What Does it Cost to Operate a High School Organized into Small Learning Communities? When Are Additional Resources Needed? How Can Efficiencies Be Achieved?

Robert Balfanz, Johns Hopkins University

Introduction

Little is known about what it actually costs to operate a high school organized into Small Learning Communities (SLCs). As a result, many of the cost estimates and subsequent funding decisions made when high schools are converted into SLCs are often based on little more than guesswork. They are often determined as much by the amount of funding readily available or the desire to spread it to as many high schools as possible as by good analysis of the actual costs involved in mounting and sustaining effective high school reforms. Yet such analysis is essential. Without it many efforts to restructure high schools into SLCs may fizzle after the initial start-up funding disappears or scarce funds might be wasted through duplicative efforts. One reason that this analysis does not occur is that not enough information exists to support it. The goal of this paper is to change this situation by answering three related questions.

Specific Issues/Questions Examined

First, what can be learned about the costs associated with operating a high school organized into Small Learning Communities? Moving from a traditional comprehensive high school to one organized around SLCs involves many direct and indirect costs beyond the technical assistance needed to implement the reforms. What are these costs and how much more do they add to the cost of operating a high school beyond the basic expenses of providing each student with a full day of instruction? How do the costs of a high school organized into SLCs compare to those of a traditional comprehensive high school with its multiple programs and specialized teaching/professional staff?

Second, based on what is learned about the costs of operating a high school organized into SLCs, what can be inferred about the adequacy of existing resources? In the second section of the paper national data will be used to broadly establish what is known about the resources available to high schools restructuring into SLCs. The National Center for Education Statistics' (NCES) Common Core of Data will be used to compare the number of teachers currently available within high schools to the number needed to support fully implemented SLCs. This national data will then by augmented by three case studies that involve detailed analyses of the actual budgets and staffing allocations of a suburban school, two urban schools in the same district with vastly different budgets, and an urban district embarking on an attempt to create small schools and SLCs district-wide. This analysis will examine the extent to which these schools can meet the staffing needs of fully implemented SLCs through re-allocation of existing staff. And if they cannot, how many additional resources would they need? The final section will examine whether existing federal, state, and foundation funds can be used to close any gaps between existing resources and those needed to establish fully implemented SLCs. This section will also explore ways to achieve cost efficiencies or find less costly means of achieving fully implemented SLCs.

Taken together, the three sections will provide much more information on the costs of operating a high school organized in SLCs than currently exists, demonstrate the extent to which high schools can re-allocate existing resources to meet these costs, and in so doing

enable a much deeper understanding of the extent to which additional resources might be needed, and if so, of what kind, and for what duration. This in turn will enable schools and districts to make more informed decisions about the nature, scale, speed, and scope of converting high schools into SLCs.

Limitations

This paper will examine the operating costs of a high school organized into small learning communities. Its focus is on the resources necessary to sustain fully implemented SLCs. As such, it does not consider the transition costs of transforming a traditional high school into one organized into SLCs. These transition cost typically involve planning year expenses, multi-years of technical and implementation assistance, sometimes from an outside provider, and facility costs as school buildings may need to be retro-fitted to accommodate an SLC structure. These costs are often supported, at least in part, through external federal, state, and foundation grants. The focus of this paper is on the resources a high school will need for the long term to sustain fully implemented SLCs. The cost of instructional materials and textbooks are not included either in the analysis because it is assumed that, however a high school is organized, it will need high quality instructional materials. As a practical matter, however, districts or high schools re-organizing into SLCs may need or want to upgrade their instructional materials at the same time. If so, the costs of such upgrades would need to be factored into the total resources necessary for a district's or school's high school reform plan.

Finally, it needs to be kept in mind that the cost estimates illuminated in the paper, are just that -- estimates. They are based on the best available data, but these data have their own, at times considerable, limitations, which will be detailed when the data are used.

Findings

What Does it Cost to Operate High Schools Organized into Small Learning Communities?

Small learning communities come in many forms. To understand their costs, it is first necessary to establish the core elements and components of SLCs associated with current practice. The following list of 10 core components was compiled from four primary sources: 1) a recent analysis by the Northwest Regional Lab (2005) of SLC practices associated with gains or improvements in student outcomes (e.g. attendance, effort, achievement); 2) an analysis conducted by the Southwest Education Development Lab (2005) of the structures and practices most commonly found in high schools that have received federal Small Learning Community Grants; 3) the author's own experience and work in the development and scale-up of the Talent Development High Schools model which re-organizes large comprehensive high schools into small learning communities (Legters, Balfanz, Jordan & McPartland 2002), and 4) the larger literature on high school reform.

At this point, it is important to acknowledge that the movement to transform comprehensive high schools into small learning communities is still in its childhood. As a result, a large body of rigorous scientific evidence does not yet exist to firmly establish the necessity of each of the following components. A growing body of evidence, including rigorous independent third-party analysis, however, at least indicates that high schools that have implemented all or nearly all of these components have been able to significantly improve the teaching and learning climate in a school, as well as student engagement, attendance, and effort. These high schools have in the main, also seen substantial gains in course passing, grade promotion, achievement, and graduation rates (Kemple, Herlihy, & Smith 2005; Quint, Bloom, Black, & Stephens 2005).

These sources suggest that fully implemented SLCs:

1) Contain approximately 200-300 students in a contiguous area of the school.
2) Practice distributed leadership, with each SLC led by a dedicated school administrator or lead teacher
3) Have teachers organized into collaborative work teams at either the SLC level or sub-units within it. Teachers teach (or almost always teach) only students in their SLC.
4) Provide teachers with time to collaborate with their team members, participate in professional development activities, and engage in student outreach activities.
5) Provide a common core, standards-based, college preparatory curriculum to all students regardless of the SLC they belong to.
6) Make provisions for academic and social supports for students via advisories, advocates, and extra help programs
7) Provide on-going professional development and in-classsroom/school coaching to its teachers and leaders;
8) Use alternative schedules to provide students who need it additional instruction in reading/mathematics and to provide all students with access to enrichment activities, and/or internships and career experiences.
9) Have a dedicated counselor and support staff.
10) Have a significant parent/community/business involvement/outreach component

Cost Analysis Assumptions

This analysis will attempt to deduce what it would cost to operate a high school that implements all of the above practices. This will be referred to as a fully implemented SLC. As noted above the strongest evidence of the positive impact of SLCs on student performance has come from high schools that have implemented all or most of these practices. That does not mean, however, that there is conclusive evidence that all of these elements are necessary. Thus, the cost data will be presented so that it is possible to remove any of the core elements listed above and re-calculate the costs.

The cost estimates are not based on a particular school reform model. Rather they are designed to be broadly applicable to any effort to create school-wide SLCs employing the practices elucidated above. As such the cost estimates are not dependent on the grade configuration of SLCs. They should apply to 9-12 SLCs, as well as grade level SLCs or

schools organized into 9th-grade academies and 10-12th-grade career academies or any combination of these.

To conduct the cost analysis it will be necessary to examine a high school of a given size. The analysis will be based on a high school enrolling 1,200-1,250 students with average class sizes of 25 students, organized into either four SLCs of approximately 300 students each or five SLCs of 250 students each. This will enable readers to scale the total costs and staffing requirements up or down in increments of either 300 or 250. (For example, to use the data presented to estimate the total costs and staffing requirements of operating a high school of 2,500 students organized into 10 SLCs of 250 students, readers would need to double the total cost and staffing figures presented.)

The costs themselves are determined in one of two ways. Either they are based on direct calculation with the calculations being explained in each section or they are estimated based on the author's experience working with more than fifty schools to establish and sustain fully implemented SLCs. This experience has involved helping the schools plan and budget for fully implemented SLCs and often working with them to find the most cost effective way to implement each of the SLC components.

The costs associated with operating a high school organized into small learning communities can be broken down into three main categories: staffing costs, professional development costs, and the cost of providing enhanced social support, experiential learning, business partnerships, and parent and community involvement.

Staffing Costs

Core Teachers: The main SLC costs associated with the teaching staff is the provision of time for collaborative work, professional development and student outreach activities. A school of 1,200 with class sizes of 25 organized into four or five small learning communities would need at least 60 core academic/elective teachers. To provide these 60 teachers with 2½ hours per week of collaborative/professional development/student outreach time would require approximately six additional teaching positions (see appendix 2for detailed calculations). Two and one-half hours per week of collaborative work time is about the minimum necessary. It would provide, for example, a 30-minutes of student outreach time, one hour of interdisciplinary team time, and one hour of professional development a week. (In practice the professional development time would likely be used in different increments in different weeks, but its cost would remain the same.)

A more generous provision would be five hours of collaborative teacher work time per week. This would break down, for example, into two one-hour interdisciplinary team meetings, a one-hour subject-area meeting, one hour of professional development, and an hour of student outreach activities per week. This would require approximately 12 additional positions for a school of 1,200 organized into small learning communities.

It is important to note that the costs of providing teachers with collaborative time is basically the same in a school organized on a traditional schedule or an alternative schedule, like the 4 by 4 or A/B Block Schedule. Sometimes the cost of collaborative work time is mistakenly attributed to implementing a block schedule. That is because a block schedule with time built in for teacher collaborative work is being compared to a traditional schedule that does not provide time for teacher collaboration. Schools that are

already on a block schedule which provides time for teachers to work together, student outreach, and professional development, therefore, may not need to add as many positions to provide the collaborative work time fully implemented SLCs require.

In sum, providing teachers with time for collaborative work, professional development and student outreach activities -- perhaps the most significant component of small learning communities -- can increase staffing costs from 10 to 20%.

Confounding Factor, Reduced Class Size: The above analysis assumes that all of the core teachers in a SLC are teaching a full load of courses with standard class sizes. Several factors, however, can cause teachers to teach smaller than normal classes. For example, Advanced Placement, career and technology, special education, and English as a second language or bilingual courses may require or necessitate smaller classes or less than a full teaching load. Some districts also strive to have smaller classes in courses that have high stakes exams attached to them. Finally, in high schools with low graduation rates, enrollments typically take on a pyramid shape in which there may be 500 freshmen and 200 seniors. In schools with pyramid-shaped enrollments, smaller class sizes are often found in required 11th and 12th grade courses. These courses must be offered so students can graduate, even if they have small enrollments.

High schools with significant numbers of courses that necessitate reduced class size will need to increase their staffing above the numbers presented in this analysis. In addition, to achieve the full benefits of SLCs they will need to avoid "solutions" that can undercut SLC's effectiveness including creating unduly large ninth-grade classrooms populated with 30 or more high needs students (i.e. students with weak prior preparation or poor attendance habits) or assigning students to classes in multiple SLCs to ensure all classes are the same size.

Leadership: To be effective, small learning communities typically need their own administrator or lead teacher. Often this person is called an Academy or SLC leader and may carry the rank of an assistant principal or a department head, though this is not necessary (unless required by local school regulations). What matters is a leader who is empowered to lead and manage the SLC. The extent to which this brings additional costs depends on how many assistant principals and department heads or other administrators (e.g. Academic Deans, or Deans of Discipline etc.) a school has. In many cases, SLC leadership positions can be staffed by re-assigning existing staff, or trading in department head or dean positions. Where this is not possible, schools in the author's experience have typically needed to add one or two leadership positions.

Support Staff and Support Teachers: Ideally each SLC would have its own support staff (e.g. secretary, counselor, paraprofessional). In practice, many SLCs share these services. How many support staff positions are needed will depend on the size of the SLC and the characteristics of the students. The extent to which sufficient support staff exists in a school and can be redistributed to provide each SLC with sufficient services will vary across high schools. As the analysis in the second section of the paper will show, some schools have generous allotments of support staff and others do not. One area where high schools often fall short is counselors. Experience with more than 50

schools implementing SLCs has shown that it is often necessary to add one or two more counselors to provide one for each SLC.

Another support cost to consider is teachers to provide extra-help in reading and mathematics. Although reading and math support teachers traditionally have not been conceptualized as integral to SLCs, they are becoming more of a necessity with the advent of NCLB and the desire to have all students take a standards-based, rigorous sequence of college preparatory courses. Research based extra-help programs, such as Scholastic's Read 180, Talent Development's ALFA lab, and I Can Learn, are typically designed to serve 15 to 20 students per class. Students often take these classes in addition to their regular standards-based mathematics and English classes. One teacher can reach 75-150 students per year (depending if support is given for a year or a semester). If 15-30% of students need substantial extra help and support to succeed in standards-based courses, each SLC would require approximately 1 FTE of extra help support. Because students typically take these courses in lieu of an elective, and not all students require them, it is usually not possible to fully fund extra-help math and reading positions by re-allocating existing staff. It is possible, however, for two extra help teachers -- one in math and one in reading -- to share an elective period (each teaching 12-15 students). Thus, in order to provide extra help in reading and mathematics to all students who need it, a high school will likely need to both re-allocate some of its existing elective positions and add one or two extra help positions depending on the number of students who enter with below grade level skills.

Confounding Factors, Special Education and ESL Teachers: In theory, sufficient special education and ESL teachers are supposed to be assigned to meet the needs of students with IEPs and limited English proficiency. Thus while special education and ESL teachers may have to work across SLCs, special education and ESL students should be able to participate in any SLC in a school. The major exception would be students who need self-contained services in Special Education or ESL. It typically is not possible to offer these within each SLC. In practice, Special Education and ESL are chronically under-resourced in some high schools. As a result, special education and ESL students are sometimes clustered within a sub-set of classrooms or SLCs in an attempt to leverage limited resources more efficiently. This, however, undercuts a core component of small learning communities, student choice and equity across SLCs. Thus, if schools are seeking to have strong and equitable SLCs they may need to augment their special education and ESL staffs.

Cost of Enhanced Social Support, Experiential Learning, Parent and Community Involvement, and Business Partnerships

One of the hallmarks of SLCs is the recognition that connections need to be made with students' current and future lives beyond the walls of the classroom (Kemple 2004). In addition, it is recognized that to succeed in high school and graduate prepared for college, career and civic life, students need to be engaged, motivated, try hard, and attend school regularly (NWREL 2005). Engagement, effort, motivation, and attendance are enhanced when students believe their teachers care about and know them, when students

can see a connection between the work they do in school and their future interests and destinations, and when supports are available to solve or ameliorate problems and challenges that interfere with success in school (Legters, Balfanz, Jordan & McPartland 2002). To achieve this, SLCs need to provide enhanced social support to students, enable students to participate in experiential learning, and increase parent, community, and business involvement with the high school.

Social Support: Providing teachers, administrators, and support staff with the time and tools to become engaged with their students, as well as providing students with sufficient social supports, is not without cost. A number of different options regarding enhanced social supports exist. Some schools have student advocates assigned to each SLC, whose job is to both link needy students with social service providers and follow up on their progress, and to have the one-on-one time needed to deal with the sub-set of students who require extensive or continuous adult interaction to succeed in school. Other schools extend the advisory system and have each teacher take on 10 to 15 students whom they are asked to get to know very well, establish relationships with their parents, and help them find social service providers as needed. Schools that serve large percentages of students from neighborhoods of concentrated poverty may also need to add or increase the number of social workers at the school.

Typically, the costs of providing enhanced social supports are either in the form of stipends to teachers for extra work or salaries for paraprofessionals. If one para-professional was hired as a student advocate in each SLC this would translate to approximately 0.5 of a teaching position per SLC. Providing the 12 to 15 teachers in each SLC with stipends for student outreach work or additional release time would be no less costly.

Parent and Community Involvement, Business Partnerships and Experiential Learning: To establish and maintain parent and community involvement, as well as business partnerships and internships, job shadowing, community service activities, and/or opportunities to participate in the arts of sufficient quality and number so all students in a SLC eventually have chances to participate requires dedicated time and effort. SLC leaders provide some of this time, but typically one person cannot lead and run an SLC, and establish, maintain, and nurture significant involvement of parents, the community, and businesses. As a result, stipends for extra work or release time need to be given to teachers in each SLC, or outreach coordinators need to be added to each SLC. If one parent coordinator and one business partnership coordinator were hired for the school, this would be the equivalent of 0.50 of a teaching position per SLC. In addition each SLC will likely need $5,000-$10,000 in operating funds for these activities.

Professional Development Costs

Another hallmark of SLCs is that they seek to establish professional learning communities among their teachers, administrators, and staff members (NWREL 2005). A key element is continuous professional development. Professional development in turn has two main costs, teacher time and professional development providers. Weekly teacher time for professional development has been included in the core staffing analysis

done above. So what needs to be factored in now is the cost of professional development and the extent to which professional development time is needed beyond the school year. Here there are several possible costs.

Instructional Coaching: There is growing evidence that one of the most effective forms of professional development is instructional coaching that provides in-classroom training and support from a knowledgeable peer (Neufeld and Roper 2003, Russo 2004). Instructional coaches work directly with teachers in their classrooms, helping them deepen their practice and employ more effective instructional techniques and approaches. This is done through modeling, clarifying, providing non-evaluatory feedback, and helping teachers to make modifications suited to the unique nature of their classes. Coaching can be organized in a number of different fashions including a pure peer-based system where teachers coach each other, the use of lead teachers who teach one period and coach the others, or the use of full time school, district, or externally provided coaches. These different approaches, however, have essentially the same cost, the cost of the coaches' time.

The amount of coaching teachers need will vary. Most teachers, however, may need or benefit from teacher support via high quality coaching. This is because fully implemented SLCs with their use of more active pedagogies (cooperative learning, project based learning etc.), the standards movement's efforts to make high school more intellectually rigorous, and No Child Left Behind's call that all high school students will achieve proficiency regardless of their prior preparation have greater increased the pedagogic and instructional demands teachers face. .

Coaching, moreover, to be successful, needs to be significant (Neufeld and Roper 2003). Seeing a coach twice a year for one class period will likely have limited effects. In the most intensive coaching models, teachers receive at least one period of in-class coaching and one period of discussion/training with the coach or the coach and a cadre of teachers per week. In this scenario one coach can serve approximately 8 to 10 teachers (Legters et al 2002). In some models this concentrated coaching is delivered for only a segment of the year; in other models coaching intensity ranges from every other week to monthly depending on the needs of a teacher.

Overall, however, it is not unreasonable to assume that when a coaching model of professional development is in place each SLC will need about 0.5 FTE of coaching support. This would enable intensive, weekly coaching of mathematics and English teachers, for example, or less intensive bi-weekly to monthly coaching of all subject area teachers. Thus, at the school level either a full time math and full time English instructional coach would be required or two schools could share math, English, science and history coaches with each coach working half time at each school. For high schools with stable teaching corps this level of coaching support might decline over time, but for high schools in which there is significant staff turnover, it may need to be seen as a permanent cost of operating high schools organized into SLCs.

Organizational/Teaming Coaching: Learning how to work effectively in teams to improve student attendance, engage in meaningful interdisciplinary projects, and to solve and prevent student behavior issues is a skill that many teachers have not had the opportunity to learn. Yet strong teamwork is integral to effective SLCs. As a result high

schools organized into SLCs often need to have an on-site organizational/teaming facilitator who works to develop strong teacher teams across the SLCs. Once these skills have been developed it is sometimes possible for this function to be transferred from a facilitator/coach to team leaders but team leaders then often need one release period a day to take on the responsibilities of team leadership. Thus one additional teacher position at the school level or .25 of a position per SLC often needs to be allocated for organizational coaching and team leadership.

Professional Development for Administrators: Principals, SLC Leaders, schedulers, and counselors all need continuing access to professional development to keep abreast of current best practices in SLCs and develop expertise in the technical knowledge and human relation skills needed to operate a high school organized into SLCs. The main costs here are time and travel funds to participate in networks of peers and targeted professional development opportunities. The costs for this should not be large. A $10,000 per year professional development budget for administrators, for example, could enable each SLC leader, as well as the principal and the scheduler, to attend one significant out-of-town or off-site professional development opportunity per year as well as more frequent local meetings.

Professional Development beyond the School Day/Year: For SLCs to function well it is necessary for teachers and administrators to learn new skills because they are typically being asked to take on new roles. Keeping SLCs self-contained is also significantly easier when teachers can teach a range of courses. The drive for more rigor in high schools also means that teachers may need additional training to teach more advanced or AP courses. Some of this professional development can be built into the school day and school year using district-provided professional development time, or the weekly professional development time built into the core staffing model for SLCs elucidated above. Some additional professional development time outside of the school day and year, however, may be needed; for example, for teachers taking summer courses to become dual certified or trained to teach AP courses. Traditionally some or all of the expense of this training has been borne by teachers, who may then be rewarded by increased pay in the district's salary structure

This approach, however, is often inefficient in that the courses teachers need or can afford for master's degrees etc., may not teach them skills useful for their SLCs. Thus, to ensure that sufficient teachers are receiving the summer training the SLC needs, it may be necessary to offer incentives in the form of assistance with tuition and travel costs. A three-year plan to provide all teachers with the opportunity for summer professional development might cost as little as $6,000 per SLC per year (3 teachers at $2,000 each per year).

In addition, some SLCs have found significant value in having full- or even two-day professional development trainings for their faculty. This provides the SLC staff with the continuous amount of time, in a setting free from distractions, which is often needed to learn new skills or engage in significant collaborative work at the SLC level. Because stipends often need to be paid and food provided, two full days of professional development beyond the school calendar can cost up to $6,000. A week's worth of training could cost $15,000.

In sum, to have a strong and continuous professional development program each SLC might need a yearly professional development budget of around $15,000 and 0.5 instructional coaches. This suggests a school of 1,200 would need approximately two instructional coaches, one organizational/school improvement facilitator, and a $50,000 per year professional development budget.

Estimated Total Cost of Operating a High School Organized into Fully Implementing SLCs

Now that the costs for the different components of fully implemented SLCs have been elucidated it is possible to look at the total cost of operating the hypothetical high schools (1200-1250 students organized into either four SLCs of 300 or five SLCs of 250 students) that we have been examining. In Table 1 below the costs of fully implemented SLCs are added to a basic staffing model for a 1,200-student high school with class sizes of 25. This basic staffing model provides the minimum number of teachers (60) needed for all students to take six periods of credit bearing courses per day; one counselor per 400 students; a principal and three additional administrators or professional staff members for the school (e.g. two assistant principals and a social worker). Per pupil expenditures are calculated using $60,000 for teacher and counselor salaries and $75,000 for administrator salaries. This is high for some parts of the country and low for others. Local costs can be estimated by establishing what fraction local salaries are of the figures used in the analysis and then multiplying the estimated per student costs in the table by this fraction

Table 1: Estimated Staffing Resources Needed Beyond Basic Staffing Model for Fully Implemented SLCs in a 1,200-Student High School

Component	Additional Staff Needed	% Staffing Increase	Estimated Per Student Cost
Collaborative Work Time for Teachers (2.5 to 5 hours per week)	6-12 Teachers	10%-20%	$288-$576
Administrator per SLC	1-2 Administrators	1.5-3%	$60-120
Counselor per SLC	1-2 Counselors	1.5-3%	$48- 96
Reading and Mathematics Support Teachers	2 Teachers	3%	$96
Social Supports, Community/Business Partners and Parent Involvement per SLC	3-4 Staff	4-6%	$144-$192
Instructional coaches/Organizational facilitators	3 Teachers	5%	$144
Total	1-2 Administrators 1-2 Counselors 14-21 Teachers or Staff	22%- 40%	$780-1224

What does this exercise tell us? Each SLC component by itself is not very expensive, with most costing between $100 and $300 dollars per pupil. Collectively, however, if we use the midpoint of the costs as a guide, fully implemented SLCs cost about 30% more than the basic staffing model, increasing per pupil expenditure on teacher, administrative, and professional salaries about $1,000 per pupil. The high school would also need to allocate an additional $80-$100 per student to provide for on-going professional development, as well as SLC outreach and operating costs.

Is the estimated costs of about $1,100 per pupil beyond a very basic staffing model to operate fully implemented SLCs expensive? Is this more than it costs to operate a traditional comprehensive high school? One way to examine this is to calculate the per pupil expenditure for instructional, administrative, and professional staff salaries in the basic staffing model on top of which the SLC costs were calculated. It comes to $3,264 per pupil. This lead to an estimated per pupil of $4264 for instructional, administrative, and professional staff salaries to fully implement SLC's. Many high schools have higher per pupil expenditures on salaries then this, and many that do not also have lower teacher salaries than the $60,000 used in these estimates. This indicates that many high schools currently have additional staff beyond those identified in the basic staffing model. These additional teachers, administrators, and staff members are likely offering or supporting specialized classes or programs for sub-sets of students or administrating or supporting sub-sets of teachers.

One of the key aims of the analysis which follows is to establish the extent to which high schools can support the additional costs of SLCs by re-allocating existing funds. In other words, to what extent is it cost neutral to transform an existing comprehensive high school with its assortment of specialized offerings into a high school organized into fully implemented SLCs? Table 1 provides a key estimate in this regard. Adding the additional teaching positions needed to fully implement SLCs to the number of teaching positions needed by the basic staffing model and dividing this number into 1,250 students indicates that one teacher is needed for about every 16 students to fully implement SLCs.

To What Extent Do High Schools Currently Have the Resources Needed to Operate Fully Implemented SLCs?

This question can be approached on three levels. First, existing national, state, and district data on high school per pupil expenditure and staffing levels can be examined to see what it reveals about the percent of high schools that have teacher-student ratios of 16:1 or less, and as a result, may have the staffing levels needed to organize themselves into fully implementing SLCs.

Second, actual case examples of high school budgets and staffing allocations can be examined to enable finer grain analysis.

Finally, national data on Title I, Small Learning Community Grants, and Comprehensive School Reform grants can be examined to see the extent to which supplemental funds are available to high schools that need additional resources to create and sustain SLCs. Each of these methods has limitations, often substantial, but together they indicate the extent to which resources need to be re-allocated or enhanced to enable high schools to fully implement SLCs.

State and District Data on High School Per Pupil Expenditure

Available data on per pupil expenditure are of limited utility. It is strongly influenced by class size and teacher experience levels, neither of which is typically tracked at the school in available national, state or district data sets (Fowler 2005). Districts and states also vary on how they calculate instructional spending per student with some including teacher benefits and others viewing this as a fixed district cost. What available data do tell us is that when instructional spending per student (typically teacher and administrator and support staff salaries and instructional materials) is analyzable within states or districts there are often wide differences across high schools in staffing and funding levels.

There are 44 high schools in the state of Rhode Island, for example. Except for the one high school on an island that is excluded from this analysis, cost of living should be fairly uniform within such a small state (teachers in a given school can live almost anywhere in the state). Yet there is huge variation across these high schools in per pupil expenditures on classroom teacher salaries, ranging from just under $3,000 per pupil to just shy of $8,000 per pupil for the 2003-04 school year. Total spending on instruction, which includes teacher salaries, paraprofessionals, classroom technology, substitute

teachers, and instructional support, ranges from $4,300 per student to $9,400. Simply put, some high schools in Rhode Island have twice as much to spend on instruction as others (Rhode Island Department of Education 2005). Similar, though not quite as severe, ranges can be observed within districts. In New York City high schools, for example, spending on school expenses ranged from $7,000 to $12,000 per student in 2002 (Balfanz and Legters 2004).

National Data on High School Staffing Levels

There is more useful data available on high school staffing levels, though it comes with a significant limitation. For each public school in the United States, the National Center for Education Statistics (NCES), as part of its Common Core of Data (CCD), asks schools to annually report their total number of classroom teachers, as well as the total enrollment of the school. With this data it is possible to construct for each public high school in the U.S. a student-to-teacher ratio. Consequently, it is possible to compare their existing teacher allocations to those that have been estimated above as necessary for full implemented SLCs.

The one substantial caveat, however, to this analysis is that CCD data counts all teachers in the school building, including special education and English as second language (ESL) teachers.   Because special education and ESL teachers sometimes provide services to sub-sets of students who also receive a full schedule of regular high school courses, including these teachers in the student-teacher ratio may overstate a high school's existing capacity to fully implement SLCs.

Analysis of the CCD data on student-to-classroom teacher ratios was conducted for two sets of schools. First all public regular and vocational high schools that enrolled 1,000 or more students in 2003 (n=4,806). This is taken as the set of high schools most likely to want to convert into SLCs. Second, all high schools that have received a federal SLC grant (planning or implementation) to date (Cohorts 1-4, n=837).   State-by-state findings are presented in the Appendix 1. The main findings are:

- Nationally, the median high school has a student-to-teacher ratio of 17.7 to 1. This indicates that less than half the high schools with more than 1,000 students in the United States may have the staffing resources to fully implement SLCs. A majority, however, may be able to implement many but not all of the practices associated with full SLC implementation.
- There is considerable variation across states. In 12 states, the typical (median) high school has a student-to-classroom teacher ratio of 15: 1 or less.   This indicates that in these states more than half the high schools (absent a very large special education and ESL population) should have the staffing resources to fully implement SLCs.   These states are Connecticut, Maine, New Hampshire, Vermont, New Jersey, New York, Montana, North Dakota, Virginia, North Carolina and Texas. At the other end of the spectrum are nine states in which the median high school has a student-to-teacher ratio of 20:1 or higher. In these states, half the high schools may have considerable difficulty implementing SLCs without substantial additional resources or they will need to have larger than

typical class sizes. These states are Arizona, Nevada, Utah, California, Oregon, Florida, Michigan and West Virginia

- As seen in Table 1 below among the 837 high schools that have received federal Small Learning Community Grants, 37% (312) had clearly disadvantaged staffing ratios of 20:1 or higher, while 20% (169) had clearly advantaged staffing ratios of 15:1 or less. This indicates that the plurality of SLC grantees fell in the middle range, with available staffing to implement some, but not all, of the practices associated with full implementation.

Table 2. Pupil-Teacher Ratios in SLC Grantee High Schools

| | | Calculated Pupil Teacher Ratio 2002-03 | | | | | | |
| | | 20 or more | | 16-19 | | | 15 or less | |
	Total	n	%	n	%		n	%
Number of SLC Grantee Schools	838	312	0.37	357	0.43		169	0.20

Data Source: NCES Common Core of Data, U.S. Department of Education

Case Studies of High School Budgets and Staffing Allocations

The student-to-teacher ratios that can be constructed using CCD data do not allow us to distinguish between regular classroom teachers and special education and/or ESL teachers. As a result, we do not know the extent to which the teachers at a school could be re-allocated to fully staff SLCs. Nor do they enable examination of the number of administrators and counselors or professional, paraprofessional, or support staff high schools currently have. To shed some light on these questions, it is necessary to examine some specific examples. The following examples have been chosen to illustrate urban and suburban schools, as well as a district-wide high school reform effort. It is unknown to what extent they are statistically representative of schools in general, but what they do provide is a window into the complexities involved in re-allocating existing staff to fully implement SLCs and provide additional insight into which high schools may have sufficient resources and which may not.

Suburban High School Example: This high school is in an affluent suburban district that is becoming more diverse and increasingly educating a higher percentage of low-income children as the result of on-going migration from a nearby central city and immigration from abroad. It has 1,222 students, 44% are white, 24% Hispanic, 18% African American and 13% Asian. Seventeen percent of the students receive free or reduced priced lunch, 11% receive special education services and 7% are ESOL. Overall, the school is fairly high achieving. Its SAT scores are above the national average; it has a 90% graduation rate and 94% attendance rate. The school also has a significant achievement gap. Eighty-three percent of white students were proficient on the state 10th grade mathematics and reading tests used for NCLB, compared to 37% of African American students. The school made AYP in all its categories. The school has an average class size of 25 students. It has a principal and three other administrators, four counselors,

and 83 teachers (for a student-teacher ratio of 14.7 to 1). At first glance, this school appears to be at most one administrator short of having sufficient resources on hand to reorganize itself into fully implemented SLCs.

A more detailed examination of its teaching staff, though, reveals that of its 83 teachers, 13 are special educators, two are ESOL, one is serving as the Athletic Director, and one is an Alternative Program teacher. It is possible that some or all of these 17 teachers could not be re-allocated to staff SLCs. If none could be re-allocated the school would have 66 teachers to staff SLCs or a ratio of 18.5 to 1. So after some further inspection it looks like this school could fall in the able to implement some to most, but not all, of the practices associated with fully implemented SLCs.

But the analysis still remains incomplete. The school, as it turns out, has substantial staffing resources beyond its classroom teachers. It has, for example, 18 instructional support positions. Some or all of these positions could perhaps be converted into additional teaching positions or used for enhanced social services support, and parental, community and business partnership functions.

Overall then, it appears that this school would have to make a choice. It does not have enough teaching positions to overlay fully implemented SLCs on top of all the other programs it is currently running. It does, however, appear to have sufficient resources so that with some effort and time it could reorganize itself into fully implemented small learning communities with at most only a small amount of additional funding.

Urban High School Example, The Tale of Two Schools: The urban example is drawn from one of the ten largest city school districts in the United States. It is a high poverty school district that primarily serves minority students. Both of the schools highlighted serve almost entirely high poverty, minority populations. However, this is where the similarities end. School A is considerably higher performing with an official graduation rate of 94% compared to 70% in School B. The schools, moreover, have very different budget and staffing patterns. This can be seen in Table 3 below.

Table 3: Staffing Allocations in Two High Schools in the Same High Poverty Central City School District

	School A	School B
Total Enrollment	1,253	1,706
Average Class Size	19-English 22-Math	37-English 43-Math
Teachers	90	89
Student-Teacher Ratio	14 to 1	19 to 1
Professional Support Staff	8.6	7
Administrators	4	6
Education Aides	11	8

School A has almost 500 fewer students than School B but one more teacher, two more professional support positions and three more aides. This ultimately is reflected in the fact that School A spends $7,334 per pupil (in 2003), $1,300 more per pupil than the

district average for high schools. School B, by contrast, spends $5,157, $900 less per pupil than the district average for high schools. Thus, by examining these two schools we can compare the extent to which a better funded and less well funded high school in the same urban high poverty district have the resources to fully implement SLCs.

Both high schools are at most one administrator short and appear to have sufficient counselors to fully implement SLCs. As in the suburban school example, what at first appears to be an ample allocation of teachers in School A becomes somewhat less so when special education teachers are considered. Of the 90 teachers at School A, 17 are special education teachers, 1.3 are gifted and talented teachers and 0.3 are English as second language teachers. This leaves 71 teachers to be deployed to support SLCs. This provides a student-classroom teacher ratio of 17.6:1, which makes School A a little more advantaged than the suburban school. Like the suburban school, School A also appears to have enough Educational Aides (11) to either re-allocate or exchange for teaching positions to achieve sufficient staffing to fully implement SLCs.

The same option is not available to School B: eight of its teachers are special educators, six are bilingual/ESL teachers and one and a half are gifted and talented teachers. This leaves 73 teaching positions to staff SLCs or a student-to-teacher ratio of 23:1. School B's overall lack of classroom teachers can be seen in its math and English class sizes of 43 and 37, respectively, nearly 20 students larger than School A's. Compared to School A, School B is also disadvantaged in the number of educational aides it could re-allocate or trade in, with 8 compared to 11. As a result, School B does not have the resources to implement more than perhaps a single component of SLCs. For School B to have the staffing it needs to fully implement SLCs, as well as class sizes and a resource base equal to the suburban school example or School A in its own district, School B would need 27 additional teaching positions or a 33% increase in its staffing allocation.

What the comparison of School A and B in the same district shows is that a high school with a budget allocation more than $1,000 per student above the district average is in a position with a few re-allocations and perhaps the addition of one more administrator to fully implement SLCs. The high school with funding nearly $1,000 below the district average only has the resources to move students around in the school building and engage in at best ritualistic SLC reform.   Together these two schools demonstrate how misleading district average expenditures per student can be. They can easily mask the fact that within the same district some schools are in a position to fully implement SLCs and others are not.

An Example of a District Converting All its High Schools to Small Learning Communities: This case study is a big city high poverty school district in the midst of an ambitious district-wide effort to transform all of its neighborhood high schools into smaller schools and within them small learning communities. This effort is aided by substantial funding from national and local foundations, but is hampered at the same time by a severe budget crisis. This enables examination of the intersection of two main variations of the cost of operating a high school organized into fully implemented SLCs -- larger class sizes (to help close a budget deficit the district increased high school class size to 30) and smaller schools (it is the goal of the district to have no high school with more than 600 students).

Table 4 examines the extent to which the school district's high school staffing model enables full implementation of SLCs. The figures are for a 600-student high school with class sizes of 30 that contains three SLCs with 200 students each. SLC staffing needs are built on top of the district's basic staffing model, which provides this school 24 teachers (student teacher ratio of 25 to 1), one principal, two assistant principals or deans, one instructional coach, one counselor and two paraprofessionals.

Table 4: SLC Staffing Needs Beyond Districts A's Basic Staffing Model for 600-Student High School

Component	Additional Staff	Additional Per Pupil
Collaborative Work Time (2.5-5 Hours Per Week)	2.5-5.0 Teachers	$238-$476
Administrator per SLC	1 Administrator	$116
Counselor per SLC	2 Counselors	$194
Reading and Mathematics Support Teachers	1 Teacher	$95
Social Supports, Business Partnerships and Parent Supports per SLC	2 Staff Members	$190
Instructional coaches/Organizational facilitators	2 Teachers/Staff	$190
Total	1 Administrator 2 Counselors 7.5-10 Teachers or Staff	$1023-1261

Table 4 demonstrates several key points. The per pupil costs for a school of 600 are about 10% higher than the per pupil costs for the school of 1,200 examined earlier. This is in large part because the reading and mathematics support teachers, as well as the instructional coaches and staff members needed to provide social support and build parent and business involvement, can not easily be reduced to fractions of individuals. In theory, it might be possible to find someone to work 3/5 time to provide similar levels of support as provided in the larger school but in practice this is difficult. As a result, in this case the smaller school receives more intensive support for a 10% increase in the per pupil costs of fully implementing SLCs.

Increasing class size from 25 to 30 students per class decreases the number of additional teaching positions the school needs to provide its core academic teachers with collaborative work time. Analysis suggests that to fully implement SLCs in schools of

600 with class sizes of 30 a student-to-teacher ratio of approximately 18 to 1 would be required, compared to about a 16:1 ratio in a 1,200-student school with class sizes of 25.

Even with increased class sizes, however, this district does not have sufficient resources to achieve the goal of fully implemented SLCs. The current district staffing ratio for high schools is 25 students to 1 teacher. The provision of one teacher coach per high school brings it down to 24 to 1 and if the two paraprofessionals were traded for an additional teacher the ratio could be 23 to 1. But each high school in the district would still need 5 additional teaching positions to bring the student-teacher ratio down to the required range for full implementation of SLCs. In addition each school would also need one more administrator and two counselors. Given existing resources, the district appears able to implement only a few of the components associated with full implementation of SLCs in its high schools.

One reason why this district-wide reform effort is significantly under-funded is that its high school per pupil expenditures are quite low compared to those for its elementary and middle schools. Per pupil expenditures on instructional and administrative salaries come to $3,046, and on teacher salaries to only $2,388. Even with a $1,000 to $1,200 increase per pupil needed to fully implement SLCs, instructional per pupil expenditure at $4,069-$4,207 would be considerably below the district average of $5,090 for all schools. In addition, unlike the suburban school example and School A in the other large city, high schools in this district do not have substantial numbers of paraprofessionals or education aides who could be re-allocated.

Part of this stems from the fact that the district has decided not to provide Title 1 funding to its high schools, even though they typically serve high-poverty populations. This outcome parallels the under-funded urban high school in the prior example and suggests another useful indicator. When funding for a high school is below the district average, it is unlikely the high school will have the resources necessary to fully implement SLCs.

What Do the National Data and Case Studies Tell Us About the Resources Available at the School and District Levels to Fully Implement SLCs?

The analyses of per pupil expenditures, staffing levels, and the case studies of actual budgets and staffing allocations support a similar conclusion. Some high schools will be much more able than others to fully implement SLCs given current resource levels. The Common Core of Data student-to-teacher ratios suggest that about a third of the large high schools in the U.S. would face primarily re-allocation challenges. In 11 states, this may be true for the majority of large high schools. Overall, these high schools appear to have sufficient staffing levels to fully implement SLCs but to achieve this they will have to re-allocate existing resources, which may be currently dedicated to specialized programs for sub-sets of students.

Across the nation, it appears that the plurality (41%) of large high schools have sufficient resources to implement some to many, but not all, of the components of SLCs. These high schools may be able to get closer to full implementation if they are willing or able to trade off slightly larger class sizes to free up additional positions to provide SLC leadership or supports.

A quarter of nation's large high schools, however, appear to lack sufficient staff to implement SLCs and already have larger then normal classes. These high schools may be unable to engage in more than largely symbolic SLC reform. They can create smaller schools within schools in a superficial manner, but they do not have the resources to implement most of the practices associated with full implementation. To implement SLC reforms, the CCD student–teacher ratio analysis and case studies indicate that the most disadvantaged schools in terms of existing staffing levels may need as much as a 25% to 33% increase in their staffing allocations.

The case studies further reveal that it will not be easy to make broad generalizations about where each of these types of high schools is located or whom they educate. The number of special education and ESL students in a high school confounds a simple student-to-teacher analysis of the resources available to support SLC implementation. This also suggests that finding ways to more fully integrate special education and ESL into SLC and high school reform is critical Miles & Darling-Hammond 1997). High schools typically do not have the resources to support fully implemented SLCs and a large contingent of special education and/or ESL teachers who stand apart from SLC implementation. Full inclusion models of special education, offer one potential way to achieve better integration of special education into SLCs but full inclusion comes with its own significant professional development and teacher support needs that have not been factored into this analysis.

Is External Funding Available to Close Existing Funding Gaps or Do Less Costly Alternatives Exist?

One criticism of the preceding analysis could be that it assumes schools and districts need to fund all of the costs of SLCs themselves and it is based on staffing allocation analyses that use full-time teachers for arguably part-time or non-teaching functions.

Federal and state funds, however, for sustaining high school reform are few and far between. Both the Federal Small Learning Communities (SLC) grants and Comprehensive School Reform (CSR) grants can only fund transition costs, not sustaining costs. The typical SLC award provides $150,000 per year for five years. This may seem substantial but when applied against the 1,250 students in the standard high school we have been examining this comes to $120 per pupil, sufficient to fund only one or two of the key components of SLC reform and then for only five years. CSR grants are typically even smaller. One reason why SLC reform may not have been as impressive to date as many had hoped is that many schools and districts may have assumed that federal SLC and CSR grants were sufficient to fund comprehensive high school reform when they are not.

In high poverty schools Federal Title I dollars could go farther. School-wide Title I funding levels tend to be higher than federal SLC and CSR grants and they are on-going. In the district examined above, the standard funding provided to school-wide Title I schools is $550 per student. This could cover about half the cost of sustaining best practice SLCs. Unfortunately, in this and many other school districts, high schools are provided no Title I dollars.

Some cost-savings can be achieved but those with the potential to save significant dollars tend to be the most politically unfeasible. Other less controversial savings are often small and sometimes attempts to cut costs can be counter-productive. An example of the former is funding collaborative work time for teachers. This is vital and the single most expensive component of SLC reform. An alternative to paying for additional teachers to be teaching students when teacher teams are working is to either shorten the school week for students by 2½ hours (i.e. send students home after lunch-one day a week) or have students engage in work that does not require the interaction with teachers in groups of 25 (i.e. study halls or extra-curricular activities monitored by volunteers, teacher aides, or some combination). Cost savings can also be achieved by increasing class sizes above the 25 students used to model costs in the analysis. Increasing class size or shortening the school week to pay for high school reform, however, is often a difficult sell to school boards and parents. Small cost savings might be achieved by using retired or part-time teachers in coaching positions or as parent/community/business liaisons. These savings, however, in most cases will not be large enough to fundamentally alter the costs of fully implementing SLCs.

An example of false economy would be paying teachers stipends to meet after school for collaborative work time. Unless the stipend is significantly less than a teacher's hourly wage, no cost efficiencies will be achieved, and if it is significantly less, teacher participation will likely diminish. Moreover, any after school activity is by its nature voluntary so collective effort is likely to break down or be inconsistently achieved, as different teachers for different reasons are likely to miss each meeting.

Summary

Transforming a comprehensive high school into one organized into small learning communities is not an easy task. Nor is it without costs. Principals, school improvement teams, superintendents/CEOs, and state education officials need to consider not only the cost involved in transitioning a comprehensive high school into one organized into SLCs but also the cost of sustaining the reform. Transition costs can often be financed in full or at least substantially through federal, state, and foundation grants. Sustaining costs can not. To fully implement SLCs funds need to be available to support collaborative work time among teachers; provide leadership, counselors and support services to each SLC; support sufficient social services and extra help in mathematics and reading so all students can get the assistance they need to become proficient in standards-based college preparatory courses; institutionalize on-going professional development for teachers, administrators, and staff that may include on-site instructional coaches and professional developmentat the SLC level; and sustain a strong family, community, business partnership function that can provide all students with access to experiential learning opportunities.

The main findings of this paper in terms of the cost of sustaining fully implemented SLCs are as follows;

1) It is estimated that it costs around $1100 per pupil above a minimum staffing model to fully implement SLCs school-wide. Based on the teacher and administrative salaries used in the cost model ($60,000 and $75,000) it was calculated that fully implemented SLCs cost in the neighborhood of $4200 per pupil in teacher, administrator, and staff salary costs and an additional $100 per pupil in professional development and community/business partnership costs. .

2) It is estimated that a high school needs to have student to staff ratio of 16 to 1 or less to be in a position to be able to fund the sustaining costs of full implementation through the reallocation of existing resources. If a school has a substantial special education and/or English as a second language student population than a lower ratio may be needed to the extent that these student populations need additional teacher resources beyond those provided by their classroom teachers.

3) Analysis of existing per pupil expenditures and staffing ratios indicates that there is great variation across the nation's high schools in the level of resources available. About a quarter of the high schools in the United States with a 1,000 or more students appear to have sufficient resources to fully implement SLCs. Forty percent appear to have sufficient resources to implement most but not all of the components associated with full implementation. Fully a third of the high schools, however, would need a substantial infusion of resources to fully implement SLCs

Recommendations

The costs of sustaining fully implemented SLCs and the difficulties which will be encountered in re-allocating existing resources need to be weighed against the success of the high school as it is currently organized. If the current organization is not serving most or even many students well, then these costs will be small in comparison to the benefits that existing evidence indicates can be gained from strong implementation of SLCs. If the high school is relatively well functioning and works for the vast majority of students then the costs may be higher than anticipated benefits.

Although each principal and superintendent will ultimately have to examine his or her high school's staffing allocations and budgets in detail to determine how many of the costs associated with SLCs can be borne through re-allocation of existing resources and which will require additional funding, a useful indicator emerges from the analysis presented in this paper. The closer a high school is to a student-teacher ratio of 15:1 the more likely most of the costs can be met through re-allocation. High schools with ratios above 20:1 are likely to need considerable additional resources. High schools with ratios between 16 and 19 fall in the middle; they may be able to implement most but perhaps not all of the SLC practices associated with full implementation through re-allocation of existing resources and may need some additional resources to fully implement all components of SLCs.

The tables presented in this paper that estimate the additional cost of each of the core components of SLCs can be used as tools to both build support for increased funding

for high school reform and make informed decisions about implementing SLCs.   Instead of having to say additional funds are needed to create SLCs they enable school leaders to say, without extra funds we will be short one leader and two extra-help teachers, and lack a sufficient professional development budget to fully implement SLCs. This in turn may lead to a more informed debate about the costs of high school reform and more focused problem solving.

More research is also needed to establish the relative contribution of each of the identified components of fully implemented SLCs in order to determine which elements are the most necessary and which might be able to be phased in over time as additional resources are acquired. Thought and analysis also has to be given to funding strategies to determine how federal grants of in the range of existing SLCs grants (750,000 over five years) can best be leveraged and directed to enable high schools to sustain fully implemented SLCs.

Finally, the analysis indicates that superintendents and state officials need to think seriously about extending Title I funding to high poverty high schools in districts where high schools currently receive none. In many cases, providing high poverty high schools that are organizing themselves into SLCs with Title I funding equal to that provided elementary students would cover many of the additional costs associated with sustaining SLCs. Massing all Title I dollars in the early grades on the hope that students can be inoculated against future school failure has not worked. In order to succeed in high school and acquire a proficient level of academic skill, students who live in high poverty neighborhoods will need schools that are organized to meet their needs throughout their schooling experience. This will require that sufficient resources be provided to enable the sustainability of effective high school reform. In this spirit, this paper has attempted to begin the process of providing more detailed information on the cost associated with operating high schools organized into SLCs. It is only a start, however, and continued work will be required so that informed decisions can be made about what resources are needed to provide all high school students with an education that prepares them for success in college or post-secondary training, careers and civic life.

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Case Study Sources-Specific URL of school budget available upon request, data source listed below.

> Suburban School-www.mbhs/edu
> Urban Schools-www.tea.tx.us

Appendix 1
High School Student-Teacher Ratios by State

Table 5.Percent of high schools with 1,000 or more students
by calculated pupil teacher ratio (2002-03)

State	Total number of schools	Percent of Schools by Pupil Teacher Ratio		
		15 or less	16 to 19	20 or more
AK	12	0.00	0.17	0.83
AL	66	0.09	0.88	0.03
AR	21	0.29	0.62	0.10
AZ	88	0.02	0.28	0.69
CA	682	0.00	0.02	0.98
CO	89	0.00	0.53	0.47
CT	72	0.90	0.10	0.00
DE	19	0.21	0.79	0.00
FL	285	0.05	0.27	0.68
GA	195	0.17	0.76	0.07
HI	28	0.07	0.89	0.04
IA	42	0.31	0.67	0.02
ID	25	0.00	0.64	0.36
IL	218	0.23	0.67	0.10
IN	109	0.06	0.60	0.34
KS	44	0.32	0.61	0.07
KY	64	0.08	0.72	0.20
LA	68	0.19	0.66	0.15
MD	134	0.11	0.71	0.18
ME	12	0.75	0.25	0.00
MI	192	0.02	0.29	0.70
MN	88	0.01	0.48	0.51

Percent of high schools with 1,000 or more students by
calculated pupil teacher ratio (2002-03) – Continued

State	Total number of schools	Percent of Schools by Pupil Teacher Ratio		
		15 or less	16 to 19	20 or more
MO	93	0.14	0.75	0.11
MS	44	0.23	0.61	0.16
MT	13	0.23	0.69	0.08
NC	168	0.41	0.52	0.07
ND	7	0.14	0.86	0.00
NE	25	0.24	0.72	0.04
NH	19	0.68	0.32	0.00
NJ	164	0.90	0.09	0.01
NM	35	0.09	0.80	0.11
NV	27	0.00	0.11	0.89
NY	203	0.79	0.21	0.00
OH	184	0.28	0.57	0.15
OK	37	0.11	0.86	0.03
OR	70	0.00	0.11	0.89
PA	211	0.25	0.59	0.16
SC	79	0.23	0.61	0.16
SD	8	0.00	0.75	0.25
TX	389	0.47	0.51	0.01
UT	56	0.00	0.00	1.00
VA	148	0.79	0.18	0.03
VT	10	0.80	0.20	0.00
WA	130	0.01	0.06	0.93
WI	104	0.26	0.71	0.03
WV	23	0.30	0.70	0.00
WY	5	0.40	0.60	0.00
Nationally	4,805	0.24	0.41	0.35

Appendix 2
Technical Notes

        The number of teachers needed to provide collaborative/professional development/outreach time was calculated by multiplying two and a half hours per week by 60 teachers (the number of teachers needed to provide six credit bearing hours of instruction per day in a 1200 student school with class sizes of 25), resulting in 150 person hours of collaborative time needed, and then dividing this by the number of instructional hours per week for a teacher in a six- period schedule (25 hours).

        National and school level data on student-teacher ratios used in this paper were drawn from the National Center for Education Statistics (NCES) 2002-03 Common Core of Data (CCD). The CCD includes information for the universe of all public elementary and secondary schools, school districts and other educational administrative and operating units across the United States. Data used for this report were submitted to NCES by state education agencies for the 2002-03 school year. Only schools with an enrollment of 1,000 or more students, a grade span of at least 10th-12th, having non-missing pupil teacher ratio data and that were listed in the 50 states or the District of Columbia were used in the analyses of this paper. The total sample of schools drawn from the CCD consisted of 5,167 schools.

        Case studies used in the analyses of this report were drawn from public data available on the internet, with the exception of the urban school district. These data were secured under the condition that the school district not be named.