substantial. The effect sizes of the major recommendations are presented in Figure 4.

Figure 4

Estimated Effect Sizes of Major Recommendations

Recommended Program	Effect Size
Full Day Kindergarten	0.77
Class Size of 15 in Grades K-3	
Overall	0.25
Low income and Minority Students	0.50
Multi-age classrooms	
Multi-grade Classrooms	-0.1 to 0.0
Multi-age Classrooms	0.0 to 0.50
Professional Development with Classroom Instructional Coaches	1.25 to 2.70
Tutoring, 1-1	0.4 to 2.5
English-Language Learners	0.45
Extended-Day Programs	No consistent impact due to variation in program focus and quality
Structured Academic Focused Summer school	0.45
Embedded Technology	0.30 to 0.38
Gifted and Talented	
Accelerated Instruction or Grade Skipping	0.5 to 1.0
Enrichment Programs	0.4 to 0.7