

Can Teachers Own Their Own Schools?

*New Strategies for
Educational Excellence*

Richard K. Vedder

Foreword by Chester E. Finn, Jr.



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Executive Summary

TO TOWN FROM

**Transforming
the Way Teachers
are Taught**



**An Action Agenda for College and
University Presidents**

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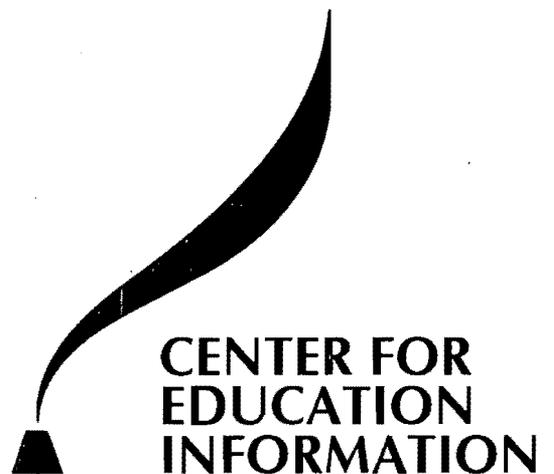
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*THE
MAKING
OF A
TEACHER*

A Report on Teacher
Preparation in the U.S.

C. Emily Feistritzer



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**RETHINKING THE ALLOCATION OF TEACHING RESOURCES:
SOME LESSONS FROM HIGH PERFORMING SCHOOLS**

**Karen Hawley Miles
and
Linda Darling-Hammond**

January, 1997

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Executive Summary

Though a great deal of debate surrounds the level and allocation of resources to public schools, very little of this discussion addresses how schools might organize teaching resources more effectively at the school level. To help understand the issues involved in breaking with the traditional organization of teachers in schools, the Consortium on Policy Research in Education and the National Center for Restructuring Education, Schools, and Teaching conducted case studies of five high performing public schools that have organized professional resources in innovative ways. The study sought to detail alternative ways of deploying instructional resources, identify potential barriers to such reorganization and begin to understand how teachers learn their new roles in these schools. Though the schools studied looked very different, they shared five principles of resource allocation:

1. More flexible student grouping targeted to individual student needs and determined by teams of school based professionals
2. Elimination or reduction of specialized programs and creation of more generalized roles for teachers
3. Creation of more common planning time for teacher teams often through the use of part-time specialist teachers hired to cover specific blocks of time
4. Structures to support more personal relationships between teachers and students and among teachers
5. Longer and varied blocks of instructional time

While the public schools in our sample have experimented with different ways of organizing teachers and allocating teacher time, they have not examined the full range of

possible resource levers. None have sought to change the distribution or structure of teaching salaries or to significantly shift the portion of resources allocated from teachers toward technology.

The use of these principles creates significantly more opportunity for individual attention and teacher planning and development in these schools as compared to traditional schools. These high performing schools have allocated similar levels of instructional resources to achieve:

- o *Smaller instructional groups in focus areas.* In the elementary schools studied, regular education reading group sizes averaged six in two of the schools and 18 in the other, compared to an average of 20 in traditional schools. In secondary schools, class sizes averaged 30% lower in academic areas than in traditional schools

- o *Longer instructional periods.* In secondary schools, the average length of academic instructional periods is nearly double the traditional 42 minute period.

- o *Lower teacher student loads.* The two secondary schools studied have moved from the traditional level of 150 students per semester to 36 at one school and 75 at the other.

- o *More common planning time.* All schools have at least an additional 2 hours per week in common planning time than do traditional schools; most of the restructured schools have significantly longer blocks of planning time.

Interviews, observation and document analysis in these nontraditional schools indicate that five sets of barriers to more flexible allocation of teaching resources existed in some of the schools, particularly those that were not "alternative schools" and therefore had to contend with traditional governance and management rules. First, a host of union, state and district policies constrained school flexibility in scheduling the teacher work day or working calendar. Second, lack of control over the selection and retention of teachers sharing similar values, commitment to and understanding of the school's approach made creating and maintaining momentum for change difficult. Third, teachers' reluctance to make decisions that might be uncomfortable for

their peers limited restructuring by some teacher teams. Fourth, state and district policies and collective bargaining rules about student assignment and grouping limited teacher prerogative in grouping students especially with regard to; special education inclusion, class size and grade structure. Finally, district and state testing programs sometimes limited and frustrated schools' efforts to raise academic standards and focus on higher order thinking skills if their attempts altered the sequence or content of instruction.

Teachers in these restructured schools found they needed new knowledge and skills to perform new roles. Areas which teachers and leaders of the new schools stressed most often include:

- o Developing and learning new curriculum material
- o Developing new instructional techniques to engage a wider range of learners and take advantage of longer blocks of instructional time
- o Diagnosing the learning needs of a more diverse group of learners (especially special education students)
- o Assessing the progress of a wide range of learners
- o Working in teams
- o Supervising interns or aides.

Teachers developed the skills and knowledge they need to implement new school designs as they go along. In these high performing schools, learning happens through five related vehicles which vary in importance depending on the school's context. These include: 1) teachers learning from one another in team planning, curriculum development and teaching; 2) formal coursework or in-service tied to the school's strategy; 3) principal or peer coaching and teacher evaluation; 4) local or national networks of schools attempting similar redesign; and 5)

individual professional reading and classroom research.

Introduction

While school reform proposals vary in their details, all call for dramatically improving student achievement. Plans to accomplish that goal typically include implementing a high standards curriculum program, instructional strategies that create more time for individual attention for students, and increasing time for school wide teacher planning and learning . In an era of belt-tightening and rising student enrollment, finding the resources to do this will require schools to reexamine the use of every dollar. Much publicity has surrounded efforts to redirect dollars from administrative or operational functions back into the classrooms. At the same time, little attention has been given to rethinking the use of existing instructional resources -- instructors, support professionals and technology -- schools' most important and expensive resources.

Reform after reform initiative has faded away with little effect on the basic organization of schools. The typical school has approximately one teacher for every 18 students and one adult for every 9 students (NCES, 1994). Despite the apparent potential for individual attention and planning time for teachers, class sizes are well over 25 for most students most of time, teacher student loads exceed 120 in most secondary schools and teacher planning time is fragmented and un-coordinated. As Seymour Sarason (1982) has written:

The fact is that one of the major factors maximizing the gulf between educational goals and accomplishments has been the way resources have been defined... There is a universe of alternatives one can consider and if we do not confront that universe, it is largely because we are committed to a way of defining who should be in the classroom.... One teacher to one classroom is not an end in itself, but one means of providing more time for individual students when needed (pp. 275, 284).

The Consortium for Policy Research in Education and the National Center for Restructuring Education, Schools, and Teaching wanted to contribute to this discussion of alternative ways of organizing instructional resources by describing in detail how a few schools have broken with tradition and improved student achievement significantly in doing so. Case studies of five schools illustrate possibilities and highlight the conditions which appear to facilitate or limit this kind of restructuring of resources.

This paper has five sections. Section one outlines a framework for thinking about opportunities to re-examine the use of resources. Section two describes the methodology used to select and analyze innovative schools. Section three summarizes the findings by describing each sample school in detail and then comparing them to each other and to traditional schools. The final two sections summarize the barriers that exist to reorganizing resources and the ways teachers say they are learning to teach more effectively in new school designs.

1. Opportunities for Fundamental Reallocation of Resources

Finding resources to create more individual time for students and increased professional time for teachers without prohibitively raising costs, demands rethinking the existing organization of resources. Researchers and observers have commented on the striking similarity across districts and over time, in the organization of schools and distribution of resources. Tyack (1993) describes age-grading, subject specialization, and the isolation of teachers in self contained classrooms as the "grammar of schooling" (Tyack, 1993). Sarason (1982) has called this constancy in school organization "school regularities." Looking across the country at school

district spending, Odden and his colleagues (1995) have dubbed the phenomenon, "fiscal regularities." A recent analysis by the Economic Policy Institute (EPI), shows that although regular classrooms have gotten smaller since the 1960s, the basic staffing patterns in schools have remained essentially the same, and the basic salary structure in which all teachers move up a uniform salary scale based on time in job and university credits has remained largely unchanged (Rothstein and Miles, 1995).

However, even as schools have added instructional staff to provide more teacher planning time and to accommodate the escalating population of students with special needs, the number of classroom teachers has declined. Since 1950 the proportion of school staff who are classified as teachers has dropped from 70% to 53%, of whom only about 3/4 are regularly engaged in classroom teaching (National Commission on Teaching and America's Future (NCTAF), 1996). The number of nonteaching professional staff and nonteaching support staff have both grown substantially. By contrast, 60% to 80% of education staff in most European countries are classroom teachers, allowing for much greater flexibility in the use of teacher time. Teachers abroad often have 15 to 20 hours per week for collaborative planning and professional development (NCTAF, 1996), time which directly increases their knowledge and skills.

To meet the new demands of schooling, schools might rethink the use of instructional dollars in and among three areas: teachers, support professionals, and technology. As Figure 1 shows, within teaching resources, schools might examine the allocation and assignment of teachers, the distribution of salaries, and the types and roles of different kinds of instructors, such as interns, assistants, aides and outside contractors. Schools could also alter the distribution of resources over several years of a student's career or across subject areas. For

example, a school might concentrate resources in grades K-2 to ensure that all students get a solid foundation in reading, allowing reduced resources in future years, or spend more resources on the teaching of writing in high schools to support more productive student performance across the content areas.

One of the most underexplored and complex areas of potential resource reallocation is use and assignment of teaching staff. The National Center for Education Statistics reports 18 pupils for every teacher nationwide, with urban schools averaging slightly fewer pupils per teacher (NCES, 1994). Eighteen-to-one would suggest the opportunity for flexibility and individualization in programming and scheduling. But, these averages do not describe reality for most teachers and students. Class size is often much higher (between 24 and 28) for most students, teachers see more than 120 students daily in most secondary schools, and teacher planning time is fragmented and un-coordinated. This is partly because many individuals classified as teachers are not responsible for regular classrooms of children, working in specialist positions or as pullout teachers instead. In addition, the highly specialized, bureaucratic organization of teaching which groups students and teachers by age, subject, and program makes it difficult to use teaching resources flexibly.

Analysis of the allocation of teaching resources in Boston identifies five educational and management practices which explain this difference between the apparently rich potential and reality (Miles, 1995). These findings help to build a conceptual framework for understanding the use of resources in both traditional and untraditional schools.

The Case of Boston

1. *Specialized programs.* In most school districts, a significant portion of teachers work outside the regular classroom with special populations of students in separate programs such as special education, Title 1, bilingual, remedial and gifted. This number has increased significantly in recent years. The Economic Policy Institute found that programs for special student populations have absorbed 58% of the new dollars devoted to education from 1967 to 1991 (Rothstein and Miles, 1995). Many of these programs operate under federal, state, district, and sometimes collective bargaining regulations that restrict the way in which these teachers may be used and how students may be grouped. Most districts operate these programs largely using a "pull-out" model in which students leave the regular classroom for all or part of the day for remedial instruction in small groups. In 1991 in Boston, teachers in specialized programs working outside the regular classroom represented over 40% of the teaching force.

2. *Planning Time.* Currently most school districts provide teachers with planning time in short fragmented periods while using other classroom teachers to give instruction at these times. At the elementary level, teachers typically have a 45 minute duty-free period four or five times a week which is typically covered by specialists in art, music or physical education. In 1991, this represented 9% of Boston's elementary teaching resources. At the secondary level, a teacher might teach five of 7 instructional periods. Other teachers cover instruction during the 30% of the student's instructional day during which the teacher is not teaching. Generally, teachers spend one of these periods planning and the other covering noninstructional duties ranging from hall duty or cafeteria duty to coordination of in-school programs. Although secondary teachers have somewhat more preparation time than elementary teachers (about 5 hours per week as opposed to 3), the short fragmented blocks of non-instructional time in the

current structure do not allow much substantive planning and collaboration. These activities require longer blocks of uninterrupted time that is co-ordinated with other teachers.

3. *Formula Driven Student Assignment.* Following the factory model of efficiency and standardization, the process of American schooling has been broken into small specialized pieces through which students are expected to move at an even, uniform rate. In this model, districts use formulas to assign students to classrooms in a regularized fashion by pupil age, subject and program. Much has been written regarding the educational shortcomings of this factory-like model (Darling-Hammond, 1996, 1997). But, these formulas are also costly because the uneven allocation of teachers over grades, small programs or undersubscribed subjects contributes to unplanned differences in class size which do not reflect educational strategies.

For example, using formulas to allocate students to classrooms by age can create huge variation in elementary class sizes. As an illustration, Boston Public School's class sizes are capped at 28 at the elementary level. When the 29th student enters a school with only one class in that grade, a new teacher must be added. Thus, the class size average falls dramatically from 28 to 14.5. Small schools with few classrooms per grade cause this phenomenon to happen fairly often despite administrators' efforts to control it. Regular elementary class sizes in Boston's 645 elementary classes varied from 15 to 31 in 1991. It was not unusual to find class size differences of 8 or 9 students from one grade to another in the same school. School level regrouping of students across grades (for example, multiage, multigrade classrooms) would offer teachers the chance to create more even class sizes. The regrouping also offers opportunity to place students more appropriately to meet their developmental needs (Pavan, 1995).

4. *Fragmented High School Schedules and Curriculum.* Curriculum and scheduling

traditions constitute the final set of practices limiting time for individual attention and teacher planning. The problems of age grading are compounded by tracking, program schedules, and teacher and subject specialization. Perhaps the most unfortunate effect of this fragmented daily schedule is its impact on student loads. In 1991, the majority of Boston's middle and high schools scheduled students for seven, 45 minute periods a day. With five classes of 25 students in middle school and 30 in high school, each teacher worked with 125 to 150 students per day. Reducing teaching loads without dramatically increasing costs demands rethinking curriculum and scheduling to lengthen the duration of classes with each teacher. That is, instead of seven, 45-minute courses per day, students and teachers might have four sessions a day lasting over an hour. This could be accomplished either by combining traditionally separate subjects or by segmenting the school's year into learning institutes and allowing smaller groups of students to work intensively with teachers in smaller numbers of subjects, much as is done in colleges and universities (Carroll, 1995).

5. *Large High Schools.* Nationwide, secondary schools average nearly twice the size of elementary schools (NCES, 1994, Table 95). Schools get larger as students progress through the system. Boston's high schools average more than 1,000 students, nearly three times the size of the city's elementary schools and twice as large as the average middle school. Comprehensive high schools in New York City average over 2,000 students, and some are well over 3,000 students. The conventional justification for this size difference is that larger enrollments create economies of scale by distributing administrative and operating costs and allowing cost-effective offering of a more diverse curriculum. However, existing research suggests that high schools have created more internal specialization and departmentalization than

can be scientifically justified (Lee, Bryk and Smith, 1993). A number of studies have found that larger schools do not increase average achievement but they do lead to increased alienation and detachment of students and teachers, higher dropout rates, and larger numbers of administrative staff, thereby deflecting resources from classroom instruction (For reviews, see Lee, Bryk and Smith, 1993; Darling-Hammond, 1997). These findings on school size suggest that schools need to find ways to create more personal learning environments without significantly adding to administrative costs or substantially reducing students' access to diverse programmatic offerings.

Principles for Rethinking Resource Allocation

In summary, the above analysis of traditional allocation of teaching resources highlights five opportunities for realigning teaching resources to provide more individualized attention and more effective time for planning (Miles, 1995). The five opportunities include:

1. Reduction of specialized programs and creation of more generalized roles for teachers. As described, traditional schools separate teaching resources by program and subject often fragmenting the student's educational experience and adding resources for "special" students in ways that do not improve education for them or for most of the students in the "regular education" program. Schools rethinking resources will consider how remedial, special education, Title 1 and bilingual resources might work together to support an integrated plan to benefit these students in the "regular education" setting.

2. More flexible student grouping targeted to individual student needs. Traditional schools assign teachers and students to classrooms using formulas and classifications of students such as age, program (special education, bilingual, Title 1) and ability. Group sizes stay constant over the day regardless of lesson and skill level. Schools looking to better match resources to student needs will consider new ways of assigning students to groups based on educational strategies.

3. Structures that enable personal relationships. The traditional large

secondary school with its fragmented schedules and heavy student loads makes it difficult for students and teachers to know one another. To address these issues, schools must also consider ways of restructuring schedules and grouping to reduce teacher loads and create smaller contained groups of students and teachers.

4. Longer and more varied blocks of instructional time. Traditional schools have created inflexible, fragmented daily schedules. Schools reconsidering ways of more effectively matching resources to teaching and student needs will look at how to better match the daily schedule to learning requirements.

5. Creation of more usable common planning and professional development time for teachers. Traditional schools have not designed non-instructional time to enable significant joint curriculum or professional development. Schools rethinking their use of teaching resources must consider ways of creating longer periods of time for teachers to plan and develop curriculum together.

Figure 2 combines these five teacher allocation practices with the other resource levers schools could re-examine (described in Figure 1) into a framework for thinking about new possibilities for use of teaching resources. Whereas some of these opportunities, such as redesigning the school schedules and creating multi-aged grouping, have received a great deal of recent attention, the issues of teacher salary distribution and the roles and types of teachers have been unexplored until recently. (See Odden and Kelley, forthcoming, for an examination of teacher compensation innovations.) Further, many of these opportunities free only a small portion of resources by themselves and so must be considered together to generate significant flexibility (Miles, 1995). A number of recent surveys suggest that public schools engaging in a comprehensive reallocation of resources are quite rare (Rettig and Canady, 1993).

2. Study Methods and Analytic Framework

This section outlines the methods used to select five case study sites, the data collection

process and the analytic framework used.

Sample

To create a sample of schools that could offer insight into the possibilities and challenges to rethinking the allocation of instructional resources in public schools, the study sought a balance of elementary and secondary schools each of which:

1. Has engaged in a significant rethinking of resources touching on at least four of the resource principles listed above.
2. Uses no significant extra resources above the school system average per pupil except start-up or training grants.
3. Serves a diverse student population in terms of income, ability and percent of bilingual and special needs students.
4. Has used a new model of organization for at least 2^o years, to allow examination of and reflection on the benefits and challenges of the new approach.
5. Has strong evidence that the changes have improved student performance.

To find such schools, experts involved in reform networks nationwide were surveyed.

The five schools eventually selected represent a number of different educational strategies and organizations. Three of the schools are "model" schools which started from scratch, and had considerable flexibility in hiring their staff and designing their programs. The other two schools have restructured existing programs and staff. The sample includes the following three elementary schools and two secondary schools.

Quebec Heights Elementary School, Cincinnati, Ohio had, at the time of the study, 500 students in grades K-6, with 15% classified as having special education needs and 70% eligible for Title 1. Quebec Heights eliminated age- and program-based instructional grouping and put students in smaller, multi-aged, heterogeneous groups that remain together for 3 years. The

school created reading groups of 8 or smaller each day. Teachers have common planning time each day and selected teachers pursue professional development in the school's priority areas during the school day. Cohort analysis of student performance data shows both special education and regular education students have improved faster than the Cincinnati average.

The *Douglass Elementary School, Memphis, Tennessee* had 475 students with 17% classified as special education and 88% qualifying for Title 1 support. The school was in its third year of implementing the "Success for All" program which restructured school resources to allow 90 minutes a day of reading and daily individual tutoring for first and second graders who did not meet grade level standards. In addition, the Douglass school was working to integrate its special education resource students and teachers fully into the regular classroom. After the second year of implementing the program, the percent of second graders (the only students with two years of the new model) scoring at or above the median in language arts moved from 17% to 59%. In addition, the school's evaluation of special education integration showed these students continuing to progress academically and socially.

The *Mary C. Lyons Model Elementary School, Boston Massachusetts* is a school of 90 students in grades K-5, 60 of whom are classified as regular education and 30 of whom have severe emotional disturbances that previously required placement in highly restrictive settings. Over 80% of students qualify for Title 1. The Mary Lyons School fully integrated all special education students to create class sizes of 15 or smaller for all, each class with a teacher and instructional assistant. As Table 2 shows, Lyons redefined the school day, creating extended school hours lasting from 7:00 am to 5:15 pm. Lyons school is also the only elementary school studied that used outside contractors to provide instruction and a variety of different staffing

arrangements including paraprofessionals, teacher interns, part-time workers, and staggered shifts. The school was one of 15 (out of 115) Boston schools to be over-chosen by every race for both special education and regular education slots for three years in a row. Standardized achievement test scores showed both special education and regular education students improved faster than the Boston average and that 100% of the students were reading on grade level.

Central Park East Secondary School, New York, New York served 450 students in grades 7 through 12, about 25% of whom qualified for special education and 60% of for free or reduced price lunch. All students are integrated into heterogeneous classrooms. The school restructured the typical daily secondary schedule to create two hour blocks of instructional time in the humanities and math/science. Teachers had more than 7 hours each week of common planning time in addition to their daily individual preparation period. To reduce academic group sizes, Central Park East (CPESS) eliminated guidance counselors and most administrative positions and converted them to teaching positions. All professional staff members lead advisory groups of about 10 to 12 students which meet three hours a week. The school contracts with outside providers for some elective coursework like foreign language instruction. Central Park East has been nationally heralded for its consistently exceptional rates of graduation and admission to colleges relative to New York City schools: more than 90% of its students graduate and more than 90% are accepted to four-year colleges.

International High, New York, New York is an alternative school of 475 students in grades 9 through 12 that serves recent immigrants. Only students who have been in the United States less than 4 years and who score below the 20th percentile on an English language proficiency exam are admitted. Over 75% of the students were eligible for free or reduced price

lunch. International offers a high school curriculum that integrates all state-mandated subject matter in an interdisciplinary curriculum taught in multi-aged heterogeneous groups. Teachers work with no more than 75 students at once and spend 70 minutes or more with them each day. The teachers have nearly six hours each week of common planning and professional development time. All staff members lead a small advisory group which meets weekly to discuss issues of personal, academic, and social growth. Despite its "high risk" population, the school's dropout rate was less than 1% in 1993-94 as compared to 30% citywide. In 1993, both the graduation rate and college acceptance rates exceeded 95%. The school has won numerous national and local awards honoring its achievements.

Figure 3 summarizes the resource allocation strategies used in the five sample schools. As the table demonstrates, each school implemented many strategies for allocating teachers and teaching time to better match student needs and create more planning time. Only the three schools with alternative status -- Lyons, Central Park East and International -- created differentiated teaching roles by contracting with other providers for teaching or restructuring some teaching positions. The high schools studied have reallocated nonteaching professional positions in order to have more classroom teachers. Two of the elementary schools -- Lyons and Quebec -- redistributed resources toward the earliest years of elementary school, reasoning that investments to help students gain basic skills early would prevent the need for later remediation. None of the schools in this study addressed the structure or distribution of teaching salaries, because they operate as part of their district's overall salary structure. Though some of the schools studied actively employ computer technology in their instruction, none significantly altered the balance of dollars going to teachers versus technology.

Data Collection

To understand the resource allocation practices in each of the five models, we collected information about school expenditures, staffing and student scheduling. In addition, district level budget and staffing information enabled comparisons of the sample schools to more traditional schools. This analysis focused on the resources used to provide and support the academic program and support services of the school. The costs of operating a school include provision and support of the academic program, administration and support services, provision and maintenance of the physical plant and auxiliary services like food, transportation, and security. Comparison of the costs of physical plant maintenance and other services across these school districts was not feasible within the scope of this work. These costs vary for many reasons independent of educational strategy, such as the age and size of the buildings, cost of utilities, and zoning within the school district.

Researchers conducted interviews with administrators and teachers and examined available written material at each school regarding the benefits and challenges of reorganization.¹ Where possible, staff meetings were observed.

Through interviews, observation, and document analysis, researchers also explored whether and how schools faced contractual, regulatory or policy barriers to changing the allocation of resources. Interviewers asked teachers and administrators to describe how they made each of the organizational changes critical to the model and to highlight the issues that have been the most difficult for them.

To understand whether teachers saw themselves as needing new or different skills in these

organizations and if so, how they developed them, researchers asked teachers to describe their roles in these restructured schools and to contrast them to teaching in a more traditional school. Teachers were asked to highlight those changes which posed the most significant learning challenges and those professional development vehicles they found most useful in helping them acquire new knowledge and skills.

Analytic Framework

Each school used different strategies to implement the common principles of resource allocation outlined earlier. In addition to describing these strategies, this study attempted to create measures which allowed comparison of resource allocation patterns between the models and compared to traditional schools. Doing this required two steps; developing useful measures and creating a meaningful "traditional school" comparisons.

The measures were developed by taking each resource allocation principle and hypothesizing the quantifiable impact it might have on resources, then testing whether this impact existed by using several indices. The indices aim to be:

- o descriptive of what is happening in both traditional and untraditional schools,
- o easy to understand, and
- o replicable.

Choosing measures that accurately portrayed what was happening in the more fluidly organized sample schools and still allowed comparison to traditional schools created a tension between finding easily understood and calculated measures and developing measures that can provide meaningful description. The subtleties involved can be seen through one example, the

attempt to measure the impact of the principle, "reduction of specialized programs to create more individual time for all". In a traditional school, regular class size provides a useful gauge of how much access to individual attention a student might have. But, regular class size does not reflect the regular education student's experience in some innovative schools because it does not describe the way these schools organize over the day and by subject. For example, the regular class sizes of 24 at Quebec Heights school gives a distorted picture of student experience, because all students spent 90 minutes a day in groups of 8 for reading. In order to capture the additional individual time for all students, a measure of average instructional group size, rather than regular class size, is used. This measure demands greater descriptive knowledge of a school, but it more accurately reflects student experience.

Figure 4 summarizes the measures used for each resource allocation principle.

The first principle, "*Reduction of specialized programs to create more individual time for all in heterogeneous instructional groups*" should lead to smaller average instructional groups for all regular education students and more even distribution of resources between regular and special program students. Three measures helped assess the extent to which innovative schools differed from traditional schools here.

- 1) Students per teacher: This number includes all teachers and students in the school from all programs. At the school level, our sample schools had roughly similar numbers of students per teacher. However, a school can reduce its functional student to

teacher ratio by converting non-teaching professionals to teaching roles. For example, Central Park East School has converted its guidance counselor, assistant principal, and librarian roles to teachers. This gave them smaller ratios of students to teachers than a traditional school with the same student population. The index of students per teacher indicates only the opportunity to create small, flexible instructional groups. It does not reflect the actual size of the groups in which most students spend time.

2) Weight Average Group size: This measure calculates the weight average size of the instructional group which a regular education student experiences over the day for academic subjects. It incorporates the time spent in different group sizes over the day for typical students. So, for example if students in a classroom of 24 spent 90 minutes a day (25% of their school day not including lunch) in reading groups of 8, then the weight average group size would be 20 (.75 times 24 plus .25 times 8). In a traditional school, the average group size and the regular class size would be the same. This measure may offer a clearer sense of how much access to individual attention most students in the school have.

3) Percent of teachers in regular education instructional groups: This figure divides the number of teachers who work with regular education students (including classroom teachers, subject specialists and other teachers who work all day instructing groups which include regular education students) by the total number of teachers in the school. The figure gives a sense of the extent to which a school has concentrated its resources on core classroom functions as opposed

to special or pullout programs of various kinds.

The second principle, *more flexible student grouping by school professionals*, should allow educators to create instructional groupings which more closely match instructional needs. As described above, strict formulas which mandate the size of groups and classrooms can create situations where the size of groups vary for no educational reason. When teachers can create their own groups using criteria linked to educational strategies, they can reduce these unplanned variations and create a strategy which maximizes the use of limited resources. The percent of regular education students in targeted group sizes represents the extent to which a school has minimized random variation in class size. In traditional schools, where no group size target existed other than the contractually defined class size maximums, I measured how many students were in classes which were at the average size.² More flexible student grouping also allows teachers to create smaller groups for target subject areas. The average size of instructional groups in focus area measures how schools focused resources to create more individualized attention in some subjects where they did so. If some regular education students spent time in much smaller instructional groups, this would be reflected in the average by calculating the percent of students receiving such support.

Four aspects of the third principle, *structures to support more personal relationships between teachers and students*, lend themselves to measurement. First, a primary indicator of a teacher's opportunity to invest time in building relationships with each student is the academic teacher's student load. A second indicator of a school's effort to maximize personal relationships might be the percent of professionals who serve as instructors or advisors to groups of regular education

students. In calculating this measure, only professionals who work with regularly scheduled groups of students in an ongoing fashion were included. Thus, an assistant principal who worked with occasional discipline problems or a guidance counselor meeting once with each of 200 students to ensure compliance with graduation requirements would not be included. Though these singular contacts with students can be important, they do not aim to build long term, personal relationships between school professionals and students. The average size of teacher and student teams or clusters provides a third measure of the opportunity to create a more personal educational environment. For this measure, student-teacher teams had to be self-managing and self-contained. This means that virtually all instruction occurs within the cluster and that the cluster has primary responsibility for curriculum, grouping, discipline, and evaluation of its students. A final strategy schools might use to create personal relationships would be to keep teachers and students together for longer than the typical year. Thus, we include a measure of the number of years teachers and students stay together.

The extent to which sample schools created *longer and more varied blocks of instructional time*, is measured by the average scheduled length of instructional period for academic subjects in secondary schools. In some of the schools studied, teachers regularly vary the length of instruction from the schedule to suit the particular lesson. These variations were not calculated here.

Finally, two measures are used to understand how different our sample schools were in applying the fifth principle of creating *more useful common planning time for teachers*. First, the number of minutes of common planning time is defined as time which is shared with other

teachers who are part of the same instructional team. A second important indicator of the usefulness of the planning time is the length of the longest planning period. For some kinds of planning and development, teachers need time periods longer than the typical 40 to 50 minutes.

Each innovative school is compared with a typical school in the same district with a similar student population. Meaningful comparisons must include an adjustment for the mix of students eligible for special services because schools typically receive additional resources to serve them. Adjusted for student mix, the schools in this sample used the same or fewer resources than traditional schools on an ongoing basis. In two cases, no "traditional" school existed in the district which served the same mix of students as our sample sites. Lyons elementary school in Boston draws a large percentage of its population from students typically served by private schools. In this case, a hypothetical comparison was created, based on the assumption that these students were served in separate, self-contained classrooms of 4 each, the smallest existing class size. Social services and other support staff were assumed to be at the same level as the Lyons school.

The International School in New York City serves a unique population of limited English speaking students speaking 40 different languages. Traditional schools serve such students through many distinct bilingual programs and ESL courses offered separately from the rest of the high school curriculum, but do not typically have 100% of their population requiring such services. To create a comparison to the International school, we used the NYC staffing allocation formula to determine the number of teachers the school would have received and assumed the additional resources would be used outside the regular program to provide

additional remedial support to bilingual students through bilingual classrooms and ESL classes. Although this generous assumption about universal ESL services to limited English proficient students does not hold true in any of New York's traditional schools, it does offer a best case scenario for the allocation of resources in a traditional model.

These calculations are intended to provoke discussion and to provide an objective way of comparing schools to each other. Obviously, other factors contribute to the opportunity for individual attention and the creation of teacher time which these measures do not incorporate. For example, a teacher in a class of 24 may use sophisticated grouping practices which allow her to provide targeted individual or small group instruction to students throughout the day, while others are working in groups. These variations in grouping strategies are not incorporated into this measurement scheme unless the entire school uses the strategy. The existence of planning and development time does not guarantee that it is used to improve teaching quality. Further, many schools find common planning time for teachers outside the school day on a volunteer basis. Thus, these measures are intended to be used in conjunction with a descriptive understanding of the way a school has organized to match teaching resources to students needs and to provide opportunity for teacher growth.

3. Study Findings

This section considers elementary and secondary schools separately because they begin from such different organizational structures. With their relatively small teaching loads and

self-contained multi-subject classrooms, elementary schools already allow more flexible, individual instruction. But their simple structures, with limited teacher time free from instruction, do not offer the same opportunities for freeing time and resources as secondary schools. Because of these simpler daily schedules, reducing the use of pull-out programs for special education, language and Chapter 1 instruction becomes a primary lever for creating smaller groups for all in elementary schools. In contrast, traditional secondary schools, with their fragmented daily schedules, large teaching loads and greater amounts of nonteaching time offer more numerous ways to reconfigure their resources.

Elementary Schools

Figure 4 presents the resource allocation measures for the three elementary schools. In the three urban districts studied, the traditional schools served regular education students in age-graded, self-contained classrooms. About 75% of the teachers worked with regular education students, the other 25% worked with Title 1 and special education students outside the regular classroom. Because all of these schools are in urban areas, with high concentrations of students in poverty, even the traditional schools were using at least some of their Title 1 teachers as regular classroom teachers. Thus, their regular education class sizes averaged between 19 and 22. Class composition and class size stayed the same all day, for all subjects, except when students were pulled out for special education or Title 1 instruction. The elementary classroom teacher instructed all subjects except specialties like art, music, and gym which were taught by specialists during the classroom teacher's free period. Teachers had 45 minutes 3 to 5 times a week free from instruction in addition to short lunch periods. These times were not

co-ordinated with other teachers in any systematic way.

Reduction of Specialized Programs

In departing from this organization, all of the sample schools increased the percentage of teachers who worked with all students regardless of program. As Figure 5 shows, the percent of teachers working with heterogeneous groups of students in the regular education program ranged from 28% to 77% in the traditional comparison schools and from 91% to 100% in the restructured schools. The only teachers not working with heterogeneous groups of students were teachers of special education students in substantially separate classrooms at Quebec Heights.

Each elementary school used different levers for realigning instructional resources to better match student needs. Quebec Heights has used multi-age grouping to drive its strategy. As Figure 6 shows, the Quebec Heights strategy reduced specialization in three ways. First, they assigned students to multi-age clusters, called "families," containing three to four teachers and 75 to 85 students each. The "families" span three grades - either primary (grades 1-3) or intermediate (4-6) and remain together for three years. Students may work with any instructor within the family during the day but they each have a homeroom teacher who has primary responsibility for an average class of 22 students for the full year. Rather than divide the curriculum by age level, all students in the family study the same basic curriculum during the year, but at their own developmental level. This means, for example, that some first graders may study topics traditionally included in a the third grade curriculum. To allow this less rigid approach to content coverage, the Cincinnati school district developed promotion standards

which students must meet at the end of grades three and six as well as yearly promotion standards which help teachers ensure that students attain critical skill levels each year.

Second, Quebec Heights eliminated separate Title 1 programs and used these resources to reduce the size of reading groups for all students. Third, special education students and resource teachers were fully integrated into the families. In the primary grades, the special education resource teacher works as one of 4 teachers in a team responsible for a group of 85 regular and special education students.

The Douglass Elementary School in Memphis used its Title 1 budget as its primary lever for rethinking resources to improve student performance (Figure 7). Because 97% of its students qualify for Title 1 assistance, Douglass has long been free to use Title 1 dollars across the school. At approximately \$250,000 dollars per year, these resources represent nearly 20% of the school budget. Unlike any other school in this sample, Douglass restructured resources using an existing model for improving student performance, the "Success for All" program. Following this model, Douglass uses Title 1 dollars to hire reading teachers to work as one on one tutors with students not meeting reading standards in the first and second grades. These teachers plus all special education teachers combine with regular classroom teachers to reduce the size of instructional groups from 24 to about 17 for 90 minutes of reading a day for all students. However, class sizes remain at 24 for the rest of the day.

Prior to implementing Success for All, Douglass used Chapter 1 dollars for regular classroom teachers and had classes averaging 17 across the school. To implement Success for All, Douglass raised class sizes to reduce group sizes for reading only and to provide targeted tutoring assistance to ensure all students are reading by third grade. In addition to raising class

sizes for other subjects, the Douglass redirected resources from grades 3-6 to the early grades. The decision to take resources away from some students and teachers to focus on others can be a tension producing one. Douglass's use of an established model which included clear staffing requirements minimized this friction. As one teacher put it, " Everything is specified by 'Success for All', we didn't consider quarreling with it because research shows this works." Principal Myra Whitney added; "We had slowly reduced all class sizes over the years with no plan for how anything in the classroom would change. It wasn't working, our students were still at the bottom in reading."

Douglass also used Success for All as a catalyst for including its special education teachers and students in the regular classroom. By the third year of the program, all students and teachers from previously self-contained classrooms as well as resource rooms spent most of their time in heterogeneous groups. During the daily 90 minutes of Success for All reading time, special needs students worked in heterogeneous groups depending on students' skill levels. Special education teachers also took responsibility for a reading group. This further reduced the size of reading groups for all students. During most of the rest of the day special education teachers team taught with regular education teachers. Co-operative learning plays a large role in Success for All classrooms, making the integration of special education students easier. Special education teachers spend approximately one quarter of their time performing individual assessments and working with regular education and special education students needing more targeted help outside the regular classroom.

While Quebec Heights used age grading and the Douglass used Title 1, the Mary Lyons

School (Figure 8) used the reallocation of special education dollars as a redesign lever (Lyons, 1995). By including special education students, previously educated in a private setting at a cost of over \$30,000 each per year, along with regular education students, Lyons created a unique, individualized environment for students and teachers. Mary Lyons is open to all students from 7:15 a.m. to 5:00 p.m. daily. Each classroom from Kindergarten to grade 5 is no larger than 15 students; it is staffed by a teacher, a teacher intern, and an after-school teacher. Each classroom included 10 "regular" education students and 5 students with severe emotional/behavioral issues, who were formerly placed in private schools. Academic teachers had close to two hours daily of common planning time.

The Lyons School paired six classroom teachers with six teaching interns who each worked with 10 regular education students and 5 emotionally disturbed students. Three of the classroom teachers had regular education certification and three had special education. This unusual integration of special education students and teachers is not financially driven, but guided by a school wide belief that schools must meet children's needs at their level of development, both academically and emotionally. The staff aims to give students confidence in their ability to learn solutions and solve problems, whether they are academic or social. They teach that each person is responsible for putting forth their best effort in whatever they set out to do; and that there is no disgrace in not knowing something or in making a mistake -- only in not trying to learn. Children work cooperatively with each other and learn to recognize and be helpful when their peers are having difficulty. Teachers try to help students learn that it takes different people different amounts of time to learn the same concepts or behaviors.

Because the idea of integrating seriously disturbed students in regular education classes is new, we ask all of our parents to test us and come to our school

unannounced, anytime.... We believe that when they visit us, they will see a well run, quiet and productive learning environment for all students. We also believe that we have been so effective as a team, that upon your arrival to our school, you will not be able to distinguish the seriously emotionally disturbed students from their regular education peers (add cite).

Making this happen demanded teachers and principal to work together to create a consistent school environment as well as to develop complex behavior management strategies.

In addition to the total integration of special education students, virtually all teaching resources at the Lyons supported this design, including Title 1 funds and funds which would have paid for subject specialists in traditional schools. A typical Boston elementary school has four subject specialists, in art, music, p.e. and usually computer to supplement instruction and cover planning time for classroom teachers. With only 90 students, the Lyons could not support specialists in these areas. Instead, Lyons pooled these dollars to contracted provision of art and music as well as part of the after school program.

In summary, while each elementary school pooled its resources from special programs to support its core design, sample schools employed freed dollars in two distinctly different ways. The Quebec Heights and Douglass schools raised regular education class sizes and redirected funds to reduce reading group sizes. Lyons used the funds freed from eliminating separate programs to lower teacher student ratios dramatically all day, moving from a class size of 19 in a traditional Boston school to 1 teacher and a highly trained teaching intern for 13 students.

More Flexible Student Grouping

Perhaps the most striking difference between the sample elementary schools and

traditional schools is the proactive and strategic way in which teachers matched students to instructional groups. In a traditional school, administrators assign students to yearlong programs and classrooms. These groupings stay constant across the day and subject. Teachers in sample schools used their knowledge of student needs, rather than a student's program classification or age, to assign each to a regular homeroom classroom and to manage their instruction throughout the day. In addition, both the Douglass schools and Quebec Heights created significantly smaller instructional groups for reading.

Traditional schools must accept variations in class sizes driven purely by swings in enrollment. Because of Boston's school choice plan, the Lyons could cap the number of students by grade through the student assignment process. Because the Douglass and Quebec Heights draw from the entire pool of students from two or three grades, teachers could control group sizes more closely. For example, at Douglass, the number of students in each age group varied from 45 in grade six, to 73 in grade 1. If Douglass had used age-based grading, class sizes in the first and second grade would have been 24 and 26 respectively, with class sizes declining as the student moved toward sixth grade. Instead, the Douglass staff combined grades to create smaller groups of 23 in the first three grades and groups of 26 in the intermediate grades. Thus, sample schools exerted more control in creating class size groupings by combining age and program so that 100% of students were in targeted class sizes rather than the 60 to 65% who would have been in such group sizes using traditional age grading.

In sample schools the size of regular education reading groups was significantly smaller than in traditional schools. Quebec Heights and Lyons organized staff to allow groups of seven and six respectively. Quebec Heights created these small instructional groups by systematically

rotating Chapter 1 teachers and instructional assistants through regular classrooms, so that each classroom had three instructors for 90 minutes of reading time per day. These instructional groupings for reading changed as often as daily. The primary classroom teacher at Quebec Heights determined the composition of the groups and content of lessons daily based on consultation with the expert reading teachers and review of students' progress in specific areas. Some lessons divided students into groups based on areas where they need further skill development, others grouped students heterogeneously to discuss reading content.

Quebec Heights' grouping strategy for reading involved two tradeoffs. First, in order to adequately staff reading groups, instructional assistants from the intermediate level had to be allocated to primary grade teachers. Second, the reading teachers were no longer responsible for a homeroom class of students as they were in a more traditional school wide model. This concentration of resources on the reading rotation meant that homeroom class sizes were one student larger on average.

Lyons used the classroom teacher and teaching intern to create reading groups of six. At Douglass, all students spent 90 minutes per day in reading groups of 15-17, down from the average of 24 for other subjects, and compared to 22 at traditional schools. The composition of these reading groups varied each day and over the course of the year depending on the teachers' assessment of student needs. A team including the teachers, reading specialists, and the Success for All facilitator assigned students to skill-based reading groups across grades using formal assessments every six weeks. Since assignment to groups indicated skill level, as opposed to a more static assignment of aptitude, the student moved on once he/she demonstrated these skills. Thus, students did not move through groupings together and each group includes

a range of ages. Students not mastering skills by agreed upon times received one-on-one tutoring for 20 minutes each day from the three reading specialists. At Douglass, about 15% of first and second grade students received tutoring at any one time, but the students receiving tutoring varied over the year depending on who needed extra assistance in particular skill areas.

This continuous assessment and regrouping of students required significant time and joint effort. The full time "Instructional Facilitator" specified in the Success For All model played a large role in helping teachers to conduct the assessments and to analyze and act on them. The facilitator received in depth training for using Success For All reading assessment tools. In addition, the program facilitator worked with a district wide expert in Success For All who had further expertise. In pulling this facilitator from the classroom, Douglass once again traded general regular education class sizes for a strategic use of resources which supported their school design. In this case, the facilitator enabled a more careful matching of instruction to student needs as well as more effective use of joint planning time.

Structures to support more personal relationships

Secondary schools in the sample were moving closer to the more personal organization that already exists in elementary schools -- small schools and closer, more sustained relationships between teacher and student. Even so, Quebec Heights and the Lyons went further. Quebec Heights' family structure aimed to strengthen relationships between teachers and students. Teachers had three years with the same family of 85 students and usually kept the same homeroom class. This meant that some teachers received as few as nine new students each year. As an intermediate teacher stated, "It's hard to overestimate how much time this saves us. We get started quickly in the new school year, students know the rules and boundaries and I know

what they can do. "

The Lyons School's small size of 80 to 90 students and intense staffing ratios created a highly personal environment for all students. Even with this, the staff found the need to create weekly time to discuss each student's progress as a team. Thus all the professionals working with each group of students -- the classroom teacher, the classroom intern, a special education evaluation specialists, the after school director, and a social worker -- met weekly for 45 minutes at a time the team determined. Together, they identified problems, discussed possible strategies, and shared success and frustration.

More Common Planning Time

Constrained by teachers union contracts and the already limited time available for teacher planning at the elementary level, only the Lyons school dramatically increased common planning time available. Lyons academic teachers shared 1 hour and 45 minutes of common time: a 30 minute lunch period followed by 1 hour and 15 minutes. During this teacher planning time, students had a half hour for lunch and recess and received instruction from their instructional intern and afterschool teacher. In addition, teachers met voluntarily for 45 minutes each week in the "student support" team meetings described above.

The resources created by integrating students who had previously been in expensive private placements made it easier for Lyons to devise this time, as did the use of a different kind of teaching assistant and outside contractors. A typical Boston elementary school creates four 45 minute planning periods using subject specialists in art, music, p.e. or computers to cover planning time. Because the same individual covers the subject specialty for the entire school over the day, it is difficult to schedule common planning time for even small groups of teachers.

Instead, Lyons created continuity for students and common planning time for teachers using two basic strategies.

First, instead of using untrained paraprofessionals, the Lyons paired a highly trained and supervised "instructional assistant trainee" with each teacher. Lyons negotiated with the Boston Teachers Union to convert their paraprofessional slots to a new position titled, "Instructional Assistant Trainees". These trainees were college educated students working on their masters in special education at Wheelock University. As part of their program, the students worked in schools for stipends of \$10,000 per year and participated in intensive course work over holidays and summer. Wheelock sent a faculty member every two weeks to observe and discuss the trainee's practice with the master teacher. The trainee's stipend compared to \$18,000 in salary and benefits for a paraprofessional. The savings allowed the Mary Lyon school to give each teacher an "instructional assistant trainee". Where possible, the new instructional assistants were recruited from the existing paraprofessional staff. While the trainee position represented a short term cut in pay, this position led to full fledged certification as a special education teacher.

Second, Lyons used contracted teachers working on different hours than the regular academic teachers to cover "school wide" planning time. Bay Cove, a private, non-profit organization which runs schools for special needs students, provided eight teachers and a director for an after-school program. The teachers provided through the contract specialized in behavior management and brought a wide range of experience with emotionally disturbed as well as gifted students. Though the principal did not hire these teachers, she worked closely with Bay Cove to specify the qualities and qualifications of these teachers. The contract was contingent on the hiring of such exceptional teachers.

Both Douglass and Quebec Heights increased their common planning time for teachers using the more conventional method of scheduling specialist coverage to allow common meeting times for small groups of teachers. The staff at Quebec Heights chose to increase their average class sizes to create another specialist position resulting in one extra 45 minute planning period per week, allowing daily planning time. Quebec Heights also had the advantage of 20 minutes a day at the end of school resulting from early dismissal of elementary students.

Secondary Schools

The traditional high school, with its departmentalized instruction and fragmented school day, offers many more opportunities for rethinking resource allocations than do elementary schools. The high school we used for comparison purposes was a typical comprehensive high school in New York City serving about 3300 students. It had approximately the same proportion of special needs and Chapter 1 students as Central Park East Secondary School (CPESS) and used traditional staffing and scheduling practices.

The sample high schools looked very different from the traditional high school on virtually every dimension measured (Figure 9). Although our analysis is focused on the use of instructional staff, it is worth noting that the traditional high school had many more noninstructional staff and nonteaching staff than the two restructured schools. Not including custodial and food service workers, more than 40% of its total staff had nonteaching assignments. These included 1 principal, 9 assistant principals, 13 secretaries, 10 school based services specialists (social workers, psychologists, etc.), 17 security guards, 22 nonteaching school aides (in addition to 14 classroom-based paraprofessionals), and 3 librarians. In the

restructured schools, just over 25% of staff had nonteaching assignments and most of them taught at least part-time (Darling-Hammond, in press).

The traditional high school had one instructional staff person for every 14.7 students -- and New York City staffing allocations would reduce the student load to 13 for a population of students like that at International High School.³ Because fewer than 2/3 of these instructional staff members taught full-time, however, there was one classroom teacher for every 24 students and class sizes averaged about 33. Special education, bilingual education, English as a Second Language and Title 1 programs were administered separately with smaller class sizes and unconnected curriculum. By contrast, all students at Central Park East Secondary and International High Schools experienced much smaller class sizes of 18 and 25, respectively, while their teachers also had much more planning and professional development time.

The typical traditional high school student attended school from 8:05 a.m. to 2:13 p.m. in seven different classes with seven different teachers, plus one lunch period. Each class was 42 minutes long regardless of lesson or activities and each had its own curriculum unrelated to the other. Teachers taught five instructional periods a day, with two periods free from instruction. One third of the staff each year had a "building assignment" such as cafeteria duty or hall duty for one of these periods. Those assignments were rotated so that a teacher averaged one year with such an assignment every three years. Excluding these special duties, teachers routinely saw about 167 students per day. By contrast, the two sample high schools began with resources roughly similar to the traditional school and ended with dramatically smaller group sizes and teacher loads. Teachers at Central Park East saw 36 students and those at International 75 students within a given term. They were able to do this by reducing specialization,

reorganizing student groups and teaching structures, and redefining the school schedule.

Reduced Specialization

Central Park East Secondary School (Figure 10) reduced specialization in a host of ways in order to create smaller teacher-student loads and focus resources on academic subjects. All students took academic subjects in heterogeneous groups of 18 on average. Students in divisions I and II (grades 7-10) took two, two-hour academic courses each day, Humanities and Math/Science. All full-time teachers in these grades, with the exception of 2 special education resource room teachers, taught one of the two interdisciplinary courses. The resource room teachers help students with their regular classroom work, thereby reinforcing rather than fragmenting students' learning. In the Senior Institute (grades 11-12), the school reduced its own need for specialization by working out advanced course-taking opportunities for students at local colleges. All students took at least two college courses during their last two years of high school.

Electives and language instruction were provided through outside contracts on an hourly basis. There was no tracking, no separate Title 1 programs, and no separate bilingual program. There were no guidance counselors; instead, teacher roles include counseling and advising. There were also no attendance officers, assistant principals, supervisors or department heads, roles that deflect resources away from teaching positions in the traditional school.

As Figure 11 shows, International High School reorganized its programmatic resources around 12 interdisciplinary themes. Six self-managing instructional teams, called "clusters," were each responsible for the total educational experience of about 75 students each trimester.

Each team, composed of 4 to 6 teachers, plus guidance and paraprofessional staff, developed 2 thematically based courses of study (e.g. *Motion, Visibility*) which integrated four subject areas, such as literature, global studies, mathematics, and physics for a 13 week course of study. Students chose one of these thematic courses of study three times each year. All teachers, regardless of funding source, taught in cross-functional teams responsible for teaching the core curriculum to a heterogeneous group of students. This group included students of all native languages, all grades, economic levels and ability levels. The faculty integrated English as a Second Language techniques into their content-area courses while providing students with opportunities to further develop their language skills with instructors outside the core curriculum.

This integration of previously specialized resources in both schools translated into much lower teaching loads and more opportunity for individual student attention than in the traditional school. As Figure 9 details, Central Park East had one full-time teacher for every 13 students and International had one for every 16 students, as compared to one for 24 at the traditional school. Half of this difference came from the sample schools' shifting of resources toward instructional functions. Both operated with fewer administrators and support staff than the traditional high school. In addition, the sample schools combined most of their programmatic teaching resources in one core academic program in which all students participated, rather than using special program resources for add on remedial programs. Central Park East used 89% of teaching resources in its core instructional program while International used all staff in the core program. This compares to roughly 70% of teachers working in regular instruction in the traditional high school.

Shifting more resources toward regular instruction allowed sample schools to create regular class sizes for academic subjects that averaged 18 at Central Park East and 25 at International. This compared to an average regular education group size of 33 at the traditional high school. This was partly achieved by creating a broader role for professional staff in the restructured schools, rather than using a variety of specialists to perform "non-classroom" functions. Staff acknowledged this trade-off in a set of "understandings that underlie professional staff work at CPESS" which includes the following statement:

In return for smaller class sizes (maximum 20) and smaller total student rolls, teachers will work with students for a total of 22 hours a week in classes, advisories or tutorials, conducting seminars, overseeing projects, giving lectures, or advising and coaching individual students (CPESS, 1991).

More Flexible Student Grouping

Reducing the number of programs, courses, and levels made it easier for the sample schools to match the size of instructional groups to student needs. As the figures below show, although 64% of all classes in the traditional high school had 20 to 34 students, 21% of classes were smaller than 25. Class sizes were higher in regular education academic classes than in non academic classes.⁴ In contrast, Central Park East and International place all of their students in target size groups, creating groups that averaged 18 and 25 respectively.

Class Sizes in the Traditional High School

Size of Class	Academic	All Classes
0 to 19	6%	8%
20 to 24	7%	13%
25 to 28	13%	13%
29 to 34	72%	64%

Over 34	3%	3%
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Even more flexible grouping strategies were found in Central Park East's Senior Institute (grades 11-12), where teachers and students focused substantial attention on preparing the graduation portfolio and applying to colleges. Time was allocated to allow teachers to provide coaching and support for independent study. A typical teacher would teach 2 classes for a total of about 12 hours per week. The schedule would also include 4 to 5 hours a week supervising independent projects, another 4 to 5 hours in advisory working with his or her 12 advisees on academic and personal concerns, and another 3 1/2 hours per week for one-on-one help to students. The schedule included class periods of varying length depending on their purpose. In addition to their in-school courses, students took courses at local colleges and completed internships in businesses and community agencies. This freed up time for teachers to work and plan together.

Structures to Create Personal Relationships

Each sample school created lower daily teacher loads, with Central Park East teachers seeing 34-36 students per day and International about 72-75 students per day. This compares to an average of 167 students per day for each regular education teacher at the traditional high school. In addition, both sample schools used "advisory groups" as a key strategy for maintaining ongoing relationships with students. Each professional staff member worked with a group of 12 to 15 students and their families. The use of all professional staff in addition to teachers allowed advisory groups to be smaller than average class sizes. The advisory group provided academic as well as personal support and met for approximately four hours a week at Central Park East. International's "house" groups met for about two hours weekly. Teachers

and advisors used the time in a variety of ways: for individual study, to discuss health, social and ethical issues, and for individual and group advising and counseling. The advisor served as the "expert" on the student and met with the family and other teachers to facilitate communication regarding the student's needs and progress. Advisors co-ordinated parent conferences and the preparation of narrative assessments of student work.

Through advisory groups all professionals in the two restructured schools worked intensively on a regularly scheduled basis with a group of students. In contrast, at the traditional high school, only 65% of the professional staff had regularly scheduled contact with a continuing group of students. While guidance counselors and other support personnel worked intensively with some students, they do so on a reactive, usually sporadic basis, which was not designed to create close, long term relationships.

Longer and More Varied Blocks of Instructional Time

In contrast to the traditional high school's seven 42 minute periods each day, both restructured high schools created longer periods and more flexible schedules. At Central Park East, students in grades 7-10 had two hour blocks of Humanities and Math/Science each day. Since these two teachers worked together as a team, they could vary the split of time between the two to accommodate daily lesson plans. In addition, one morning a week students spent 2 1/2 hours in a Community Service project while their teachers were engaged in curriculum planning. Other course work such as language instruction took place in smaller (usually 1 hour) blocks of time. In the Senior Institute, classes varied in length from 1 to 2 hours on different days of the week, while advisement sessions, internships, and independent work time were scheduled for 1 1/2 to 2 1/2 hours at a time to allow students to undertake extended work with

adequate coaching and time for research.

At International, students typically had four courses each of which met for 70 minutes four times per week as well as a 2 hour internship and an hour long seminar each week. Because each cluster of 4 teachers controlled their shared students' entire time schedule during a 13-week cycle, they could vary time across classes each day as needed for the work in which students were engaged.

More Common Planning Time

Both sample high schools created structures that demand and allow much more common planning time. Including staff meetings, Central Park East teachers spent on average 7.5 hours per week in scheduled common planning time. To create this time, CPESS used four strategies; placing students in community service, using teaching fellows to cover teacher planning time, dismissing students early one day per week and meeting after school. First, one morning a week, students spent two and a half hours in community service activities. During this time, teachers met with others in their house on curriculum and student evaluation issues. Second, teaching fellows and other professionals provided coverage to create common planning time during the day. Teachers had from 1 1/2 to 3 hours each week to meet with fellow "house" teachers and with students individually. Special coverage was also arranged to deal with important schoolwide issues. For example, in 1994-95, Math/Science and Humanities teachers each had four full days during school hours over the year to work on portfolio assessment building. Third, students were dismissed at 1:00 on Fridays to create time for a weekly two hour staff meeting. The students' hours were adjusted over the rest of the week to make up for this time. Finally, as its basic governance plan states, " the full staff agrees to meet during

hours when the students are not in attendance to complete necessary business." In addition to the Friday meeting, teachers attended a regularly scheduled Monday meeting from 3:00 to 4:30.

At International, teachers had two periods (140 minutes) each week to plan with their cluster during which students participate in club activities or college courses. A half day (about 3 hours) each week was set aside for Club activities for students, during which time teachers planned together and engaged in staff-initiated professional development. In addition, teachers had a 70 minute individual planning period each day which often coincided with that of other members of their team. These models offer stark contrast to the traditional high school model in which teachers had one or two separate 42 minute periods free from instruction, not organized to allow work with other teachers.

4. Barriers to Reallocating Resources

Interviews, observation and document analysis in these nontraditional schools indicate that, especially in those that are trying to transform long-standing, traditional practices, five sets of barriers to more flexible allocation of teaching resources exist. Each of these five are elaborated below.

Teacher Reluctance

In three of the schools studied, the Lyons School, Central Park East Secondary, and International, teachers created a new school. The designers of these schools were able to hire teachers and other professionals whose skills and dispositions matched the school design.

Asking existing schools to overhaul their organizations is a much different prospect. Teachers' efforts to rethink the use of Title 1 dollars at Quebec Heights offers an illustration of the difficulties. Supporting small group sizes in reading from grades K-3 required taking resources away from the intermediate grades and converting one teaching position to an instructional aide position. As the principal stated, "It's hard to ask teachers to assume leadership roles when it impinges on long friendships.. when tough personnel decisions need to be made, I often end up having to make them...Of course, if I make them, I weaken the principle of teacher leadership. I often feel like it's a vicious cycle". Schools attempting to realign existing resources will need to recognize the effort as a long term process of matching needs to current and future staff. Districts may need to help schools provide selected individual retraining and outplacement if needed.

The process of rethinking staffing is sometimes easier when a particular staffing model is identified as a goal at the start. At Douglass, for example, teachers were asked to commit to implementing the Success for All model, and the district provided an opportunity for teachers not choosing the model to transfer to a new school. In addition, teachers were given the opportunity to switch after six months of implementing the new model. Because the model specified particular staffing requirements, it was somewhat easier to accomplish the changes.

Selection and Retention

Selection and retention of teachers with the required qualities and experience to match these school designs is critical to their success. This is particularly difficult in districts operating under financial stress. In Cincinnati and New York, budget pressures have led to job uncertainty

for many junior teachers. As seniority still governed teacher assignment, senior teachers whose positions were eliminated in one building could be transferred to other schools. At Quebec this has meant that such teachers could bump less senior members of the Quebec staff. Thus, a teacher not familiar with or comfortable with the school's strategy could be assigned to the building. Although this also happens in New York City, the two sample schools had negotiated control over selection and hiring of their own staff, which gives them some protection over who enters, but does not necessarily protect junior staff when cutbacks occur.

In schools that are working to restructure their existing staffs, teachers described how a few resisters can make moving forward much more difficult. Losing committed team members is also damaging. As one Quebec Heights teacher explained, "it takes at least a year just to understand what we are trying to do and we have built up such working relationships by then, when we lose someone due to budget cuts, it really sets us back."

For sample schools, the selection and recruitment of specialists and instructional assistants, as well as teachers, often became a sticking point. In these schools, specialists and instructional assistants required special training and played very specific roles. Some districts have solved this problem by creating alternative personnel tracks for specially designated schools. Cincinnati has done this for Paidea and Montessori schools. In Boston, schools negotiate control over the hiring process on a position by position basis.

The New York City sample schools have explicit responsibility for hiring, evaluating, granting tenure and dismissing teachers. Central Park East has school based responsibility for hiring and teacher evaluation. The school's basic governance plan states that:

No one should be an involuntary member of this community, or join the community without the opportunity to understand its governance structure and

educational plan -- neither students, their families, nor teachers. Continued membership in the community requires abiding by its general rules and policies.

Similarly, IHS has a faculty personnel committee which develops school policies for hiring, firing and evaluation. With agreement from the United Federation of Teachers, the school has defined guidelines and procedures for selecting its own staff and managing staff development, evaluation, and dismissal. Because of its unique features, the school does not have to accept involuntary transfers due to shifts caused by budget cuts in other areas.

Policies, Regulations, and Contractual Issues

The sample schools directly challenged policies, regulations and teacher contracts related to the teacher work day and job responsibilities in at least three ways. First, most of the schools changed the contractually defined teacher work day as well as contractual rules for such matters as seniority transfers. Second, in breaking down barriers between programs, age groupings, and subjects, they confronted staffing formulas, program administration rules, and, sometimes, teacher licensing categories. Third, many of these schools redefined both teaching and non-teaching positions to create new jobs which do not fit neatly into existing contractually defined categories.

Teachers' union contracts in most districts clearly define the teacher work day, outlining the hours teachers are required to work and limiting the number of required afternoon and evening meetings. Most go further to specify the number of minutes of time teachers must have free for lunch and planning activities. Many contracts, like the Boston Teacher's Union contract, also limit the number of hours in a row that teachers can be involved in instruction,

making it more difficult to create connecting blocks of planning time. Clearly, schools in which teachers, rather than administrators, develop curriculum and manage their own and students' time demand new working conditions.

Those schools operating largely within existing contracts, such as Douglass and Quebec Heights, are most severely limited in creating the required planning time. On the other hand, Central Park East Secondary School's governing policy explicitly recognizes that staff members may work longer hours, including attending after school meetings.

In broadening the scope of teaching jobs, schools can run into state, district and collective bargaining restrictions. Using teachers across programs, like special and regular education, can require waivers. For example, Lyons uses 3 special education teachers and 3 regular education teachers to teach integrated classrooms of special needs and regular education students. According to the BTU contract and Massachusetts state certification laws, neither group has the certification which allows it to teach the other. In this case, Lyons negotiated waivers to both sets of restrictions. The principal argued that she knew how to identify individuals with experience and disposition to handle both special education and regular education students. She developed a plan to create a team structure which took advantage of a staff which had a diverse set of skills and knowledge along with a professional development plan for each individual teacher, as well as for the entire school, so that they all would develop a more balanced set of skills.

In moving to interdisciplinary instruction, schools also can run into certification problems. According to many union contracts and state regulations, teachers must hold certification in more than one subject to teach Humanities or Math/Science in high schools.

Finding individuals with the subject and pedagogical knowledge to combine these subjects effectively is obviously critical to successful interdisciplinary instruction. Although certification is one indicator of this ability, it is not the only means for identifying or developing expertise. At Central Park East, which uses an interdisciplinary approach in grades 7-10, teachers plan in curriculum teams that provide the cross-disciplinary expertise necessary for expanding the capacities of each teacher to handle the breadth the core courses require.

Finally, sample schools have created different job positions and used different hiring arrangements than collective bargaining contracts in their districts envision. For example, Lyons Elementary and Central Park East Secondary created a different kind of Instructional Assistant. As described, Lyons converted the paraprofessional position to a lower cost instructional trainee position which employed students involved in a special education masters program who are aiming to become teachers. This arrangement allowed Lyons to hire more instructors with greater professional expertise and a different kind of experience. Central Park East also used teaching interns to organize community service placements, conduct seminars, tutor students, and assist in classrooms. This kind of change represents a very significant departure if implemented on a wide scale basis, because it essentially allows schools to rethink the qualifications and the resources it has available to find lower cost and more highly trained staff who, although short-term, may be more suitable for some kinds of positions.

In addition, three of the sample schools received waivers from the union to use outside contractors for specific pieces of instruction. Lyons contracted with a private company to provide its after school program. Central Park East used hourly instructors to provide language instruction. And International used adjunct teachers who are students at the community college

in which International is located to teach art, music and physical education.

Policies, Regulations, Contracts and Student Grouping

Teacher contracts, district policies and state regulations often define class size maximums by program, grade level, and sometimes subject. For example, Lyons departs from state and district regulations regarding class size by grouping special education students formerly placed in private schools where student-teacher ratios were well below 8 in larger groups of 15, with significant professional support throughout the day. State guidelines specify the size of classroom for students at each level of special education classification. But if parents, teachers and special education professionals agree to an "individual education plan" that develops the student in a larger, more inclusive setting, then schools can depart from these regulations. This departure requires schools to work closely with students and parents to create understanding of the new approach and to insure appropriate additional support for the students. It also demands that state and district officials work with schools to allow educationally sound designs.

District student and teacher assignment policies can also frustrate attempts to use teachers differently. In the sample districts, schools moving students from more restrictive special education settings into the regular classroom sometimes faced a potential loss of teachers because special education staff were allocated based upon the number of students requiring separate education. When schools attempted to integrate students back into the regular classroom and resources were therefore reduced, the regular teacher whose class the special education student now spent most of his time in received no extra resources and no reduced student load. In these cases, schools can find that regular education classrooms grow more unruly and crowded while

the case loads of special education teachers decline. Over time, schools should find ways of shifting resources back into the classroom without losing special education expertise. However, schools can not do this all at once and need ways to move in this direction. To respond to this problem, Boston has adjusted its staffing formula to allow schools to use the resources for special needs students in inclusive settings.

Quebec Heights' experience with moving away from age grading provides another example of how collective bargaining rules combined with student assignment formulas can have unintended consequences. The Cincinnati teachers contract requires that teaching positions be specified as either grade level or multi-age. Using this designation, the district determines the number of teachers to be assigned to a school in one of two ways. If the school is a grade level school, the district takes the number of students in each age group and divides by the target class size to assign the number of teachers. However, if the school is multi-age, the district takes the number of students in each age group and divides by the target class size to determine the number of teachers. In this case, Quebec Heights lost two teaching positions because of its choice to designate itself as multiage.

Standardized Testing

While not typically considered a resource allocation issue, district and state standardized testing programs can pose problems for schools changing the content and order of instruction especially if the tests are content specific and administered at each grade level. For example, at Quebec Heights, students must take three different standardized tests, two of which test content knowledge yearly which students in their multiage program may not have covered. The

pressure to perform well on these tests is so great though, that Quebec has had to organize pull-out tutoring sessions to coach students in curriculum they have not yet studied. As one teacher put it, "Besides the fact that none of these tests match what we are trying to teach our students in any given year, we simply cannot align our curriculum to address three differently conceived tests each year".

This problem is widespread. In the two secondary schools, reconfigured curricula that are more performance-oriented and more challenging for students compete with New York State's Regents Competency Tests, most of which require the memorization of large quantities of information unlikely to be used again after the exam. Staff report that drilling students to pass the state tests takes time and energy away from the more productive learning tasks the students engage in as they develop portfolios, projects, and research papers. They, too, find the exercise a waste of valuable time and intellectual resources.

5. Developing the Knowledge and Capacity for New Teaching Roles

These new principles of resource allocation required teachers to play new roles that needed new skills and knowledge. Areas which teachers and leaders of the new schools stressed most often include:

- o Developing or learning new curriculum material and approaches
- o Developing new instructional techniques to engage a wider range of learners and take advantage of longer blocks of instructional time
- o Diagnosing the learning needs of a more diverse group of learners (especially special education students)
- o Assessing the progress of a wide range of learners on a greater variety of performances

- o Working in teams
- o Supervising a teaching intern or an aide.

Similar lists of professional development priorities can be found in many reform documents and district strategies. Teachers interviewed in this study especially emphasized the time and support needed to learn and develop new curriculum. Each of these five schools required teachers to implement and learn new curriculum and in some cases to design it. For example, at Quebec Heights -- the multi-age elementary school -- teachers who formerly taught math in sequence to one grade of students had to redesign their lessons to teach concepts to a wider age range over three grade levels. One teacher described the initial transition as particularly difficult. "At the beginning of the year, I was given 10 textbooks for each grade as though I should teach all three grades at once". Quebec's multi-age structure required teachers to learn two more years of curriculum material and to employ different instructional techniques such as co-operative learning. While Quebec Heights restructured to provide 45 minutes of planning time during school hours each day, this has been used for common planning issues such as assigning students to groups and planning daily schedules. Teachers at Quebec Heights had to learn new curriculum material on their own time, largely without assistance.

In contrast, Douglass devoted virtually all of the freed planning and teaching resources to helping teachers learn the new curriculum associate with Success for All. A full time program facilitator helped teachers determine which materials to use and then observed and coached them in their implementation. Most of the professional development days were allocated to learning methods and curriculum used by Success For All.

At International, teachers wrote entirely new curricula to integrate subjects into thematic, activity-based, interdisciplinary courses. They needed time both to create the curriculum and in some cases to develop expertise in new areas. The two hours weekly common planning time and three hours of collective staff development time allowed teachers to manage and improve this interdisciplinary curriculum. However, most curriculum development occurred through a combination of long overtime hours and support from development grants.

In these sample schools, teachers are developing the skills and knowledge they need to implement new school designs as they go along. "Professional Development" in these schools looked very different than in traditional schools because creating a new school together raised the need for new knowledge and skills and increased the opportunities for teachers to learn from each other. As they worked to create a collaborative culture of learning for their students, teachers began to build one for themselves. In these high performing schools, learning happened through five related vehicles that varied in importance depending on the school's context. These included: 1) learning from each other in team planning, curriculum development and teaching, 2) formal course work or in-service tied to the school's strategy, 3) principal and peer coaching and teacher evaluation, 4) local or national networks of schools attempting similar redesign, 5) individual professional reading and classroom research.

Though schools shared some common needs, the professional development requirements depended on the their curriculum and instruction strategy and on the existing expertise of the individuals in the school. Teachers in the sample schools stressed the central importance of learning from each other in team planning and team teaching situations. But, teams needed to draw upon other expertise in a host of areas. Some of the schools studied had the opportunity

to select a staff which included a range of skills and experience and then developed strategies for teachers to share their talents in a variety of settings: committees, teams, and professional development offerings. Others actively sought to build this "distributed expertise" as they went, both by using in-house experts and external resources.

At Lyons, the principal sought to assemble a team in which each individual contributed necessary expertise to her inclusionary model. Each staff member had a strong background in developmental curriculum, but some had significant expertise in different areas such as: working with high achievers, child development, bilingualism, or emotional and behavioral disorders. One teacher with a strong background in business helped the teachers develop management skills such as supervising instructional assistants.

While Lyons had the luxury of proactively hiring distributed expertise, Quebec Heights elementary developed a plan to build it. As Quebec's principal describes, "Each teacher must be a generalist as well as the most qualified in her area of focus." The school created a professional development plan which prioritized areas for in-house expertise. Through a combination of substitute money and creative scheduling, one quarter of the staff could pursue individual course work in their area of expertise each year during school hours. This individual building of expertise complemented other school wide professional development in areas such as co-operative learning where all must become accomplished practitioners.

Through the Success For All model, Douglass created a resident expert who devotes full time to learning new techniques and curriculum and sharing them with the staff. This "instructional facilitator" was freed from daily teaching responsibilities and acted as the school's catalyst and co-ordinator for building skills. This model facilitated the quick introduction of new

techniques and curriculum upon which the Success For All model relies. It did not preclude developing other pockets of expertise across the school. For example, through a special grant, a portion of the Douglass school teachers created an interdisciplinary international summer school program. Working on a stipend, teachers worked together to learn about and implement an interdisciplinary curriculum. Throughout the year in various forums, faculty meetings, and demonstrations, the staff shared this information with the entire Douglass school and worked with other staff to develop small interdisciplinary units during the academic year.

Central Park East and International have used all of these strategies. Staff are hired to ensure distributed expertise on teams, and staff-led professional development encourages individual faculty to take leadership in coaching one another in areas ranging from curriculum and assessment development to pedagogy and strategies for meeting the needs of diverse learners.

Conclusion

Although these five high performing schools look very different from one another, they have all begun to rethink the way they allocate teaching resources to meet student needs and to create the time teachers need to implement a new vision of schooling. They demonstrate that schools considering new designs must also re-examine their use of resources. The framework presented here aims to provide researchers and practitioners with a way of systematically examining possibilities for doing this and measuring their impact. Researchers and school redesigners might also use this framework to consider the ways in which implementing the six principles of resource allocation requires reworking of district, state and collective bargaining

policies and regulations. Finally, the framework helps to highlight priority areas for professional development as it details the new kinds of roles and responsibilities teachers play.

This analysis shows how the restructuring of resources serves as a catalyst for changed teaching practice as the new organizations both demand and enable a new kind of teaching by providing time for teachers to create and sustain their new roles. At the same time, the variety of models presented here suggests that restructuring of resources makes no sense without an underlying educational design. For example, the actions of integrating all special education students as Lyons School did, or raising regular education class sizes as Douglass did, have no inherent merit without an accompanying educational strategy. Thus, resource reallocation and the design of an instructional vision and strategy are inextricably intertwined. Because of this, the quantitative measures presented here are only useful when they are accompanied by descriptive information which allows an understanding of the trade-offs a school has made.

The schools studied here have only touched the surface of opportunities for rethinking the way school resources are used as they have largely worked within existing salary structures and have not much explored the use of technology in the classroom. Nevertheless, they foreshadow the many ways schools can rethink existing resources to create more personalized education for students and more professional responsibility and growth for teachers.

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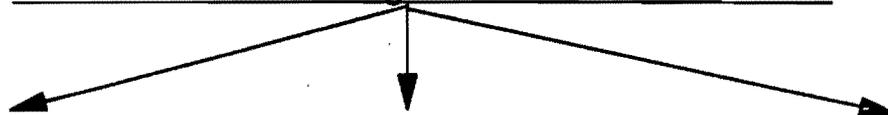
1. In addition to the authors, research assistants Lori Chajet and Peter Robinson helped collect these data.

2. For this purpose we considered group sizes within 5% of the target to be uncontrollable variation.

3. Because International High has a unique student population comprised of 90% Chapter 1 eligible and 100% limited English proficient students, an analogous traditional school could not be found for comparison. Instead, we used the New York City staffing guidelines, as outlined in the New York City publication Comparative Analysis of the Organization of High Schools, 1992-93, to estimate staffing for students identified for special needs programs.

4. New York City Schools, Comparative Analysis of the Organization of High Schools, 1992-93, p. 82-92.

Figure 1
Levers for Reallocating School Level Resources



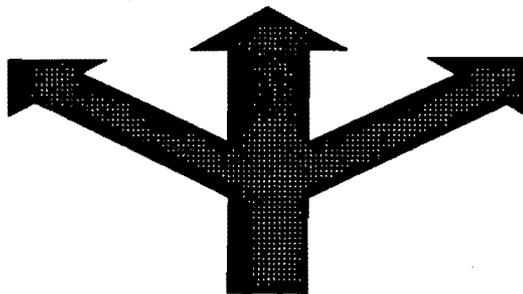
Teachers

- Allocation
- Differentiated staffing and contracting out
- Salaries

Support and Admin

Technology and Instructional Materials

- Balance between teachers and technology



Use of Resources over
time in Student Career

Figure 2
Reallocating Instructional Resources
Levers

Resource Levers	Strategy
Teachers: Teacher Allocation	<ol style="list-style-type: none"> 1. Reduction of Specialized Programs 2. More flexible student grouping by teachers 3. Structures to create more personal relationships 4. Longer and more varied blocks of instructional time 5. More common planning time for teachers 6. Alternative definition of school day or year
Teachers: Differentiated Staffing and contracting Out	<ol style="list-style-type: none"> 1. Use of trained paraprofessionals as teaching assistants 2. Use of interns as teaching assistants 3. Contracting for instruction
Teachers: Salary Distribution	Changing structure of salaries to reflect job responsibilities and expertise
School Support Professionals	<ol style="list-style-type: none"> 1. Expanding instructional responsibilities for administrators 2. Using all professionals to lead advisory groups 3. Incorporating support services such as library, guidance, social work into teaching teams
Technology	Changing the balance between administrative staff, teachers and technology
Use of Resources over Student Career	<ol style="list-style-type: none"> 1. Focusing resources in early grades to ensure basic skills 2. Focusing resources on key skills that cut across subject areas (e.g. reading, writing)

Figure 3
Resource Reallocation Strategies Used by Sample Sites

Sample Site Characteristics

Strategy	Lyons	Quebec	Douglass	Internat'l	CPESS
TEACHERS:ALLOCATION					
1. Reduction of Specialized Programs	X	X	X	X	X
2. More flexible student grouping	X	X	X	X	X
3. Structures to Create more personal environments	X	X	X	X	X
4. Longer and varied blocks of instructional time	X	X	X	X	X
5. More common planning time				X	X
6. Alternative definition of school day or year	X			X	
TEACHERS: DIFFERENTIATED STAFFING					
1. Use of paraprofessionals as teaching assistants	X	X			
2. Use of Interns as teaching assistants	X				
3. Contracting for Instruction	X			X	X
TEACHERS:SALARY					
SCHOOL SUPPORT: Increased staff assigned to teaching				X	X
TECHNOLOGY: Changing the balance					
RESOURCES CONCENTRATED AT DIFFERENT POINTS OVER STUDENT CAREER		X	X		

X=sample school implements strategy

Figure 4
Measuring Resource Allocation Patterns
Staff Allocation

Resource Allocation Principles	Expected Impact on Resources	School Measure
Reduction of Specialized Programs to create more individual time for all	<ul style="list-style-type: none"> -smaller sized regular education instructional groups -More even distribution of resources between regular and special program students 	<ul style="list-style-type: none"> -Students per teacher -Average size of regular ed instructional groups -% teachers in reg instructional groups
More flexible student grouping by school professionals	<ul style="list-style-type: none"> -smaller instructional groups in focus areas -Less unplanned variation in class sizes 	<ul style="list-style-type: none"> -% students in target regular ed size groups -avg. size of group in focus area
Structures to support more personal relationships	<ul style="list-style-type: none"> -lower teacher student loads -more adults involved in instruction -smaller teams of teachers and students -multi-year relationships between students and teachers 	<ul style="list-style-type: none"> -teacher student loads -% adults instructors/advisors -size of teacher/student clusters -length of student/teacher relationship
Longer and more varied blocks of instructional time	<ul style="list-style-type: none"> -longer instructional periods for academic subjects 	<ul style="list-style-type: none"> -average length of instructional period for academic subjects
More common planning time	<ul style="list-style-type: none"> -more minutes of common planning -longer periods of time for planning 	<ul style="list-style-type: none"> -common planning minutes/week -length of longest planning period
Alternative definitions of school day or year	<ul style="list-style-type: none"> -varied or longer school days or years 	<ul style="list-style-type: none"> -not applicable

Figure 5
High Performing Elementary Schools vs. Traditional Schools

Resource Allocation Principles	School Measure	Quebec Heights		Douglass		Lyons	
		AVG.	Trad	AVG.	Trad	AVG	Trad
Reduction of Specialized Programs	-students per teacher	15	15	16	16	11	7
	-Average size of regular ed instructional group	19	21	26	22	13	19
	-% of teachers in regular ed instructional groups	91%	77%	95%	76%	100%	28%
More flexible student grouping by school professionals	-% students in target size instructional groupings	100%	65%	100%	60%	NA	
	-avg. size of instructional group in reading	7	21	17	22	6	19
Structures to support more personal relationships	-student loads for primary classroom teachers	22	21	24	19	13	19
	-length of time students stay with teacher	3 yr	1 yr	1 yr	1 yr	1 yr	1 yr
More common planning time for teachers	-common planning minutes/week	325	100	135	0	405	45
	-length of longest planning period	45	45	45	45	105	45

Figure 6
Alternative Structures
Quebec Heights Elementary School

Principles	Model Components	Changes in Teacher Allocation
Reduction of Specialized Programs	-Multi-age, heterogeneous groups for all subjects	-No grade level teachers, -Title 1 instructors used school wide, concentrate in grades K-3 -Special Ed resource teacher works with all students in primary team
More flexible student grouping by school professionals	-Daily regrouping of students based on lesson, skills -90 minutes per day of reading instruction in groups of 8 or smaller	-Title 1 instructors rotate to reduce the size of all groups for reading
Structures to support relationships	-Multi-age clusters of students in grades K-3 and 4-6 remain together for 3 years.	
More Common Planning Time for Teachers	-Teachers have 50 minutes daily common planning time with their cluster -Whole school has 20 minutes common time daily	-5 specialists cover instruction -Average regular group size rises to provide specialists -Elementary school day 20 minutes shorter than secondary school to add planning time

Figure 7
Alternative Structures
Douglass Elementary

Resource Allocation Principles	Model Components	Changes in Teacher Allocation and Use of Time
Reduction of Specialized Programs	<ul style="list-style-type: none"> -All Title 1 resources devoted to reading instruction for all students using Success for All model -All special education resource room students integrated into heterogeneous classes 	<ul style="list-style-type: none"> -Special education resource room teachers team teach heterogeneous groups
More flexible student grouping by school professionals	<ul style="list-style-type: none"> -All students in groups of 18 to 23 for reading and language arts 90 minutes per day -All first grade students reading below grade level receive 1 to 1 tutoring in reading for 20 minutes per day 	<ul style="list-style-type: none"> -regular class sizes raised from 16 to 24 to free Success for All facilitator, and School Wide Title 1 teacher for tutoring -Title 1 resources focused on early grades
Structures to support relationships		
More Common Planning Time for Teachers	<ul style="list-style-type: none"> -Common planning time by grade level three times weekly -Monthly half day meeting between special ed and regular ed teams 	<ul style="list-style-type: none"> -Specialists scheduled to allow common planning time for each grade -Substitutes regularly scheduled to cover planning

Figure 8
Alternative Structures
Mary Lyons Model Elementary School

Resource Allocation Principles	Model Components	Changes in Teacher Allocation and Use of Time
Reduction of Specialized Programs	-All students and teachers in heterogeneous classrooms of 15 with one teacher and one teaching assistant	-No separate Title 1 programs -No separate special education groups -pooling of subject specialist resources
More flexible student grouping by school professionals	-School team determines classroom assignment	
Structures to support relationships	-Support Services team composed of all professionals working with each group of students meets weekly to review individual student progress	-Teams volunteer one hour to meet each week
More Common Planning Time for Teachers	-Common planning time 1 1/2 hours per day, plus common lunch for all teachers -45 min. per week of student support team meetings for each class room	-After school staff provided by outside contractor work from 12:00 to 5:30 to cover planning time for academic teachers as well as after school program
Alternative definition of the School Day and Calendar	Extended hours from 7:15 to 5:00 p.m. daily	-paraprofessionals work staggered shifts to cover before-school program, half work 7:00 to 1 p.m., half for school hours -After school program provided by outside contractor

Figure 9
High Performing vs. Traditional Secondary School

Resource Allocation Principles	School Measure	Central Park East	International	Traditional
Reduction of Specialized Programs	-Students per instructional staff member	10.2	10.2	14.7/13*
	-students per full-time teacher	13.3	15.8	23.6
	-Average size of regular instructional group	18	25	33.4
	-% teachers in regular instructional groups	89%	100%	70%
More flexible student grouping	-% students in target size grouping	100%	100%	60%
	-average size of advisory group	15	12	29 (homeroom)
Structures to support relationships	-student loads per term	36	75	167
	-% professional staff serving as instructors/advisors	100%	100%	65%
Longer and more varied blocks of instructional time	-avg. length of instructional period	120 min.	70 min.	42 min.
More common planning time	-common planning minutes/week	450 min.	350 min.	0 min.
	-length of longest planning period	120 min.	140	42 min.

* A traditional high school that had a 100% Limited English Proficient pupil population like that at International would receive additional staff to reduce its student/teacher ratio for those students to 13:1.

Figure 10
Alternative Structures
Central Park East Secondary School

Principles	Model Components	Changes in Teacher Allocation and Use of Time
Reduction of Specialized Programs	-All students in multi-aged heterogeneous groups of 18	-No ability grouping -All special education students mainstreamed -No separate Title 1 programs -No bilingual/ESL program -One language teacher co-ordinates language courses taught on contract -Electives contracted out
More flexible grouping	-Two academic courses per day Math/Science and Humanities in grades 7-10 -Senior Institute students (grades 11-12) take college courses, internships, and work one-on-one with advisors in addition to regular courses.	-Core teachers in grades 7-10 teach one of two interdisciplinary courses -Senior Institute teachers teach fewer courses and spend more hours supporting their advisee's work on portfolios, college courses and internships
Structures to support more personal relationships	-Teacher load of 36 students each -Advisory groups of 12-15 students -Divisions of 75 students comprising 2 "houses" of 36-38 students that are stable for two years	-Administrative and support functions are incorporated into teacher role. (guidance, librarian, discipline, curriculum development, supervision -Teachers stay with same students for two years)
Longer and more varied blocks of instructional time	-Classes are one to two hours long -Regular periods for counseling, advisement, and one-on-one tutoring are built into teachers' and students' schedules	-Teachers teach fewer classes for longer periods of time -Teachers' roles are varied: advisement and tutoring are part of normal role and schedule
More Common Planning Time for Teachers	-Weekly 2.5 hour common "curriculum planning time" per week and bi-weekly 1.5 hour house meeting (grades 7-10) -Weekly Senior Institute staff meetings (1.5 hours) -Weekly 3.5 hours whole school staff meetings	-Weekly 2 1/2 hour community service project for students (grades 7-10) -Senior Institute students do internships and take college courses off-campus -Two hours of whole school planning time created by early dismissal on Friday and 1.5 more hours by volunteering time after school

Figure 11
Alternative Structures
International High School

Principles	Model Components	Changes in Teacher Allocation and Use of Time
Reduction of Specialized Programs	-Students in heterogeneous, multi-aged groups of 23 to 25 students who stay together all day	-No age grading -No ability groups -No separate Title 1 program -No separate bilingual program -All teachers work in interdisciplinary teams -Music, art and p.e. provided by adjunct teachers
More flexible student grouping	-All subjects integrated into 12 interdisciplinary courses	-Daily schedule and student grouping determined by teacher teams
Structures to support more personal relationships	-Teacher student loads of 75 -All students and teachers have weekly small advisory groups -Students and teachers in clusters of 75 for 13 to 26 weeks.	-All professional staff assigned advisory groups -Teachers work in self-managed teams of 4 to 6 that include counselors
Longer and More Varied blocks of Instructional Time	-Typical student day consists of four 70 minute courses per day, with two hour community service or internship each week -Students and teachers can choose a.m. or p.m. shift which start one hour apart.	-All teachers teach two interdisciplinary courses, 3 periods per day -Teachers choose, a.m. or p.m. shift, some work extra period per day
More Common Planning time	Teachers have 3 to 5 hours of common planning time per week	-weekly 2 hour community service projects and weekly 3 hour clubs period for students during which teachers meet together

Figure 12
Teacher Knowledge and Skill Areas

Principles	Change to Traditional	Knowledge or Skill Needed
Reduction of Specialized Programs	<ul style="list-style-type: none"> -Integration of Programs <ul style="list-style-type: none"> -Special Education -Title 1 -Bilingual -Elimination of Age based grouping -Combination of traditional subjects into interdisciplinary program 	<ul style="list-style-type: none"> -New Instructional Techniques to engage a wide range of learners -Diagnosing the learning needs of more diverse learners, especially special education students -Assessing the progress of wide range of learners -New Curriculum Material
More Flexible Grouping	<ul style="list-style-type: none"> -Elimination of age and program based grouping -No tracking 	<ul style="list-style-type: none"> -Assessment of Student Progress -Working in Teams to assess/assign students
Structures to support more personal relationships	<ul style="list-style-type: none"> -Creation of Advisory Groups -Elimination of Traditional support roles -Self managing teacher teams 	<ul style="list-style-type: none"> -Child/adolescent development -Functions of old roles such as guidance counselor -Working in teams
Longer and more varied blocks of instructional time	<ul style="list-style-type: none"> -Longer class periods 	<ul style="list-style-type: none"> -New instructional techniques -New curriculum