SCHOOL DESIGN:
Leveraging Talent, Time, and Money

SECTION 2

Maximizing Instructional Time

PRACTICAL TOOLS
for District Transformation

ERS Education Resource Strategies

Rethinking Resources for Student Success

ANALYSES AND DO-IT-YOURSELF WORKSHEETS

THE SCHOOL DESIGN WORKSHEET SERIES INCLUDES worksheets with step-by-step instructions to help you calculate and measure effective school design and portfolio management. These analyses can help identify your largest challenges and greatest opportunities for action. Armed with this knowledge, you will be able to quantify transformational opportunities for your district. **This document contains Analysis 4.**

Analyses for effective school design and portfolio management

	ANALYSIS	WORKSHEET
IMPROVING TEACHING EFFECTIVENESS	1. Collaborative planning time	1. Elementary school contracted teacher planning time
	2. Expert support	2a. Coaching and lead teacher support spending per teacher
		2b. School teacher-to-coach ratio
	3. Principal span of review	3. Principal span of review
MAXIMIZING INSTRUCTIONAL TIME	4. Instructional time	4a. Total time in school
		4b. Instructional time by subject
PROVIDING INDIVIDUAL ATTENTION	5. Class size	5. Average class size by course type
	6. Teacher load	6. Average teacher load
SERVING SPECIAL POPULATIONS EFFECTIVELY	7. Special education placement	7a. Special education placements as a percentage of total enrollment
		7b. General education class size versus student-to-teacher ratio
PORTFOLIO MANAGEMENT	8. Student needs by school type	8. Student needs by school type
	9. School cost	9a. Distribution of schools by enrollment
		9b. Per-pupil spending differential between small- and medium-size schools
	10. School capacity utilization	10. Seat vacancy by school
	11. Mix of school programs	11. Special education fill rate

Data checklist

Use this list to gather the data and files that you will need to complete the worksheets. All data files listed are for the current school year.

☐ **District K–12 course file by student, by grade, by school. This file will allow you to:**
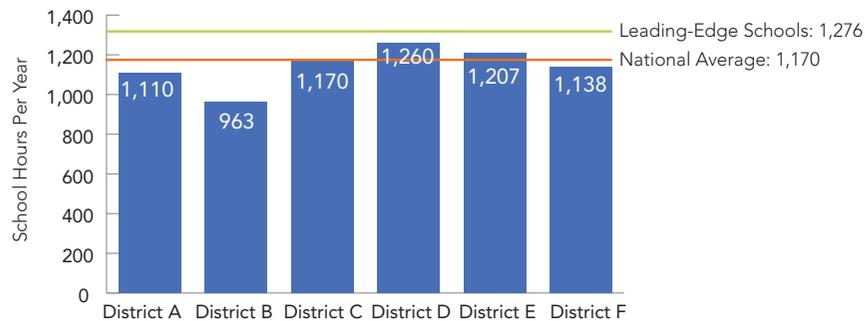
    a. Measure length of school day.

    b. Measure instructional time by subject for each student:

        i. Determine core versus non-core classification of each course.

        ii. Determine start and end time for each period.

Analysis 4a: Instructional time

Both the total amount of time that a student spends in school and his or her level of engagement with instructional content are critical components of student success.[1] ERS' work with high-performing schools has found that students in these schools spend on average 106 more hours per year in school than the average student.[2] Figure 4a shows the average school hours per year for leading-edge or high-performing schools versus a sample of seven large urban school systems.

Figure 4a: Total Hours per Year

Leading-Edge Schools: 1,276
National Average: 1,170

District	School Hours Per Year
District A	1,110
District B	963
District C	1,170
District D	1,260
District E	1,207
District F	1,138

If your district's school year is significantly shorter than the national average, you may be underinvesting in instructional time for your students. While adding time to the school day and year can be costly, it can result in significant improvements in learning. Extra time is most critical for students who are significantly behind grade level, so investments in additional time should be concentrated in the lowest-performing schools.

1   American Educational Research Association (Winter 2007). *Research Points: Time to Learn.*

2   Shields, R., & Miles, K. (2008).

Worksheet 4a: Total time in school

OBJECTIVE: To understand how much time students are in school.

SUMMARY OF METRICS

STEP 1: Identify the length of the school day for each school and the district average length of school day.
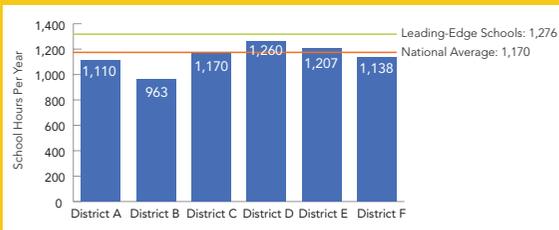
STEP 2: Identify the length of the school year for each school and the district average length of school year.

STEP 3: Calculate the school hours per year for each school and the district average school hours per year.

STEP 4: Graph differences in the school hours per year across schools.

REMINDER

Figure 4a: Total Time in School

Note: If every school of the same level (e.g., elementary, middle) has the same length of day and year, you may want to just calculate hours by school level.

STEP 1: Identify the length of the school day for each school and the district average length of school day.

1. Identify the start and end times for every school in the district using the district's course schedule database or master schedule records.

2. Calculate the length of school day in hours for each school in the district.

3. Take the average across schools, weighted by enrollment, to get the district's average length of school day (in hours).

STEP 2: Identify the length of the school year for each school and the district average length of school year.

1. If the length of the school year is dictated by collective bargaining agreements/state law/etc. and is the same across all schools, please use that as the length of the school year.

2. Otherwise, calculate the length of the school year (in days) for each school using the district's course schedule database or master schedule records.

3. Take the average across schools, weighted by enrollment, to get the district's average length of school year (in days).

STEP 3: Calculate the school hours per year for each school and the district average school hours per year.

1. For each school:

   Length of the school day (in hours)
   x Length of the school year (in days)
   _____
   School's hours per year

2. Calculate the district's average school hours per year:

   District's average length of school day (in hours)
   x District's average length of school year (in days)
   _____
   District's average school hours per year

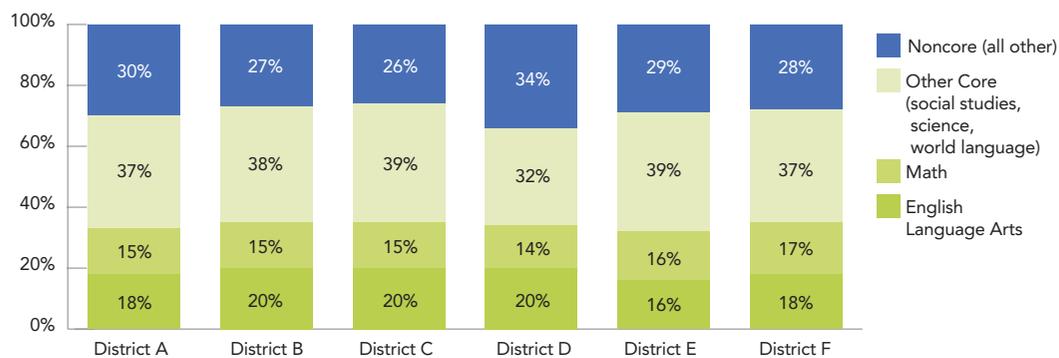## STEP 4: Graph differences in the school hours per year across schools.

1. The chart in this guide graphs the district's average school hours per year against the national average and other districts.

2. For your district, graph your district's average school hours per year and the school hours per year for each school (or school level, if all schools of the same level have the same total hours). You may also want to compare your district's school hours per year to the other districts presented in Figure 4a.

Analysis 4b: Instructional time

Assuming adequate overall instructional time, how well do schools use their daily schedule to achieve the most important student learning goals? In the case of a typical high school, each student attends six or seven different equal-length periods.[4] Figure 4b below shows the mix of time by subject in six urban school districts with which ERS has worked. Most schools in each district are on standard six- or seven-period schedules. The result is that, on average, students spend 20% or less of their time in English language arts and 17% or less of their time in math. In these urban districts where achievement in these subjects is lagging, this is not enough time to ensure that struggling students catch up and that on-track students remain on course.

Figure 4b: Instructional Time by Subject

Legend:
- Noncore (all other)
- Other Core (social studies, science, world language)
- Math
- English Language Arts

	District A	District B	District C	District D	District E	District F
Noncore (all other)	30%	27%	26%	34%	29%	28%
Other Core	37%	38%	39%	32%	39%	37%
Math	15%	15%	15%	14%	16%	17%
English Language Arts	18%	20%	20%	20%	16%	18%

Although electives are an important means of engaging and motivating students, schools with a high percentage of low-achieving students may need to consider a schedule that gives priority to core academics and investigate alternatives for maintaining a rich elective offering. Such alternatives might include shorter periods for electives versus core courses, rotating electives by semester or year instead of offering all courses at all times, or leveraging community resources to provide non-core instruction after school hours.

Students struggling in a particular subject need even more time in that subject to catch up to grade level. In practice, we find that remedial students receive only slightly, if any, additional time, and what time they do receive is often repetition of failed courses.[5]

4   Miles, K., & Frank, S. (2008).

5   Frank, S. (2010). *Measuring Time and Attention in Urban High Schools: Implications for Research and Practice*. Watertown, MA: Education Resource Strategies.

Worksheet 4b: Instructional time by subject

OBJECTIVE: To understand how much time schools are investing in core academic versus other subjects.

REMINDER

Figure 4b: Instructional Time by Subject

Note: This guide illustrates this analysis at the district level for secondary schools. For your analysis, it is most useful to do this comparison for each school or even for each grade within a school. This will allow you to compare, for example, how 9th graders in different schools spend their time or how time allocations for students in a single school change from grade to grade.

## STEP 1: Categorize all the classes at each school by subject and grade.

1. Use your district course file to identify classes at each school.

2. For each school, assign a subject and category to each class:

   a. **Subject:** The subject of a class can usually be determined by the course name. Subjects to be identified include English language arts, math, science, social studies, foreign language, art, music, health, computer literacy, vocational/career, and internship.

   b. **Category:** Core classes include the following subjects: English language arts, math, science, social studies, and foreign language. Non-core subjects include physical education, art, music, health, computer literacy, vocational/career, and internship.

STEP 2: Determine the time each student spends in each subject.

1. Use your district course file to identify students at each school.

2. For each student ID, identify the classes that student takes.

3. For each class identified in Step 1, create columns that indicate how long this class meets for each day. (Note: If period length varies by day, you will need to identify how many minutes each class meets per week or cycle.) Based on the way your system aggregates data, this could be represented one of several ways:

   a. **Course start time/course end time:** Calculate the difference in minutes in these two columns to get total minutes per class.

   b. **Course duration:** This will provide the actual length of the course.

   c. **Course units:** For which a course unit equals the number of minutes.
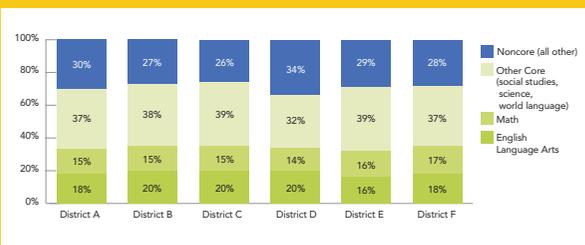
4. Once you have time per class, calculate the total number of minutes for each subject for each student by totaling all the minutes for all the classes in each subject (e.g., math, English language arts, etc.).

STEP 3: Calculate the percentage of time for core and non-core courses.

1. Add up the total minutes that all students in each school spend on each subject.

2. Total the number of minutes spent in core subjects (English language arts, math, science, social studies, and foreign language).

3. Total the number of minutes spent in non-core subjects.

4. Calculate the percentage of time students spend in core and non-core classes.

$$\frac{\text{Number of minutes in core classes}}{\text{Number of minutes in core and non-core classes}} = \text{\textbf{Percentage of time students spend in core classes}}$$

STEP 4: Graph comparison metrics to illustrate instructional time differences for schools in your district.

1. Construct a stacked bar graph like Figure 4b, in which:

   a. Each bar represents a school, or a grade, or a student group.

   b. Each stack in the bars represents the percentage of time spent in a core or non-core subject.

QUESTIONS TO CONSIDER AND ACTION STEPS

Questions to Consider

1. What is the length of the school day and year for students in your district?

2. Do the lowest-performing schools in your district have longer school days or years than the rest of the district?

3. How does time spent in school in your district compare to the national average and leading-edge schools in Figure 4a?

4. What percentage of student time is spent by students in core versus non-core subjects in schools in your district? Does this vary by school or student group?

5. Do schools in your district vary the number, length, and frequency of periods during the school day to provide additional instructional time for priority subjects and students?

6. What scheduling and staffing policies would you need to alter to increase time on core subjects for higher-need student groups?

Take Action!

- **Consider increasing total instructional hours.** In struggling schools or those in which the current school year is shorter than 1,170 hours (an average of 6.5 hours per day for a 180-day year), consider adding time to the school year. If you add time, however, that time must be used well. Doing more of the same is not likely to dramatically increase achievement. If you invest in improving the quality of instruction and then give struggling students extra learning time, you are likely to see improvements. In addition, extending overall school time can maintain non-core offerings such as gym, art, and music, which are important in engaging students and providing a full educational experience, while providing additional core academic time.

- **Change the annual schedule.** Research suggests that reducing summer learning loss can decrease the achievement gap, since minority students often have less intellectually stimulating choices of summer activities. Year-round academic schedules—those that increase total days in school *and* those that spread the same days more evenly throughout the year—can help students maintain their learning momentum from grade to grade.[6]

- **Leverage block scheduling to increase time on core subjects.** Traditional six- or seven-period schedules, in which each subject gets a class period of roughly the same size, restrict the amount of time that schools have to invest in core instruction for struggling students. By changing to an eight-period block schedule and double-blocking English language arts and/or math, schools can almost double the amount of student time in those subjects and cut teacher loads in half—all at little or no cost and without eliminating other subjects. The table on the following page illustrates how this schedule shift might work. In a six-period schedule, students take six equal blocks, spending approximately 17% of their time on each subject. In an eight-period A/B block schedule, with double blocks for math and English language arts, students are in school for the same amount of time and still take six subjects but spend 25%

6   Cooper, H., Nye, B., Charlton, K., Lindsay, J., & Greathouse, S. (1996). The Effects of Summer Vacation on Achievement Test Scores: A Narrative and Meta-Analytic Review. *Review of Educational Research,* 66, pp. 227–268.

of their time in math and English language arts in longer blocks, giving teachers more time to cover material more thoroughly. Another added benefit: This approach reduces the number of students a typical English or math teacher is teaching by 40%, with three sections instead of five, allowing teachers to utilize more intensive assignments and provide more individual attention.
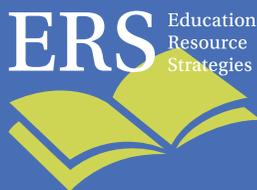
Scheduling More Time for Core Subjects

SUBJECT	6 PERIODS PER DAY		8 PERIODS PER DAY	
	Periods	% Time	Periods	% Time
English/Reading	1	17%	2	25%
Social Studies	1	17%	1	13%
Math	1	17%	2	25%
Science	1	17%	1	13%
Physical Education	1	17%	1	13%
Elective	1	17%	1	13%

Especially at the elementary and middle school levels, an integrated curriculum approach can also increase time spent on core academics by including critical reading, writing, and math skills throughout the day and/or across subjects.

- **Vary individual student time and instructional program based on student needs and performance.** High-performing schools find creative ways to provide "just-in-time" additional time for students who need it. This strategy can be accomplished through flexible grouping within classes or through small-group classes that meet at consistent times during the week (for example, during a schoolwide free period or during lunch), but the composition of the group varies depending on which students need extra attention in which subjects each week. Other schools provide integrated after-school opportunities for students who need to accelerate learning.

ABOUT ERS

ERS is a non-profit organization dedicated to helping urban school systems organize people, time, and money to create great schools at scale.

ERS Education Resource Strategies