Evaluation of the Massachusetts Expanded Learning Time (ELT) Initiative

Year Five Final Report: 2010-2011

Volume I

February 2, 2012

Prepared for:
Massachusetts Department of Elementary and Secondary Education

Prepared by:
Abt Associates Inc.
Amy Checkoway
Beth Gamse
Melissa Velez
Meghan Caven
Rodolfo de la Cruz
Nathaniel Donoghue
Kristina Kliorys
Tamara Linkow
Rachel Luck
Sarah Sahni
Michelle Woodford

With assistance from:
Stephanie Althoff
Beth Boulay
David Bell-Feins
Mieka Lewis
Alyssa Rulf Fountain
Missy Robinson
Fatih Unlu

Acknowledgements

We would like to thank the numerous participants and partners in this multi-year research study. In particular, we are grateful to the study school students, faculty, and administrators who graciously allowed us to learn about their schools as well as district administrators, parents, and community partners who provided valuable insight about the ELT initiative. We also appreciate the contributions made by key research and program staff from the Massachusetts Department of Elementary and Secondary Education, especially Carrie Conaway; Massachusetts 2020; Focus on Results; and the study's internal advisors and research team, including the Public Consulting Group (PCG) and Randstad, for their assistance with data collection activities. We would also like to acknowledge the Institute for Education Sciences (IES) of the U.S. Department of Education, which provided funding to support this study.

Table of Contents

List of Exhibits

Executive Summary

The Massachusetts Expanded Learning Time (ELT) initiative was established in 2005 with planning grants that allowed a limited number of schools to explore a redesign of their respective schedules and add time to their day or year. Participating schools are required to expand learning time by at least 300 hours per academic year to improve student outcomes in core academic subjects, broaden enrichment opportunities, and improve instruction by adding more planning and professional development time for teachers. Schools draw upon state resources as well as technical assistance and support from Massachusetts 2020 (Mass 2020) and Focus on Results to implement expanded learning time in their schools. The first cohort of ten ELT schools (Cohort 1) received implementation grants to begin operating their expanded days in the 2006–07 school year; in 2007-08, a second cohort of nine schools (Cohort 2) began to implement ELT; and a third cohort of nine schools began in 2008-09, resulting in an initial group of 26[1] ELT schools in the Commonwealth. There has not been additional funding for new ELT schools since then. In the most recently completed school year, 2010-11, 19[2] schools continued to implement the initiative.

Abt Associates Inc. is completing a multi-year evaluation of ELT that examines both the implementation of ELT in the funded schools, and the outcomes for schools, teachers, and students hypothesized to result from effective ELT implementation. This report describes current implementation and outcomes for an initiative that has been underway for five full academic years. The staggered nature of the ELT initiative means that as of the end of the 2010-11 school year, participating schools have completed five, four, and three years of implementation (Cohorts 1, 2, and 3, respectively).

Study Design

The overall ELT evaluation is guided by three major evaluation questions:

1. How has ELT been implemented in schools that have received ELT grants?
2. What are the outcomes of ELT for schools, teachers, and students?
3. What is the relationship between ELT implementation and outcomes?

This report addresses all three of the evaluation questions. It focuses considerable attention on how the ELT initiative was implemented in the ELT schools during the 2010-11 school year, and also examines

[1] In 2007-08, one Cohort 1 ELT school closed due to restructuring. Also in 2007-08, an existing Cohort 1 ELT school merged with a non-ELT school to become a new ELT school; in 2008-09, this new school merged again, this time with multiple non-ELT schools, and became a new ELT school. Given the intensity of the restructuring this school underwent, ESE changed this school's cohort designation from Cohort 1 to Cohort 3.

[2] In 2009-10, two ELT schools, one a Cohort 2 and one a Cohort 3 school, in one district were merged; the combined school was designated a Cohort 3 school. During the 2009-10 and 2010-11 school years, six ELT schools left the initiative; in three cases the teachers' union and in two cases the district School Committee voted down the school's continued participation; in one case ESE did not renew the school's ELT funding due to underperformance and because the school's Level 4 status made it eligible for Federal SIG funding to aid with school turnaround. The total number of active ELT schools is as of the time of this report 19, 18 of which are included in this evaluation.

the effects of the ELT initiative on schools, teachers, and students in the three cohorts of ELT schools for three and four years of implementation.[3] Finally, the report addresses the third question through a variety of descriptive and exploratory analyses of variation in implementation and associated variation in outcomes.

Below, the key findings from the implementation and then outcomes components are summarized.

Key Findings

Implementation of Core Components

In the fifth year of the ELT initiative, all funded schools continued efforts to create a school day that incorporated the major elements of ELT: increased core academic time, enrichment opportunities, and opportunity for teachers to engage in collaborative planning and professional development. Schools varied considerably in their respective efforts to implement the core components.

Core Academics and Instruction

- The ELT school day was just under eight hours, on average, in 2010-11.
- On average, almost five of the nearly eight hours of a typical school day were allocated to core academics (English Language Arts (ELA), math, science, and social studies). Twenty more minutes per day, on average, were allocated to core academics in 5th than in 8th grade.
- Overall, the plurality of time in an ELT school day was allocated to ELA, followed by math, then science and social studies. Specifically, of the five hours allocated to core academics:
  - The amount of time scheduled for English Language Arts (ELA) was 1 hour and 45 minutes, on average.
  - Nearly 90 minutes were allocated to math instruction, on average.
  - An average of nearly 1 hour was scheduled for science and 45 minutes to social studies per day.
- Time allocations for core subjects varied somewhat by grade. Specifically,
  - An average of about 45 minutes more each day was allocated to ELA in 5th than in 8th grade.
  - Slightly more time (12 minutes, on average) was allocated to math in 5th than in 8th grade.
  - About 20 fewer minutes were allocated to science and 15 minutes fewer to social studies in 5th than 8th grade, on average.
- While there are broad core principles guiding ELT implementation, ELT schools have flexibility in how they implement core components. As in past years, schools varied considerably in how they allocated time to various instructional activities.

[3] The report presents findings based on two or three cohorts of schools in the main body; findings based solely on one cohort (Cohort 1) are presented, where appropriate, in appendices.

School-Wide Academic Focus

- In the 2010-11 school year, most ELT schools had a school-wide academic focus, according to both principals and teachers. Teacher and principal reports of the focus were consistent at 11 of 16 schools.
- Both teachers and principals reported that the most common focus area was literacy, although writing, math, and higher order thinking skills were also common foci.
- Elementary school teachers reported a literacy-related focus more frequently than middle schools, and middle school teachers reported that higher order thinking skills was the focus more frequently than elementary schools.
- Students were most likely to report that the focus was math; however, student reports were rarely consistent with those of principals and teachers or internally consistent within a school.
- At most schools, the focus was posted publicly, often in hallways, teachers' classrooms, and the administrative offices.
- According to principals, most ELT schools had implemented school-wide instructional practices, and the vast majority of teachers reported that their instructional practice was influenced by the focus.
- A substantial majority of teachers reported that they used data specific to the focus area to monitor student progress and adjust instructional practices. Most also reported that dedicated academic support was influenced by the school-wide focus.

Enrichment

- Most ELT schools have implemented separate enrichment classes. Nearly all students participated in enrichment classes/instruction, though the amount of time varied. Some schools also embedded enrichment activities within core classes.
- The amount of time a typical student spent in enrichment varied considerably, from daily to weekly. Similar to last year, middle school students appeared to spend more time in enrichment than elementary students.
- Approximately half of all ELT teachers reported that they taught at least one enrichment activity. Middle school teachers taught enrichment more often than elementary teachers.
- Regular teachers/staff taught some enrichment activities at most ELT schools, and over half the ELT schools relied on partner organizations to provide some enrichment; of those latter schools, regular meetings were scheduled for partner staff and teachers to collaborate, an increase over reported efforts to integrate partners from the previous year.
- Most teachers reported that they and their students had some choice about selecting enrichment activities. The vast majority of teachers reported that all students had access to enrichment activities, and enrichment activities were of high quality.

Common Planning Time and Professional Development

- More than half of ELT teachers (65 percent) participated in collaborative planning time weekly or more often.

- Only a small proportion of teachers (16 percent) reported never having participated in collaborative planning.
- Teachers reported participating in multiple activities during collaborative planning time, including analyzing student data, strategizing about instructional practices, and/or reviewing student work. The majority of teachers who reported participating in an activity also reported that the activity was useful.
- Teacher perceptions of principal leadership varied across schools. Teachers were more consistently positive about principals' ELT-focused leadership than they were about principals' leadership in general.

Implementation Index

The study team developed an index keyed to core principles of effective ELT implementation, as articulated by ESE and Mass 2020. The purpose of the index is two-fold: one, to integrate information from multiple data sources into one measure that could help to describe variation in schools' implementation efforts, both for individual schools and for the initiative as a whole; and two, to create a measure that could potentially be used to explore relationships between level of implementation and student achievement.

The index is based upon interview and survey data from staff and students in both ELT and matched comparison schools. Its structure and thresholds reflect contributions from ESE and Mass 2020 as well as the study team. The index includes separate scores for eight criteria related to six dimension of implementation[4], and the dimension-specific scores are also combined into an overall index score. Each school received a score that ranged from zero (indicating no or very little evidence of implementation on a given criterion) to three (indicating consistent evidence of implementation on a given criterion) for each of the dimensions, some of which had more than one component.

Key findings about implementation based on application of the implementation index include:

- The range of total scores for ELT schools was from 5 to 22, and for comparison schools, the range was from 2 to 12 out of a total possible score of 24.
- The average total score for ELT schools was 11.4 and for comparison schools was 6.9.
- ELT schools, on average, scored higher than comparison schools on six of the eight criteria.
- Comparison schools scored notably lower on the enrichment-related criteria.
- On average, ELT schools' scores on individual criteria ranged from 1 to 2, and comparison schools' scores ranged from 0 to 1.
- Many comparison schools also appeared to be implementing at least some of the key components that are considered core expectations of the ELT initiative.

[4] The implementation index dimensions include: school-wide academic focus, core academics in target grades (two subcomponents), enrichment activities (two subcomponents), teacher leadership and collaboration (two subcomponents), and school leadership, along with ELT-specific stakeholder support. Chapter 3 includes additional details about the index.

- For two of eight criteria, the average comparison school score was higher than the average ELT score.

Assessment of Outcomes

Student and Teacher Surveys

Findings from study-developed surveys are based solely on responses from the 2010-11 school year, regardless of individual schools' implementation year, because the surveys were substantially revised to ensure more detailed information from school respondents on time use, teachers' participation in the extended day teaching schedule, and overall time allocations across the schools. Consequently, survey responses could not be aggregated with prior survey responses to examine responses as a function of implementation year.

It is also important to note that the study surveyed all teachers across all content areas, and all eligible 5th and 8th grade students in study schools, and only those schools with response rates above 70 percent for both student and teacher surveys are included in findings presented in the report. Teachers from 37 schools (18 ELT and 19 matched comparison schools) participated in teacher survey administration. The response rates across the schools ranged from 64 to 100 percent. Eighteen ELT schools and 17 of the matched comparison schools achieved response rates of at least 70 percent[5].While teacher responses can be assumed to be representative of teachers in study schools, student responses cannot, as they represent perceptions of students in only one or two grades within schools that serve between three and nine grade levels.

Extant data (e.g., attendance, MCAS scores)

Findings based on extant data sources are presented in terms of implementation year, as data were available for multiple academic years prior to 2010-11. For this latter group of outcomes, findings are presented in the main body for implementation years one through four (i.e., for schools with two or more years of ELT implementation); findings based on five years of ELT implementation (Cohort 1 only) are presented in the appendices.

Analysis of extant data uses a comparative interrupted time series design that leverages pre-ELT data, school, and year fixed effects when estimating the effect of ELT. This design is among the strongest quasi-experimental designs available, although its analyses are non-experimental. Since schools and their students were not randomly assigned to ELT participation, results cannot be attributed solely to ELT. The interrupted time series design, use of matched comparison schools and statistical controls, and rigorous model specification, taken together, are capable of yielding credible and robust estimates of program impacts. This report also presents results from a number of descriptive and exploratory analyses to provide context for the comparative analyses; while informative, these findings do not support causal conclusions, as they are based upon less robust analyses.

[5] The two matched comparison schools that were excluded from analyses represent one Cohort 1 and one Cohort 3 school, and both are elementary schools.

Non-Academic Outcomes

Comparing Time Allocations in ELT and Matched Comparison Schools

- The length of the ELT school day was significantly longer for 5th and 8th grade students than would be expected in the absence of ELT.
- ELT schools allocated significantly more time for ELA, math, and science classes for 5th and 8th graders than would be expected in the absence of ELT.
- ELT schools allocated significantly more time for non-core classes and specials for 5th grade students than would be expected in the absence of ELT.
- ELT schools allocated significantly more time for enrichment activities for 5th and 8th grade students than would be expected in the absence of ELT.
- ELT schools allocated significantly more time for transitions, recess, snack, lunch, and homeroom for 5th and 8th grade students than would be expected in the absence of ELT.
- A statistically smaller proportion of students in ELT schools reported that they attend an academic club than would be reported in the absence of ELT.
- Significantly fewer students in ELT schools attended an after-school program than would be the expected in the absence of ELT.

Teacher Outcomes

- A significantly higher proportion of teachers in ELT schools reported that the length of the day allows them to accomplish their teaching goals and cover the amount of instructional material their students need to learn than would be expected in the absence of ELT.
- A significantly higher proportion of teachers in ELT schools reported that they are satisfied with the amount of time available for instruction in ELA, math, and science than would be expected in the absence of ELT.
- A significantly higher proportion of teachers in ELT schools reported that they are satisfied with the amount of time available for academic support, enrichment activities and for students to pursue topics of interest than would be expected in the absence of ELT.
- Significantly more teachers in ELT schools reported that they are satisfied with the amount of time available for collaborative planning and that the length of the day allows for coordination of instruction than would be expected in the absence of ELT. Conversely, significantly fewer teachers in ELT schools than the counterfactual reported that the amount of collaborative planning time is a problem area.

Student Outcomes

- A significantly higher proportion of teachers in ELT schools reported that teachers and students spend sufficient instructional time together than would be expected in the absence of ELT.
- Significantly more teachers in ELT schools reported that teacher and staff fatigue, as well as student fatigue, were problem areas than would be expected without ELT. Likewise, a significantly higher proportion of students in ELT schools reported that they were tired in school.

- Significantly fewer students in ELT schools reported that: they look forward to going to school; like being in school; that all of their classes are important to them; and that they like the length of their school day, than would be expected without ELT.
- A significantly smaller proportion of teachers in ELT schools reported that student academic performance and homework completion rates were problem areas.
- Students in ELT schools had statistically significantly higher suspension rates than would be expected in the absence of ELT; however, while statistically significant, the differences were extremely small in magnitude, and therefore are unlikely to have educational or practical significance.

Student Achievement Outcomes

- In the first and second years of implementation, ELT schools served a statistically significantly greater proportion of minority students than estimated in the absence of ELT, although the estimated magnitude of the differences (3.7 and 4.0 percentage points, respectively) is unlikely to be practically meaningful, and there were no effects of ELT on schools' minority student population in the third or fourth year.
- In the third year of implementation, ELT schools had a statistically significantly smaller proportion of highly qualified core academic teachers compared to the estimated proportion in the absence of ELT (2.9 percentage points).
- In the fourth year of implementation, ELT schools had a statistically significantly lower number of FTE teachers (4.7 fewer), and statistically significantly higher student-teacher ratio (almost two more students per teacher) than estimated in the absence of ELT.
- Across all years of implementation, there were no significant differences in average student mobility rates between ELT and matched comparison schools.
- Descriptive analyses restricted to ELT schools indicated variation in student performance levels among schools both before implementation began and in the most recent school year (2010-11), and indicated no consistent patterns of results. Descriptive analyses indicated that some schools have substantially increased the percentage of students that reached proficient or advanced performance levels, while others have experienced little change or decreased percentage of students at these same levels.
- On average, there were no statistically significant effects of ELT after one, two, three, or four years of implementation on MCAS student achievement test outcomes for 3rd, 4th, or 7th grade ELA, 4th, 6th, or 8th grade math, or 8th grade science.
- There was a statistically significant positive effect of ELT after four years of implementation on the MCAS 5th grade science test.
- Exploratory analyses using data from non-ELT schools in ELT districts, and non-ELT schools statewide, rather than the study's matched comparison schools, were generally consistent with the primary analysis, including the significant finding for 5th grade science noted above. In addition, there was a statistically significant negative effect of ELT on 3rd grade reading after two years of implementation, and there were statistically significant positive effects of ELT on 6th grade math and 8th grade science after four years of implementation in both the district-level and state-level

analyses. The state-level analysis also found a statistically significant positive effect of ELT on 7th grade ELA after one year of implementation and on 6th grade math after three years of implementation.

- Exploratory descriptive analysis linking the level of implementation in ELT schools and student achievement outcomes indicated no clear patterns or meaningful relationships.
- Exploratory analysis investigating the difference of the effect of ELT in higher- versus lower-implementing schools indicates minimal heterogeneity in the effect by the level of ELT implementation. However, the effect of ELT on 8th grade math in higher-implementing schools is estimated to be statistically significantly greater than the effect of ELT in low- implementing schools after three and four years of implementation.

Discussion

Across findings from interviews, surveys, and achievement data, the following themes seem clear:

- There is strong evidence that the ELT schools have implemented many core ELT elements, both in terms of additional time available for instruction, academic support, and enrichment and supports for teachers' use of that time.
- There continues to be substantial variation across ELT schools' level and approach to implementation (as measured by interviews, surveys, and an index).
- Measuring different aspects of time use is challenging: collecting information on a prototypical student in a given grade level may or may not reveal how students are supported by the ELT initiative and definitions of various activities/time uses are not consistent across schools.
- There are some, but not many, differences—even descriptively—between ELT and comparison schools on survey and achievement outcomes.
- The school reform landscape is dynamic and more schools (outside of this ELT initiative) appear to be expanding the amount of time in their school year, as well as implementing reforms consistent with the core ELT components with each successive year.
- This study was able to assess the quantity and allocation of time, but did not measure the quality of instruction, enrichment, and other activities made possible by the additional time, and clearly, the quality of such activities is also important.

Future Steps for the ELT Initiative

The ELT initiative has been underway for several years, and can now be considered a fairly mature intervention. Over that time period, as the schools' implementation efforts have matured, the contexts within which the schools operate have continued to change. Some of that change reflects increasingly explicit guidance from the Massachusetts Department of Elementary and Secondary Education, some reflects the increasingly targeted nature of technical assistance and support from Mass 2020 and Focus on Results, and some reflects the heightened visibility of ELT more broadly, through other federal and state initiatives such as School Improvement Grants and Race to the Top funding. While the federal, state, and local contexts have changed, and the implementation of the initiative in the ELT study schools has also

continued to evolve, the improved academic achievement outcomes for students have not materialized as expected across ELT schools as a whole.

This multi-year evaluation has described schools' ongoing implementation efforts in four prior interim reports. ELT schools clearly have made progress on implementing many of the core elements of ELT and, as measured by the study's implementation index, score higher than the matched comparison schools on average. Yet the patterns of implementation differ as much across the ELT schools as between the ELT and comparison schools, highlighting the variation in ELT across the initiative. The fact that such variation exists in the initiative's fifth year illustrates both the complexity inherent in large-scale efforts to transform low-performing schools and the variation that inevitably results from flexible interventions that can be shared to fit individual schools' needs. It may also reflect the different motivation of schools to participate in ELT from the outset, as some schools opted in voluntarily while others were strongly encouraged to apply.

Variation in ongoing implementation is clearly a continuing theme for the Massachusetts ELT initiative. Prior years' impact analyses have found little evidence of effects on students' academic achievement, and the results from the fifth year indicate that students' academic achievement outcomes, on average, have largely remained unaffected. Descriptive and exploratory analyses provide limited suggestive evidence that student growth in ELT schools is greater than growth in non-ELT counterparts, yet such results are not generally statistically significant. Despite the demonstrable progress ELT schools made to implement core components of ELT, those implementation efforts have not yet consistently translated the additional time into the content, strategies, or support that in turn yield improved overall student performance.

Chapter 1. Introduction and Context

This introductory chapter first describes the existing research literature about increased learning time for students, and then presents a brief overview of the current federal policy context within which the Expanded Learning Time (ELT) initiative in Massachusetts is situated. The chapter then provides a brief history of the Massachusetts ELT initiative and description of the roles played by state stakeholders supporting ELT. Next, it provides local contextual information from the nine districts with ELT schools. Finally, an overview of the organization of this report is provided.

Research Evidence about Expanded Learning Time

Even though ELT is widely seen as a promising initiative for improving the academic achievement of students, there is limited rigorous research that has examined the relationship between ELT and student achievement.

Variation in Expanded Learning Time (ELT) Implementation

Though ELT refers broadly to the addition of a certain number or proportion of hours to the school year, schools across the country vary considerably in their implementation of ELT. Models of ELT range from extended academic years, to longer school days, to summer programming, to mandatory after-school programming staffed by adults from community-based organizations. Even within schools that are nominally implementing the same type of ELT, significant variation in implementation is evident. Kolbe, Partridge and O'Reilly (2011) acknowledge that "more comprehensive data are needed to unpack how schools allocate in-school time to instruction, enrichment, and teacher professional activities."

Not Just Time, But Quality Time

While ELT is believed to impact student outcomes, at least in part, by increasing the amount of instruction students receive, ELT and non-ELT schools alike also allocate time to lunch, attendance, transition periods, and various other non-instructional activities. Following the lead of a number of well-known education researchers (Berliner, 1990; Aronson et al., 1999), a report issued by ECONorthwest in 2008 draws a useful distinction between types of time spent in schools. The report distinguishes between allocated time, the total number of hours in a school day; instructional time, the amount of time students are in academic classes; and academic learning time, "that precise period when an instructional activity is perfectly aligned with a student's readiness and learning occurs"(Aronson, Zimmerman, & Carlos, 1999). Drawing on Aronson et al. (1999) and Silva's (2007) research, the ECONorthwest authors assert that there is "a strong positive relationship between the amount of academic learning time and student achievement, a weak relationship between engaged time and achievement, but no relationship between allocated time and student achievement" (ECONorthwest, 2008). The important point, the paper continues, "is that while time in school is necessary for learning, time alone is not sufficient."

Indicators of and Factors Affecting ELT Program Quality

A recent paper synthesizing current research on ELT concluded that although time itself cannot improve academic achievement, more time in concert with improved instructional quality was positively correlated with academic achievement (McREL, 2010). If using time well is integral to linking ELT with improved academic achievement, the question begs asking: what is quality use of time? Moreover, how can educators and policymakers ensure that schools maximize academic learning time?

As for the attributes of quality ELT programs, researchers who have studied ELT emphasize several characteristics. The ECONorthwest researchers note that successful ELT programs have: strong school leadership; involve teacher commitment and leadership; are evidence-based and data-driven; engage the support of parents, partners, and the community; and are focused on core academics and enrichment activities that are aligned with other goals and reforms (2008). Similarly, a report by Massachusetts 2020 named "strong leaders, excellent teachers, high student expectations, careful monitoring of performance, and a safe, supportive, and nurturing school environment" as key to successful ELT implementation (Farbman & Kaplan, 2005). A RAND study of out of school time (OST) programs[6] found that quality programs had nine characteristics in common: a clear mission; high expectations and positive social norms expected of participants; a safe and healthy environment; a supportive emotional climate; a small total enrollment; stable, trained personnel; appropriate content and pedagogy, relative to the children's needs and the program's mission, with opportunities to engage; integrated family and community partners; and frequent assessments (Bodilly & Beckett, 2005).

Several recent studies focusing on the use of expanded time in charter schools have identified both promising practices for ELT, as well as positive associations between ELT and improved student achievement in charter schools. Through examining a group of 30 high-performing expanded time schools, the National Center on Time and Learning identified eight practices common among high-performing schools: maximizing instructional time, prioritizing instruction according to an instructional focus, providing individualized academic support, establishing a culture of high expectations, providing a well-rounded education including enrichment activities, readying students for college and careers, working to strengthen instruction, and using data to direct instruction (Kaplan & Chan, 2011).

A study of New York City charter schools (Hoxby, Murarka, & Kang, 2009) found that students assigned by lottery to charter schools performed, on average, significantly better on a number of achievement outcomes than students who were not assigned to charter schools. This study found correlations between certain achievement gains and several time-related attributes of the charter schools, including the longer school day and increased time spent in English Language Arts.

Another study that compared charter schools, pilot schools, and traditional schools in Boston (Therriault, Gandhi, Casasanto, & Carney, 2010) found that increased school autonomy—defined by a school's control of their own governance and leadership, budget, staffing, professional development, scheduling and time, and curriculum and instruction—was related to increased achievement outcomes. The study also noted that the charter schools consistently implemented a longer school day and school year than traditional or pilot schools, thus enabling them to provide professional development and supplemented curriculum. Relatedly, a study of NYC charter schools (Fryer & Dobbie, 2011) found that added instructional time was among five school policies that accounted for 50 percent of the variation in school effectiveness. Higher achieving charter schools added 25 percent or more instructional time, and showed annual gains in math, compared to a broader sample of charter schools. Other policies that were positively associated with improved student achievement included frequent teacher feedback, the use of data to guide instruction, high-dosage tutoring, and a culture of high expectations.

[6] It should be noted that many OST programs have important differences from the Massachusetts ELT initiative.

Academic Outcomes

A recent review of research identified 15 empirical studies that examined the academic outcomes associated with ELT (Patall, 2010). This review found that the research designs used to look at the effects of expanded time generally were not rigorous enough to permit strong causal inferences; small sample size and other design weaknesses undermined the reliability of results. However, the results from the more rigorous experiments and strong quasi-experiments (such as those comparing groups of students through cohort or matched comparison designs) yielded more consistent results positively linking ELT to academic achievement (Frazier & Morrison, 1998; Adelman, Haslam, & Pringle, 1996; and Farbman & Kaplan, 2005). However, the association between ELT and positive outcomes varied within study schools, and as a function of student demographics and the specific outcome measures studied.

Among this set of 15 studies, it is difficult to disentangle the effects of ELT on academic achievement from confounding factors. For example, a study conducted by the Division of Assessment and Accountability of the New York Board of Education (2000) found academic improvements associated with ELT, but also found a concentration of certified teachers in extended time schools as compared to non-extended time schools (Patall, Cooper, & Allen, 2010). Marcotte and Hanson (2010) also found that additional instructional days have similar positive effects on student achievement, but here too, other factors appear to be confounded with these impacts, including increased teacher quality and reduced class size. Patall (2010) suggested that instructional practices be "viewed as mediators of extended school time effects on students. That is, the effectiveness of instruction might determine whether extended school time has positive, negative, or no effects on student outcomes." However, in examining the method by which extra time is implemented in classrooms, Patall (2010) could not determine any consistent or statistically significant trends. Adelman, Haslam, and Pringle (1996), for example, reported that the percentage of students in a Boston school who passed a state basic reading skills test increased from 77 to 90 percent over a three-year period. Farbman and Kaplan (2005) found that students at profiled (ELT) schools outperformed students of similar SES at traditional-year public schools, but later reveal that these schools also promoted teacher quality, strong leadership, professional development, a positive school culture, and family involvement, "which likely also contributed to students' academic performance." A thorough understanding of extended school time is still limited by study designs that make it difficult to isolate the effects of ELT on student achievement.

Non-Academic Outcomes

The discussion above focuses on academic outcomes. Even fewer studies have systematically examined the effects of ELT on such other outcomes as student engagement, social or emotional well-being, or student behaviors and aspirations.

One study by the Harvard Family Research Project found that quality "expanded learning opportunities" for high school students improved school attendance and lowered dropout rates; improved students' attitudes towards school; helped students establish stronger connections with adults and peers; improved students' health and healthy choices; and provided more opportunities for learning about college and career options (Harris, Deschenes, & Wallace, 2011). Another study by the Wallace Foundation noted a link between unstructured time for young people and "getting into trouble," suggesting that structured activities contribute to students' safety and healthy decision-making. The same study found, though, that access to such opportunities varied considerably by SES (Duffett & Johnson, 2004). It is of note that these

studies focused on OST, rather than ELT, though the programs of interest shared many design elements and objectives.

ELT for Whom?

Multiple studies have shown ELT to be particularly effective for low-income students. Silva (2007) explains that ELT might be particularly important for poor and minority students who have less access to educational resources outside of school. Patall (2010) found some evidence that ELT provided a particular benefit to "at-risk" youth (Farbman & Kaplan, 2005; McDonald et al., 2008; Ross et al., 2007; Meier, 2009; Van Der Graaf, 2008). These findings are consistent with those of Aronson et al, (1998), and Wheeler's (1987) meta-analyses of the relevant research. A separate study conducted by Little, Wimer and Weiss (2008) notes that "all children, but particularly disadvantaged children, may gain a host of benefits that are not reflected in standardized achievement test scores but nevertheless lead to better overall educational outcomes. These include higher levels of engagement, higher work quality, higher grades, improved attendance, higher self-esteem, improved physical and mental health, lower drop-out rates, and lower incidence of anti-social behaviors, sexual activity and crime."

Areas for Future Research

Patall (2010) suggests a number of possible directions for future research into ELT, including investigating the effects of ELT at different levels of schooling; including outcomes other than achievement in ELT studies; and examining variations in instructional strategies in the context of ELT. Other researchers suggest conducting a detailed cost-effectiveness of ELT study as a policy initiative in the context of limited resources (ECONorthwest, 2008; Kolbe, Partridge, & O'Reilly, 2011). The recent attention paid to ELT as a promising strategy for improving educational outcomes is unheralded.[7] However, given the limited rigorous research evidence about both the effects of ELT on academic and other student outcomes, and on the specific mechanisms/factors that would help to understand whether, how, and for whom ELT is effective, the need for credible evidence is clear.

Current Federal Policy Context

Closing the achievement gap between advantaged and disadvantaged students, especially in the nation's chronically low-performing schools, is a critical national issue and the subject of focused national attention from federal, state, and local policymakers. Expanded Learning Time (ELT) is seen as one promising approach to improve the academic achievement of students, although there is limited rigorous research that has examined the relationship between ELT and student achievement. The schedules and calendars of most American public schools, defined by relatively early afternoon dismissals and lengthy summer vacations, is still in place from an agricultural era when children were needed at home to work in the fields. President Obama recently asserted that "we can no longer afford an academic calendar designed when America was a nation of farmers who needed their children at home plowing the land at the end of each day" (Obama, 2009). As persistent achievement gaps between affluent students and their more disadvantaged peers come under increasing scrutiny, so has the standard academic calendar.

[7] http://www.afterschoolalliance.org/PolicyFedNewsarchive.cfm;http://blogs.edweek.org/edweek/beyond_schools/2011/10/nclb_waivers_touch_out_of_school_time_realm.html;http://www.edweek.org/ew/articles/2011/10/26/09elt_ep.h31.html

The Elementary and Secondary Education Act (ESEA), known as the No Child Left Behind Act (NCLB), was signed into law by President Bush in early 2002 and aimed to improve the academic achievement levels of public schools nationwide. Under NCLB, states must administer standardized tests to all public school students in grades 3 through 8 plus one year in high school to document progress towards the ultimate goal of having each and every student "proficient" in Math and English Language Arts by 2014. Schools are expected to demonstrate Adequate Yearly Progress (AYP) of their student achievement scores. Schools in which student achievement scores consistently miss the AYP benchmarks face substantial sanctions, and persistent failure to meet AYP results in special designation status often requires structural reforms, including closure, re-staffing, and curricular redesigns.

Since the 2002 reauthorization of ESEA, schools have made modest progress towards the objective of achieving 100 percent proficiency. Indeed, in a March 2011 address to Congress, U.S. Department of Education Secretary Duncan claimed that more than 80,000 of the nation's 100,000 public schools could be labeled as failing under No Child Left Behind.[8] Of particular concern to policy makers, education professionals, and communities, is the persistent gap in achievement scores between students from different backgrounds. A report published in June 2011 by the National Assessment of Education Progress (NAEP) noted that the gap between White students' and Hispanic students' achievement scores was greater than 20 points in math and 25 points in reading (Hemphill, Vanneman, & Rahman, 2011). A similar report from 2009 indicated that, though achievement gaps appear to be narrowing nationally, White students had average scores at least 26 points higher than Black students in each subject (Vanneman, Hamilton, & Anderson, 2009).[9]

In the current landscape of student achievement and school accountability, ELT has gained traction among educators and policy makers alike. In fact, in 2010, two of the four models to improve the lowest performing schools in the revamped federal School Improvement Grants (SIG) program require schools to increase learning time. The Race to the Top Fund (RTTT), which provides competitive grants to states to develop systemic statewide education reform, encourages expanding learning time as a strategy that states should seriously consider for turnaround schools. ELT is also the focus of a handful of Investing in Innovation (i3) Fund grants awarded by the U.S. Department of Education. According to a 2010-11 survey conducted by the National Center on Time & Learning (NCTL), there are currently at least 1,000 schools offering some sort of expanded schedule. The Time for Innovation Matters in Education (TIME) Act currently proposed in Congress would also focus nationally on expanded time and could be part of the upcoming reauthorization of the Elementary and Secondary Education Act.

The notion of expanding the school day to improve student outcomes, however, is not an entirely new one. Historians of the ELT movement trace its beginnings to two influential reports of the early eighties and nineties: *A Nation at Risk* (1983), and *Prisoners of Time* (1994), which both advocated for the expansion of the American school day (Kolbe, Partridge, & O'Reilly, 2011).

Despite these earlier calls for sweeping changes to the education system, only two states currently require that the school year is longer than 180 days, and those that do hardly exceed the threshold (North Dakota

[8] In the fall of 2011, the federal government announced a new plan for education reform that provides states the opportunity to apply for a waiver from ESEA accountability requirements and the flexibility to redefine progress benchmarks. See http://www.ed.gov/esea/flexibility.

[9] NAEP tests are scored on a 500-point scale.

and Ohio require 181 days and 182 days, respectively). Additionally, no state requires that students spend more than 1,100 hours in school a year, which, over 180 days, amounts to a six-hour school day, on average (National Center on Time And Learning, 2011). According to a report from Mid-Continent Research for Education and Learning (McREL), a non-profit education research organization, the average length of the school day and year do not differ at all from those challenged by the 1983 report *A Nation at Risk* (McREL, 2010). Further, a study published by the Organization for Economic Co-Operation and Development (OECD) found that, on average, American students spend less time in school than do students from other countries including the United Kingdom, Canada, China, Thailand, Russia, Korea, and New Zealand (OECD, 2011). Unfortunately a number of states have also been forced to reduce the length of the school year as of late given the difficult economic climate.[10]

History of the Massachusetts Expanded Learning Time Initiative

The need for more learning time and the better use of this time was first formally recommended in Massachusetts in 1995, when the Commission on Time and Learning (the Commission) released its final report, *Unlocking the Power of Time*. The Commission was appointed to develop a plan "to extend the time during which students attend school" and to review the costs and implications of extending the length of both the school day and school year. The Commission's report provided seven recommendations, including: 1) prioritizing academic learning; 2) accommodating differences in rates of student learning; 3) enhancing opportunities for teachers to plan lessons, participate in professional development activities, and collaborate with colleagues; 4) lengthening the school year; 5) providing optional enrichment activities throughout the calendar year; 6) using schools as Community Learning Centers through the day and year; and 7) promoting strong school and community partnerships. The Commission concluded that "time alone guarantees nothing … but with it, all else is possible."

Since its founding in 2000, the policy and advocacy organization Massachusetts 2020 (Mass 2020) has worked to expand learning and economic opportunities for children and families. Initially, its efforts focused on expanding after-school programming and summer learning opportunities; over time, the organization has turned its resources and attention toward the expansion and redesign of the school day itself. In 2005, Mass 2020 helped to launch the Expanded Learning Time (ELT) initiative, and 16 school districts received planning grants from the state Department of Elementary and Secondary Education (ESE)[11] to explore adding time to and redesigning their school day.

The Massachusetts ELT initiative focuses on expanding the school day and/or school year at the school level, and while the operational definition has changed slightly over time, the basic time requirement has not. Specifically, during the initiative's first year (2006-07), this requirement meant an increase of 30 percent more time over the prior year's district average. The following year (2007-08), the requirement was adjusted to 25 percent more time or 300 hours. The requirement for the 2008-09 and subsequent school years was simply to expand the school schedule by at least 300 hours over the district's average. During the 2010-11 school year, as in previous years, ELT implementation grants provided schools with $1,300 per pupil to implement their redesigned schedules.

[10] It is worth noting, however, that many charter schools, which in most states operate as autonomous self-contained districts operate with a longer than average school day and/or year, and the number of charter schools will likely continue to grow in the near future due to new federal policy and funding.

[11] In 2005, ESE was known as the Massachusetts Department of Education (DOE).

While the specific expectations for how schools should use their additional time have evolved over the course of the initiative, the major objectives have remained the same:

- Provide more instructional opportunities in literacy, math, science, and other core subjects to support student achievement;
- Integrate enrichment opportunities into student learning; and
- Provide educators with increased opportunities to plan and to participate in professional development.

The first cohort of 10 ELT schools (in five districts) received implementation grants from ESE for their expanded programs in the fall of 2006, and a second cohort of nine schools (and three new districts) began implementation in the fall of 2007. In the 2008-09 school year, a third cohort of nine ELT schools (and four new districts) began implementation, bringing the total of ELT schools to 26[12] (in 12 districts). There has not been additional funding for new ELT schools since then. In the most recently completed school year (2010-11), 19 schools (in 9 districts) continued to implement the initiative.[13] ESE and Mass 2020, in collaboration with other partners, continued to work closely together in a partnership to support the development and implementation of ELT in the funded schools.

ESE, with support through a research grant from the Institute of Education Sciences (IES) within the U.S. Department of Education, has overseen a multi-year study of the Expanded Learning Time initiative to learn about the implementation and impact of ELT. Abt Associates Inc. is conducting this research. The study addresses both the implementation of the ELT initiative and the outcomes of ELT for schools, teachers, and students. To assess the implementation of ELT, data were gathered from school administrators, teachers, students, and other stakeholders through interviews and surveys. To determine the impact of the ELT initiative, outcomes from ELT schools (e.g., student achievement scores and non-academic outcomes) are compared to those from matched comparison schools. As described further in Chapter 2, the study controls for external policy changes by including a set of carefully chosen schools that are not implementing ELT.

ELT implementation during 2010-11 was characterized by three main themes. First, the role of variation in ELT schools' implementation of the initiative was recognized, as was the need to better comprehend and measure such variation as a means to understand the ELT model's effectiveness. Second, participating schools were perceived to develop momentum in implementation at varying rates; some

[12] In 2007-08, one Cohort 1 ELT school closed due to restructuring. Also in 2007-08, an existing Cohort 1 ELT school merged with a non-ELT school to become a new ELT school;, in 2008-09, this new school merged again, this time with multiple non-ELT schools, and became a new ELT school. Given the intensity of the restructuring this school underwent, ESE changed this school's cohort designation from Cohort 1 to Cohort 3.

[13] In 2009-10, two ELT schools, one a Cohort 2 and one a Cohort 3 school, in one district were merged; the combined school was designated a Cohort 3 school. During the 2009-10 and 2010-11 school years, six ELT schools left the initiative; in three cases the teachers' union and in two cases the district School Committee voted down the school's continued participation; in one case ESE did not renew the school's ELT funding due to underperformance and because the school's Level 4 status made it eligible for Federal SIG funding to aid with school turnaround.

were able to implement with impressive speed, and others were slower. Third, ESE and Mass 2020 have been both clearer and more specific about guidance and expectations for the initiative over time, and have implemented more formal supports; the increased levels of guidance and support were perceived to improve consistency and to strengthen implementation.

State-Level Context

Policy Context

During 2010-11, significant state-level education reform policy initiatives continued to play a role in the ELT context. For example, ESE identified 34 of the state's lowest-performing schools as Level 4 schools; these schools could adopt increased time as one part of a school turnaround strategy, and many of the Level 4 schools decided to expand their schedules.[14] Massachusetts' Race to the Top efforts also includes the use of increased learning time as a school turnaround strategy for both districts and schools to consider. ESE provided significant support to develop and implement redesign plans in collaboration with the Level 4 schools, district superintendents, school committees, teachers' unions, and other stakeholders, and these plans served as their application for federal grant funding.

Roles of Key Stakeholders

Administration of ELT Initiative

In 2009-10 and 2010-11, there were several notable changes related to statewide oversight of and support for the ELT initiative. ESE engaged in a more formal accountability process than in prior years. Beginning in 2009-10, ESE set up multi-year performance agreements with schools (see Appendix A for agreement template) to demonstrate ongoing commitment by both ESE and the ELT school/district to rigorously implement the proposed ELT model and give the initiative sufficient time to succeed. The agreements were developed in collaboration with Mass 2020. The performance agreements specified objectives set by each participating school in three areas: improvement of academic outcomes, improvement of teacher leadership and collaboration, and provision of integrated enrichment opportunities. Each school's agreement formed the basis of its annual reapplication. The agreements also provided ESE with better information with which to assess whether to continue schools' funding; successful attainment of objectives mean a school will continue to receive ELT funds (assuming adequate funds in the state budget). Cohort 1 schools were expected to meet their performance agreement objectives at the end of the 2010-2011 school year, and Cohort 2 schools will need to attain their objectives by the end of the 2011-2012 school year. The increased attention to actual performance is reflected in greater clarity of and accountability for expectations over time, and are intended to improve (at both individual school and initiative levels) the quality of implementation. However, ESE staff support for the ELT initiative decreased in 2010-11, due to turnover and agency reorganization transitions, leaving one staff person with primary responsibility for coordinating ELT-related support.

Policy/Advocacy and Implementation Support

Mass 2020 is a policy, advocacy, and technical assistance organization focused on developing and implementing both a national and state agenda for expanding learning time and redesigning schools. During 2010-11, Mass 2020 remained a strong advocate for the initiative and provided targeted technical assistance to ELT schools.

[14] None of these Level 4 schools are among this study's sample of ELT schools.

Technical assistance to schools was also further formalized during 2010-11. Mass 2020 took the lead for organizing and facilitating regular school leadership sessions, and also provided coaching to a subset of schools in collaboration with Focus on Results. Focus on Results is a national consulting organization that works with schools and districts on plans to improve performance, leadership, and decision-making.

ESE and Mass 2020 continued to collaborate closely as key state partners to support the development and implementation of the ELT initiative. Jointly developed by ESE, Mass 2020, and Focus on Results, the *ELT Expectations for Implementation*[15] continued to help define "good work" in an ELT school and guided technical assistance during 2010-11 (see Appendix A). The Expectations were divided into seven areas with corresponding indicators to detail associated practices. These seven areas included: 1) clear school-wide academic focus; 2) additional time for core academics; 3) additional time for enrichment; 4) additional time for teacher leadership and collaboration; 5) focused and collaborative leadership; 6) alignment and focus of resources; and 7) district leadership for ELT.

During 2010-11, 14 funded ELT schools participated in formal technical assistance through coaching and/or leadership training sessions. Mass 2020 provided coaching to six schools, and Focus on Results provided coaching to an additional five schools. Three schools attended leadership training sessions but were not assigned a coach.

Coaching played an important role in 2010-11 because it allowed for more differentiation in the support of schools. Coaches helped schools with their performance agreements, monitored progress on ELT implementation, and assisted with individual school priorities for improvement. The format ranged from one-on-one time with the principal or the principal and ELT coordinator to time with the entire instructional leadership team. In addition to in-person time, the coaches stayed in touch with schools via phone and e-mail throughout the year.

The approach to coaching, in general, continued to involve first focusing on a school's instructional approach, next coaching the school in practices for teachers aligned with this approach, and then focusing the school on specific professional development and planning time that are linked to these practices. Next, the approach involved focusing on data and information gathering linked to the practices, encouraging public use of the data, and focusing the school leadership team on owning and leading the improvement process.

During 2010-11, all schools that participated in the technical assistance process focused multiple topics including strategies for the best use of the additional time, how to design academic support periods, the use of time analysis tools, and additional layers of support that schools might consider including summer and weekend instruction. Since performance agreements were finalized with ESE in 2009-10, schools spent extensive time working towards these goals during the 2010-11 school year and thinking about how best to use data to measure academic progress. Bimonthly school leadership team sessions designed and facilitated by Mass 2020, focused on teacher collaboration, ensuring that appropriate protocols and meeting structures were in place, and that student data were analyzed at these meetings.

[15] See Appendix B for ELT Expectations for Implementation.

Both Mass 2020 and Focus on Results provided ESE with additional capacity to both build support for the initiative and directly support participating schools with implementation. ESE also did not have the staff capacity to provide coaching and intensive implementation support to ELT schools, and having partners in this role added valuable expertise in this area. State stakeholders also reported that it was helpful to have a non-governmental entity serving in the coaching role to lend authenticity to these relationships and separate the government's accountability role from ongoing interactions with coaches.

Funding

In fiscal year 2011 (July 1, 2010-June 30, 2011), the state appropriated approximately $13.9 million for ELT grants. The fact that this line item remained essentially level (although slightly lower compared to fiscal year 2010) was a testament to the Legislature, Governor, Mass 2020, and ESE's support of the ELT initiative.

ESE provided grants to 19 schools in 2010-11 at a level of $1,300 per student; this per-student amount has remained the same for all four years of the initiative. Grant amounts ranged from approximately $235,000 to just over $1.5 million per school, reflecting variation in ELT school enrollment from 181 to 1,167 students. Preliminary grant amounts were calculated using estimates based on the school's prior year enrollment, and several adjustments to final grants were made when enrollment varied from estimates by more than ten percent. Funds for planning grants were not available during 2010-11 for the third consecutive year.

In a report detailing the allocation of Massachusetts' ELT grant funds (O'Reilly & Kolbe, 2011), a fair amount of variation was found in the amount that each school spent, per-pupil, on the implementation of ELT. A number of schools reported expenditures substantially higher than the $1300 received from the state grant. In every ELT school, most spending went towards instructional costs (77% on average). On average, schools distributed the balance of their grant funds relatively evenly across administrative costs; transportation facilities and meals; and supportive services (between seven and ten percent each), though there was variation between schools within categories. Four district respondents reporting data about nine schools indicated that they used funds other than state grant funds to support ELT in their schools. For all nine schools, the ELT grant funds provided the largest share of funding.

School District Context

The ELT schools in 2010-11 were located within nine school districts. During the spring of 2011, Abt Associates study team members interviewed district-level staff at eight of the nine Massachusetts districts of which ELT schools are a part. All interviews covered the same topics, including the presence of ELT practices and indicators at non-ELT schools, district supports for ELT, and other district policy and program initiatives that affect, replicate, or compliment the implementation of ELT in the district.

Overall, these interviews revealed that many of the core components of ELT, namely extra time for core academics, academic support, enrichment, common planning time for teachers, and a school-wide academic focus, are implemented at some or many schools that do not receive ELT funding. ELT schools were reported to benefit from additional support structures including technical assistance on implementation, financial support for extra staff, and the ability to implement programs under one roof without requiring that students travel to a separate site. The following section describes the

implementation of ELT across all schools in participating districts, as well as districts' support for ELT, and other policy initiatives that may have affected ELT implementation.

Extra Time

In five of the eight districts in which interviews were conducted, district staff noted that some of the district schools not formally implementing ELT had added time to the school day. It is important to note that there were typically only a few such schools in each district, except in one large urban district, in which more than a few schools expanded their days. Though district staff generally expressed enthusiasm for ELT, they noted certain necessary conditions needed to exist for schools to add time to the school day.

The primary barrier to expanded time was funding. The district schools that added time without ELT funding did so either using money from the level 4 turnaround grants or innovation grants. Additionally, some of the schools that extended their days were pilot schools which had increased flexibility around budget allocation. Another consideration highlighted by district staff was staffing and teacher contracts. One of the three districts that did not add time at any additional schools cited collective bargaining as the barrier. One school that did add time to their schedule, despite teacher contract issues, did so by staggering teacher start and end times, so that no teachers worked additional hours yet the school was operating for additional time.

Academic Support

When asked about academic support practices in district schools, interviewees from the majority of districts noted that some or all district schools provided some level of academic support to students. Though asked specifically about providing dedicated blocks of time for academic support, respondents also described pull-out, tutoring, and paraprofessional supports. It is unclear from interviews whether other schools were providing academic support to all students in the same fashion that ELT schools tended to do so, namely, with a dedicated block of time for all students. One district noted that all struggling students received a dedicated block of academic support. Within districts, schools varied in their design and implementation of academic support programs, though across districts, respondents named SES and Title 1 grants as the means by which these programs were funded.

Only one district indicated that they did not provide academic support in any of the non-ELT schools. "It is something that we have been talking about," the respondent noted, but "the staffing piece of academic support is somewhat challenging for schools that do not have the extra time".

Enrichment

Enrichment programming was less-widely implemented than academic support in districts' non-ELT schools. Only one district noted that enrichment activities were provided in every school in the district. It is notable that this district is a particularly small one. In all other districts, interviewees noted that some schools had arts or athletic programs that might qualify as enrichment, but that few schools had them, or if so, few students participated. By and large, enrichment programming seemed to be confined to ELT schools and voluntary after-school initiatives at non-ELT schools in these districts.

Interestingly, all eight district representatives indicated that their districts had at least some after school programs and opportunities, especially in the elementary and middle grades. Five district interviewees indicated that all schools in the district had after school programs, while in other districts, these programs

were limited to Title 1, or another subset of schools. Three districts explained that 21st Century Community Learning grants enabled them to provide after school opportunities.

Across the board, after school offerings were buoyed by partnerships between schools and community organizations. In all but one district, where the teachers' union prevented outside community partners from being paid to work in the schools, interviewees reported that there was abundant enthusiasm and interest among organizations for partnering with the district. Though partnerships with community organizations were active in all district schools, interviewees noted that ELT schools had more experience and stronger structures for capitalizing on these partnerships. "ELT has served as a community model in terms of how schools and community organizations can access each other and work together," noted one respondent.

Common Planning Time

Common planning time is another aspect of ELT that, according to district interviewees, occurs ubiquitously across all schools in all districts, though interviewees noted that the frequency and duration of these meetings varied considerably. Several respondents explained that ELT schools had led the way for the development and implementation of collaborative planning time in non-ELT district schools. Others noted that common planning time was a district-wide focus, or a strategy that had been in place since before ELT.

School-wide Academic Focus

Similarly, the identification of a school-wide academic focus occurred in most or all schools, not just ELT schools. One district noted that this practice had been in place since 2003. District respondents identified reading comprehension and the instructional core as specific examples of academic foci. A school's academic focus often included or complemented an identified set of common instructional practices. In two districts, respondents did not mention specific academic foci, but identified instead, commonly used instructional programs like the Bay State Reading Initiative. Though school-wide academic focus and common instructional practice are distinct from one another, they can be related aspects of school and district culture.

District Support for ELT

District respondents revealed that the district's roles and responsibilities in supporting ELT varied. In general, the amount of leadership and guidance required by schools from the district appeared to wane over time, requiring more support initially, and less each subsequent year of implementation. This pattern was untrue, however, in at least one case in which the district became increasingly involved in later years, as ELT grant funding was jeopardized by the schools' poor academic outcomes.

The most commonly mentioned district supports for ELT were administrative in nature. District interviewees noted that they helped develop the grant application, negotiated expanded teacher contracts, and navigated logistical issues related to transportation and food. One respondent noted that district staff attended ELT technical assistance meetings with ELT schools' administrative teams, but this practice did not seem common across districts. Beyond initial grant, contract, and logistical supports, district interviewees explained that ELT schools received many of the same supports that non-ELT schools received, which varied across districts. Smaller districts generally reported more involvement with and knowledge of their schools than did the larger districts.

School Context

Interview and survey data provided useful information about several contextual factors that influence ongoing ELT implementation in study schools, including principal mobility, scheduling and staffing, teacher leadership, key priorities, and out of school programming.

Principal Mobility

ELT implementation may or may not necessarily be affected by principal turnover, although one might well assume that changes in school leadership influence the overall school climate and staff experiences. Over the course of the study period, 2006-07 to 2010-11, ten ELT schools had stable principal leadership, six ELT schools experienced one principal turnover, one school experienced two principal turnovers, and another school experienced three principal turnovers.

Staffing

Schools varied with respect to how much of the expanded time schedule was covered by classroom teachers. According to principal interview data, in 2010-11, teachers from every ELT school worked at least some portion of the expanded hours. In the majority of ELT schools (17 of 18), more than half of the teachers worked the entire expanded schedule, and in two-thirds of ELT schools, 90 percent or more of teachers were working for the entire expanded day schedule. Teacher survey data indicate consistent results: 65 percent of teachers reported working the entire expanded day, 23 percent reported working some of the expanded hours, and eight percent of teachers reported working no expanded hours.

Teacher Leadership

The majority of teachers (59 percent) agreed that they (teachers) were involved in key decision-making at their schools; all ELT principals described the school-based Instructional Leadership Team (ILT) as a commonly used vehicle for such teacher participation in decisions. The typical membership included teachers (in all 18 ELT schools), principal (in 16 schools), and other administrators (in 12 schools), and schools varied in whether Title I teachers, special education teachers, and/or guidance counselors participated in ILTs. During the school year, all ILTs met at least monthly, and 75 percent met at least every other week. The meetings agendas were established primarily by the principal in slightly more than half of the schools (10 of 18), and by all or rotating team members in the remaining eight. The primary mechanisms for disseminating information from ILT meetings were the posting or emailing of meeting notes (nine ILTs) or teachers from the ILT would report back to their teams (six ILTs).

Key Priorities

Principals were asked to describe their school's key priorities for the 2010-11 school year. Every principal included academic topics in their descriptions, with considerable variation in the accompanying level of detail provided. The majority (13 of 18 principals) reported that ELA was a key priority, and seven of these principals specifically emphasized a focus on improved ELA MCAS scores. Slightly fewer than half (seven of 18) principals reported that math was a key priority, and five referred specifically to improving math MCAS scores. A few principals listed instructional strategies as their priorities (4-square writing, QAR, Two-column notes). Other key priorities reported by a handful of principals were improving enrichments (3 principals), professional collaboration (2), and student discipline (2).

Additional Out of School Programming

In addition to the expanded school day, most ELT schools (16 of 18) offered some sort of activities beyond the school day. Principals reported on their schools' after school, Saturday school, summer school, and vacation week programming. Two-thirds of schools (12 of 18) reported that they offered after-school programming (e.g., tutoring, homework help, and sports), Saturday school, and summer school. Across these types of out of school time, the activities offered were primarily academic in nature, and included academic support for low-performing students, homework help, and language skills practice. Fewer schools (7 of 18) offered organized activities during vacation weeks. Field trips, accelerated academics, and core subject work were some examples of vacation week programming. Federal funds provided support for additional out of school programming for about half of the ELT schools (8 of 18). Other sources include private fundraising (two schools) and district funds (two schools). One school reported using its ELT grant to fund these extra programs.

Organization of this Report

Study findings on both ongoing implementation and outcomes from the 2010-11 school year, the fifth and final year of the evaluation, are presented in this integrated report. Chapter 2 describes the study design, data collection methods, and analytic approach. Chapter 3 describes an implementation index developed to measure aggregate ELT implementation and its application. Chapter 4 presents detailed implementation findings for ELT schools in 2010-11. Chapter 5 describes non-academic outcomes findings, and Chapter 6 describes student achievement outcomes findings. Finally, Chapter 7 includes conclusions and recommendations for future policy development and research.

Chapter 2. Study Design

The findings in this report are based on data collected during the 2010-11 school year. While the general framework for the study design has not changed over the course of this five year study, selected features have changed to accommodate schools' entry into the ELT initiative in multiple cohorts, changes in the analytic sample because some schools exited the initiative, and lessons learned from prior years that informed changes in data collection instruments and strategies. This chapter begins with a description of the conceptual model that underlies the initiative and its evaluation. It then describes the core research questions, quasi-experimental study design, and study sample, including how comparison schools were selected for the strongest possible study design. The discussion then turns to a description of the data collection measures, procedures, and response rates before outlining the analytic approaches used to describe implementation and estimate outcomes.

Conceptual Model of the Massachusetts ELT Initiative

This evaluation is based on an understanding of the Massachusetts ELT initiative's components and intended outcomes; the conceptual model is displayed in Exhibit 2.1. The first step in successfully redesigning schools to provide expanded learning time requires extensive planning as well as the ability to overcome numerous logistical and political obstacles, such as balancing adequate time for additional instruction, enrichment opportunities, and teacher planning and coordination. Districts and schools rely on the cooperation of community stakeholders who may help facilitate (via resources or political connections) or who may impede the planning process.

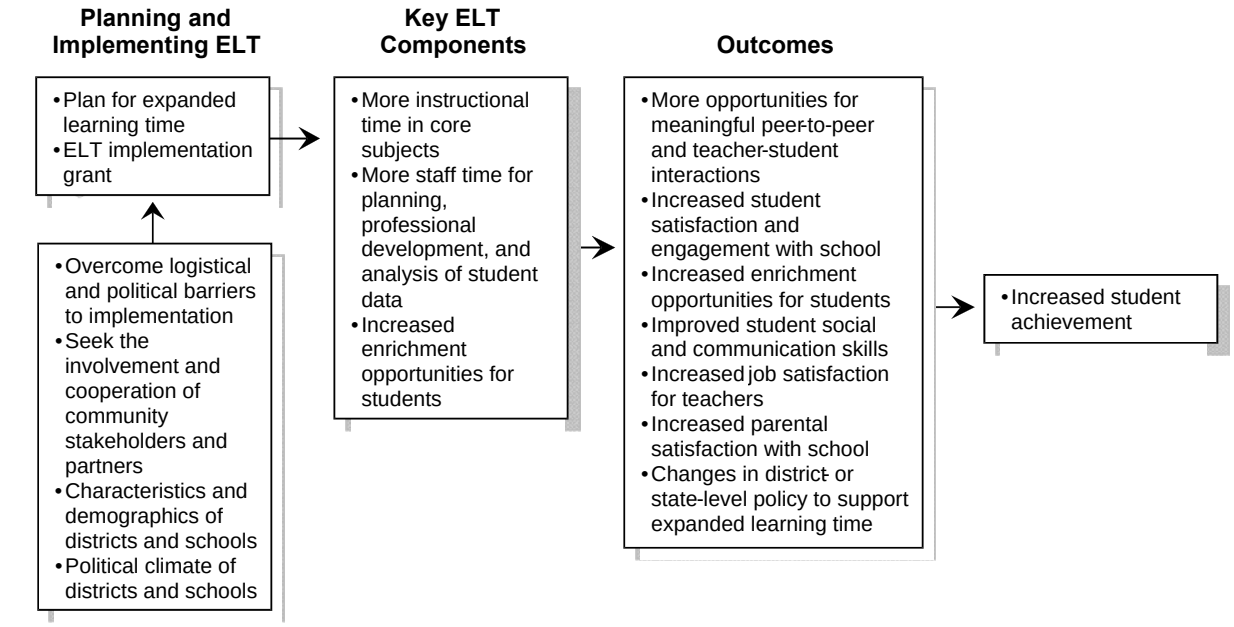
As shown under "Key ELT Components," schools that successfully implement these core ELT tenets are expected to provide three major components: (1) more instructional opportunities in core subjects for students; (2) increased enrichment opportunities that engage students in learning; and (3) increased opportunities for educators to plan, collaborate, and participate in professional development opportunities. It should be noted that a number of mediating factors may affect an ELT school's ability to successfully implement these core components. Schools may differ in the *degree* and *quality* to which they implement the three core factors. For example, there may be important school or district contextual factors, such as parental support for the initiative or the ability of schools to leverage the involvement of partner organizations, which affect how schools implement ELT's main components.

When implemented successfully, these "Key ELT Components" are hypothesized to affect a number of desired outcomes, particularly for students and teachers. For example, theory suggests that as a result of ELT, students may become more engaged in school because there are additional enrichment opportunities. Similarly, they may develop better communication and problem-solving skills as a result of more time with teachers and peers, and, with less idle time available, become less likely to engage in disruptive behavior. Teachers may find their teaching experience more rewarding and satisfying because they have adequate time to plan, collaborate, and instruct, as well as earn higher pay and have additional opportunities to develop meaningful relationships with students and peer educators. Parents too may be more satisfied with their children's schooling experience. Ultimately, improvements in these outcomes may lead to increased student achievement.

This evaluation examines each element presented in the conceptual models in turn. The discussion began in Chapter 1, which focused on the history, planning, and challenges in implementing ELT in broad

terms. The evaluation team next examines the implementation of the "Key ELT Components," beginning with a discussion of the degree to which ELT schools have addressed key implementation components (Chapter 3), before moving into a more detailed exploration of each of these items (Chapter 4). Chapter 5 examines the relationship between ELT, teacher outcomes, and student non-academic outcomes. Chapter 6 addresses the final item in the conceptual models, assessing the impact of ELT on student achievement over the course of the study period.

Exhibit 2.1: Conceptual Model of Expanded Learning Time (ELT) Initiative in Massachusetts



Key Research Questions and Study Design

Key Research Questions

The research questions of the ELT evaluation are guided by the conceptual model presented in the previous section as well as additional key objectives that have evolved over the course of the initiative. The research questions are as follows:

Research Question 1: ELT Implementation

1. To what degree have the "Key ELT Components" been implemented?
2. How have the "Key ELT Components" been implemented?
3. What are the opinions and attitudes of key stakeholders about the quality and effectiveness of ELT?

Research Question 2: ELT Outcomes

After three or more years[16] of implementation of ELT, is there a relationship between ELT and:

1. Non-academic outcomes
    a. Instructional and non-instructional time
    b. Teacher outcomes
        i. Satisfaction with school and district leadership
        ii. Satisfaction with time available for instructional activities, planning and professional development
        iii. Job satisfaction
    c. Student outcomes
        i. Student-educator relationships
        ii. Student satisfaction and engagement
2. School characteristics and academic outcomes
    a. School characteristics and student mobility
    b. Student Massachusetts Comprehensive Assessment System (MCAS) scores[17]

Research Question 3: Implementation and Outcomes

1. Is there an observable descriptive relationship between the percent of a school's students reaching the proficient or advanced MCAS levels and ELT implementation; and
2. Is there a difference in the effect of ELT on MCAS scores by level of ELT implementation in schools?

This final report focuses on the above questions for the three cohorts of ELT schools, which have been implementing the initiative for up to four years.[18]

Study Design

All of the analyses described below are non-experimental, since the random assignment of schools or students to ELT was not feasible. Although ideally one would like to be able to attribute any observed differences between the groups on study outcomes to participation in ELT, the results from non-

[16] As of 2010-11, all schools in the study have implemented ELT for at least three years.

[17] The annual MCAS assessment tests all public school students in Massachusetts in English Language Arts (ELA) and Mathematics in grades three through eight, and grade ten and in Science and Technology/Education in grades five, eight, and nine through twelve in order to measure performance based on Massachusetts Curriculum Framework learning standards. See http://www.doe.mass.edu/mcas/ for more information about this assessment.

[18] In the main body of the report, findings are presented after one, two, three, and four years of implementation because only the schools who began implementing ELT in 2006-07 have implemented the initiative for five years. Supplementary exhibits with the preliminary findings after five years of implementation are presented in Appendices D and E.

experimental studies generally do not permit reliable inferences because reasonable alternative hypotheses can be offered to explain observed differences, other than participation in ELT. The most common alternative hypotheses are: 1) pre-existing, persistent characteristics of schools that affect outcomes; and 2) changes in general education policy that might cause changes in outcomes across all schools. For example, it is likely that there are preexisting differences between the ELT and non-ELT schools (e.g., ELT funding was prioritized to schools serving disadvantaged students) that could reasonably account for any observed differences on study outcomes. Similarly, it could be posited that changes in federal, state, and district education direction could affect outcomes across some or all schools.

This study, however, is designed to use a group of comparison schools—matched on key observable characteristics as well as pre-program data, when available—to control for many of such potential alternative hypotheses. These analyses represent some of the strongest non-experimental methods available to get closer to a true estimate of the effect of ELT on teacher and student outcomes (Cook, Shadish, and Wong, 2008; Dehejia and Wahba, 1999; Hotz, Imbens, and Klerman, 2006; Morgan and Harding, 2006; Morgan and Winship, 2007; Shadish, Cook, and Campbell, 2002; and Stuart, 2010).

In addition, when longitudinal data are available, the study models use school fixed effects to address the first category of alternative hypotheses mentioned above: pre-existing, *persistent* characteristics of schools that affect outcomes. For example, the motivation of parents of students in a school presumably affects pre- as well as post-ELT student achievement. Including school fixed effects in the models allows the estimation of the effect of ELT over and above what might be expected given the effects of these stable school characteristics. The inclusion of year fixed effects does not require establishing a particular trend line (or curve); rather, any systematic trends will be captured by including these variables in the model.[19] This approach does assume, however, that the pre-ELT trends are the same in ELT and matched comparison schools; this assumption is tested in a series of specification tests presented in Appendix F.

The second category of alternative hypotheses, secular changes in a given academic year expected to change outcomes across all schools, are addressed by the inclusion of the matched comparison schools and year fixed effects estimated across both ELT and matched comparison schools. To the extent that any policy or program implemented in all of the schools affects the matched comparison and ELT schools similarly, the year fixed effects will control for their effects, allowing the estimating of the effect of ELT over and above the effects of the other factors.

Models with longitudinal data (and school and year fixed effects) model the implementation of ELT as an "interruption" in what would otherwise be assumed to be somewhat stable levels of a particular outcome as interest and are thus referred to as interrupted time series (ITS) with a comparison group. While ITS models represent a rigorous quasi-experimental design, it should be noted that even after controlling for school and year fixed effects, there might still be time-varying, school-specific, unmeasured variables that

[19] In the first two reports prepared for this study, the effect of ELT was estimated by modeling trends in outcomes during the years prior to ELT and then projecting this trend into the post-ELT years to estimate the expected outcomes in the absence of ELT. This approach, sometimes called "short interrupted time series analysis," provides a strong quasi-experimental design, and it requires at least two assumptions: 1) that achievement trends in the pre-ELT years are correctly modeled and 2) that this trend is stable enough to persist unchanged in the post-ELT years. Although these assumptions are quite reasonable in many circumstances, it is possible to model year-to-year variation in outcomes without making these assumptions.

could be related to study outcomes that would not be addressed by controlling for pre-ELT and matched comparison school outcomes. These omitted variables could still introduce bias into the estimated effects. It is important to note, however, that in combination, the study's design, use of appropriate statistical controls, longitudinal data, and school and year fixed effects yield impact estimates that provide both robust and credible evidence of the effects of ELT.

Our approach to estimating the effects of ELT are described in greater detail later in this chapter.

Study Sample

ELT Schools

To receive grant funds, districts on behalf of designated schools[20] submitted a grant application to ESE and were considered as part of a competitive award process. ESE used multiple selection criteria to select ELT schools, including: the strength of the application and implementation plans; potential for district-wide impact; and the student population served.[21]

Exhibit 2.2 shows the number of schools participating in ELT in each year of the initiative through 2010-11. At the height of the initiative, 26 schools in 12 districts in Massachusetts participated in ELT. In the fifth year of the initiative, 2010-11, 19 schools across 9 districts in Massachusetts participated in ELT.

[20] ELT funds were awarded to designated schools through grants to districts. Grant applications were submitted in some cases due to the school's initiative and in some cases due to the school and district's initiative.

[21] Funding preference was given to districts with a high percentage of underperforming students on the MCAS and/or high poverty rates.

Exhibit 2.2: Number of Participating ELT Schools in Each District, by School Year

District	2006-07 (N=10)	2007-08 (N=18)	2008-09 (N=26)	2009-10 (N=22)	2010-11 (N=19)
Boston	3	4[f]	4[f]	4[f]	4[f]
Cambridge	2	2	2	2	2
Chelsea			1	1	1
Chicopee		1	1	1	0[g]
Fall River	3	3[a]	3[b]	3	3
Fitchburg		1	2	1[c]	1
Framingham			2	1[d]	0[h]
Greenfield		2	2	2	2
Malden	1	2	2	2	2
Revere			2	2	2
Southbridge			2	0[e]	0
Worcester	1	3	3	3	2[i]

EXHIBIT READS: There were three ELT schools in the Boston Public School district during the 2006-07 school year and four ELT schools during the 2007-08, 2008-09, 2009-10, and 2010-11 school years.

Notes:

[a] One ELT school closed due to restructuring, another ELT school merged with a non-ELT school to become a new ELT school, and one new ELT school joined the initiative in Fall River in 2007-08.

[b] One ELT school in Fall River was again merged, this time with a number of non-ELT schools, to become a new ELT school in 2008-09.

[c] The two ELT schools in Fitchburg were merged in 2009-10.

[d] Participation in the ELT initiative for one school in Framingham was voted down by the teachers' union in 2009-10.

[e] The School Committee in Southbridge voted against continued participation of both ELT schools in that district in 2009-10.

[f] Four schools in Boston received ELT grants. In 2007-08 and 2008-09 all four schools were part of the analytic sample. After discussion with ESE, in 2009-10 and 2010-11 only three were part of the analytic sample; a decision was made to exclude one school from all aspects of the evaluation because of its unique structure as the only high school implementing ELT and because there were no existing (and therefore plausible) comparison schools either within or outside of the district given the school's unique focus as an arts academy.

[g] Participation in the ELT initiative for the one school in Chicopee was voted down by the teachers' union.

[h] Participation in the ELT initiative for the remaining school in Framingham was voted down by the teachers' union.

[i] ELT funding for one ELT school in Worcester was not renewed by ESE in 2009-10 due to underperformance and because its Level 4 status made it eligible for Federal SIG funding to aid with school turnaround.

Source: MA ESE website (http://www.doe.mass.edu/redesign/elt/).

The implementation and non-academic outcomes analyses include 18 of the 19 schools participating in ELT in 2010-11; similar to previous years, one school was again excluded from all aspects of the evaluation because of its unique structure. Analyses examining instructional time rely on principal survey data collected from 17 of the 18 ELT schools as one ELT school does not serve students in the grades that time data was collected for (5th and 8th grade). The analysis of non-academic outcomes using teacher and student survey data includes the schools that achieved at least a 70 percent response rate; further detail about response rates is provided later in this chapter.

The Student Information Management System (SIMS) behavioral outcomes and MCAS analyses include 24 ELT schools; for the purposes of estimating impacts on student outcomes from extant data, schools

that received funding to implement ELT were maintained in the analytic sample only for those years during which the schools implemented ELT.[22]

Exhibits 2.3 and 2.4 present key characteristics of the 18 schools and 9 districts that implemented ELT and were part of the study sample in 2010-11. Appendix C includes characteristics of sample schools by cohort and ELT status. Each school belongs to a particular cohort according to the first year it implemented ELT: schools that began implementing ELT in 2006-07 are part of Cohort 1, schools that began implementing ELT in 2007-08 are part of Cohort 2, and schools that began implementing ELT in 2008-09 are part of Cohort 3. Thus, as of the 2010-11 academic year, schools in Cohorts 1, 2, and 3 have been implementing ELT for five, four, and three years, respectively. Exhibit 2.3 presents school characteristics by cohort; Exhibit 2.4 presents district information overall given the small number of districts (9) in the sample.

As Exhibit 2.3 indicates, the ELT schools in the study sample included six elementary schools, eight middle schools, and four schools that served kindergarten through eighth grade. Elementary and middle schools varied in the specific grades served. Two-thirds of ELT schools (12 of 18) served 50 percent or more minority populations, and all schools served at least 50 percent low-income students. In just over one-third of the schools, more than 20 percent of the population was of Limited English Proficiency (LEP). In 2010-11, 16 schools in the ELT sample were identified for "improvement, corrective action, or restructuring" based on English Language Arts (ELA) performance, and 17 schools were identified for such action on the basis of math performance.

Exhibit 2.4 suggests that characteristics of the districts where ELT schools are located are reflective of the school-level characteristics highlighted in Exhibit 2.3. The majority of the districts served at least 50 percent minority students (7 of 9) and at least 50 percent low-income students (8 of 9). Further, in about a quarter of the districts, 20 percent or more of the students served had limited English proficiency. Finally, note that none of the districts met Adequate Yearly Progress (AYP) in 2009-10. All were identified for "improvement, corrective action, or restructuring" for English Language Arts (ELA) performance, and all but one were identified for such action on the basis of math performance.

[22] The number of schools included in analyses by implementation year therefore varies, as six schools that had implemented ELT for a portion of the study period subsequently discontinued ELT and were removed from the study sample after exiting. For example, if a school implemented ELT for two years, it is included in the sample when estimating impacts after one or two years of implementation, but is not included in calculating impacts after three and four years of implementation. Given the considerable funds necessary to implement ELT, the study assumes that schools that have discontinued the initiative no longer extend the length of their school days.

Exhibit 2.3: Current Characteristics of ELT Schools, by Cohort, as of 2010-11

	ELT Schools			
	Cohort 1	Cohort 2	Cohort 3	Overall
Grade Span				
Elementary school	1	3	2	6
K-8 school	3	1	0	4
Middle school	4	1	3	8
School Location				
City	7	1	1	9
Suburb	1	1	4	6
Town	0	2	0	2
Rural	0	1	0	1
School Size				
600 students or more	3	2	2	7
400-599 students	3	2	3	8
200-399 students	2	0	0	2
Fewer than 200 students	0	1	0	1
Low Income Student Population				
75 percent or more	4	1	4	9
50-74 percent	4	4	1	9
Less than 50 percent	0	0	0	0
Minority Student Population				
75 percent or more	6	0	1	7
50-74 percent	1	2	2	5
25-49 percent	1	1	2	4
Less than 25 percent	0	2	0	2
SPED Student Population				
20 percent or more	4	2	1	7
10-19 percent	4	3	3	10
Less than 10 percent	0	0	1	1
LEP Student Population				
20 percent or more	5	1	1	7
10-19 percent	0	1	2	3
Less than 10 percent	3	3	2	8
Met Aggregate Adequate Yearly Progress (AYP) in 2011				
English language arts	2	3	2	7
Math	1	1	0	2
ELA Accountability Status in 2011				
No status (AYP met for previous two years)	1	1	0	2
Identified for improvement, corrective action, or restructuring	7	4	5	16
Math Accountability Status in 2011				
No status (AYP met for previous two years)	0	1	0	1
Identified for improvement, corrective action, or restructuring	8	4	5	17

EXHIBIT READS: As of fall 2011, 6 of the 18 ELT schools were elementary schools, 4 were K-8 schools, and 8 were middle schools.

Source: MA ESE website (http://profiles.doe.mass.edu/).

Sample: 18 ELT schools in the study in 2010-11.

Exhibit 2.4: Characteristics of ELT Districts, 2010-11

	Number of ELT Districts (N=9)
District Size	
10,000 students or more	2
5,000-9,999 students	5
Fewer than 5,000 students	2
Low Income Student Population	
75 percent or more	2
50-74 percent	6
Less than 50 percent	1
Minority Student Population	
75 percent or more	2
50-74 percent	5
25-49 percent	1
Less than 25 percent	1
SPED Student Population	
20 percent or more	4
10-19 percent	5
Less than 10 percent	0
LEP Student Population	
20 percent or more	2
10-19 percent	4
Less than 10 percent	3
Met Aggregate Adequate Yearly Progress (AYP) in 2009-10	
English Language Arts	0
Math	1
ELA Accountability Status in 2011	
No status (AYP met for previous two years)	0
Identified for improvement, corrective action, or restructuring	9
Math Accountability Status in 2011	
No status (AYP met for previous two years)	1
Identified for improvement, corrective action, or restructuring	8

EXHIBIT READS: As of fall 2011, of the 9 ELT districts, 2 had 10,000 students or more, 5 had 5,000 to 9,999 students, and 2 had fewer than 5,000 students.

Source: District –level data tables downloaded from the MA ESE website (http://profiles.doe.mass.edu/).

Sample: 9 ELT school districts in 2010-11.

Matched Comparison Schools

As described above, it could be the case that general changes in federal or state education policy or other district- or school-based factors could cause improved outcomes across all schools, not just those implementing ELT. To account for this possibility, the study controls for external policy changes by including a set of carefully selected schools that are not implementing ELT, since one would expect any external shifts to change achievement equally in both ELT and matched comparison schools. Once these effects have been removed, one can examine the changes in ELT schools over and above that in their matched pair schools and assume that any significant changes were caused by participation in ELT.

The assumption that external changes will affect ELT and matched comparison schools equally is based on another assumption: that the study's ELT and matched comparison schools were similar *prior* to the onset of ELT. As such, potential comparison schools were selected to match the ELT schools on as many measurable characteristics as possible.

Non-ELT schools were matched to ELT schools within district[23] and grade span (e.g., K–8, 6–8)[24] based on the following prioritization of matching variables identified in collaboration with ESE staff (see Appendix B for a more complete description of these variables):

Tier 1: Highest priority matching variables

- ELA Composite Performance Index (CPI)
- Math Composite Performance Index (CPI)
- Aggregate ELA Adequate Yearly Progress (AYP)
- Aggregate Math Adequate Yearly Progress (AYP)

Tier 2: High priority matching variables

- ELA Accountability Status
- Math Accountability Status

Tier 3: Medium priority matching variables

- Student enrollment
- Percent minority (i.e., percent non-White)
- Percent limited English proficiency (LEP)
- Percent low-income
- Percent special education

Tier 4: Lower priority matching variables

- Percent male
- Percent of teachers in core academic subjects who are highly qualified

[23] Within-district matches for two ELT schools could not be found due to the size of the districts. The matched comparison schools for these two schools were drawn from demographically similar districts in similar regions of Massachusetts that also had ELT schools in their districts.

[24] One ELT school has two comparison schools. The original comparison school that was recruited for this ELT school only served students in one grade level of interest. As such, a second comparison school was recruited in a subsequent year of the study to provide data about both grade levels of interest (5th and 8th). The original comparison school was kept in the sample to maintain consistency.

Two potential matches were identified for each ELT school. The study team also contacted district superintendents to obtain qualitative information to help determine which of the two potential non-ELT comparison schools provided a better match. Information about the tenure of the school's leadership, district context, and demographics of the school's neighborhood allowed the study team to select matched comparison schools based on critical quantitative and qualitative factors.

Again, the goal of the matching process was to create two groups of schools that were very similar *prior* to the implementation of ELT. Similarity was assessed by comparing the two groups, within cohort, in the year just before implementation of ELT began on all characteristics that are measured on a continuous scale. Because focus is on similarity prior to ELT implementation, all ELT schools (and their matched comparison schools) that were ever in the study sample are included in the analysis. The difference between the groups on each characteristic was converted into a standardized effect size to assess whether the differences might affect the analysis. Recent methodological research suggests that differences larger than .25 standard deviations are considered meaningful and therefore require adjustment in the statistical models (Ho et al., 2007).

The results of these analyses are summarized in Exhibit 2.5. Three of the nine comparisons revealed differences larger than 0.25 standard deviations (as indicated by ^). In the year prior to ELT implementation, matched comparison schools were larger on average, serving about 100 more total students. ELT schools, relative to matched comparison schools, were serving an 11 percentage point greater proportion of students from low income families. One other difference exceeded the 0.25 standard deviation cutoff, but the magnitude may be less practically meaningful. On average, matched comparison schools had a smaller proportion of core academic teachers designated as highly qualified, although the magnitude of this difference was only 3 percentage points. Such a small percentage point difference corresponds to considerably large effect sizes as this measure does not vary much across the schools, yielding small standard deviations that produced a large effect size.

These results indicate that while the matched comparison schools may represent the best available matches, they differ in some important ways from their ELT counterparts. As a result, where possible, the analysis models (described in more detail later in the chapter) used to estimate ELT impacts include indicators for each school (called "school fixed effects") to control for observable and unobservable, time invariant, pre-program differences between ELT and matched comparison schools (see Appendix B for additional details).

Exhibit 2.5: Comparison of School-Level Characteristics of ELT Schools and Matched Comparison (MC) Schools in the Final Year Prior to ELT Implementation

Characteristic	Final Pre-ELT Year		Difference (in effect size units)
	Actual ELT Mean	Actual MC Mean	
Student Enrollment	462	558	-0.47^
ELA Composite Performance Index	73	75	-0.22
Math Composite Performance Index	60	63	-0.19
Percent Minority	56%	51%	0.11
Percent Limited English Proficient	12%	13%	-0.07
Percent low income	72%	61%	0.29^
Percent special education	17%	19%	-0.10
Percent male	52%	52%	-0.01
Percent of teachers in core academic subjects who are highly qualified	97%	94%	0.32^

EXHIBIT READS: In the year prior to the implementation of ELT, the average enrollment was 462 in ELT schools and 558 in matched comparison schools. The difference corresponds to an effect size of 0.47 standard deviations.

Notes: Means shown are averages across schools within each respective group.

^ effect size of at least 0.25 standard deviations

Source: MA ESE website (http://profiles.doe.mass.edu/).

Sample: Full sample of 49 schools in the outcomes study, including 24 ELT and 25 matched comparison schools in 2010-11.

Data Collection Measures

This section describes the data collection measures used in 2010-11 for each study component. As summarized in Exhibit 2.6, the implementation component of the study draws on data from interviews conducted with a variety of stakeholders in the ELT initiative—representatives from ESE, Mass 2020, and Focus on Results, district administrators, and school principals—as well as from surveys administered to teachers and students. The outcomes component of the study also uses data from these surveys as well as extant data provided by the state; additionally, the outcomes component of the study uses some select data from interviews with principals, specifically school-specific time allocation to various instructional activities. Each data collection measure is described in more detail below.

Exhibit 2.6: Data Collected in 2010-11, By Source and Study Component

	Implementation Component	Outcomes Component
Interviews		
ESE Representatives	✓	
Mass 2020 Representatives	✓	
Focus on Results Representatives	✓	
ELT District Administrators	✓	
ELT Principals	✓	✓
Matched Comparison (MC) Principals	✓	✓
Surveys		
ELT Teachers	✓	✓
ELT Students	✓	✓
MC Teachers		✓
MC Students		✓
MCAS Scores		
ELT Students		✓
MC Students		✓
Other Extant Data		✓

Interviews and Focus Groups

Abt developed semi-structured interview protocols to gather information about key aspects of ELT implementation; data gathered about time allocation was of particular focus in this year's analyses. The interview protocols are in Volume II of this report.

Teacher Surveys

During spring 2011, as in prior years, teachers in both ELT and comparison schools responded to surveys organized into six topic areas: school environment; time use; enrichment and academic support; school-wide academic focus; individual and collaborative planning; and professional development. Teacher surveys were identical for ELT and matched comparison schools, except that within each section of the survey, ELT-specific questions were included, as appropriate, for teachers in ELT schools (such questions were not included on surveys for comparison schools' teachers). Copies of the teacher surveys are in Volume II.

Student Surveys

During spring 2011, as in prior years, 5th and 8th grade students were surveyed about their perceptions of and attitudes towards school, relationships with teachers, and participation in extracurricular activities. The student survey is in Volume II.

Publicly Available School-Level Datasets

Publicly available school-level datasets for both ELT schools and matched comparison schools were downloaded from the ESE website (http://profiles.doe.mass.edu/), for each school year available beginning as early as 2001-02 through 2010-11. The datasets include all of the variables used in the

matching process described above (school-level academic achievement indicators, school-level student demographic characteristics and special population designations, school enrollment, and percent of core academic teachers identified as highly qualified). Data prior to the implementation of ELT were used to select potential matched comparison schools, and the final sample of comparison schools was selected using the process outlined in the previous section. Data both prior to and after the implementation of ELT were used to examine the effects of ELT on these school-level outcomes and as covariates in models estimating the effects on student and teacher survey responses.

Student-Level Data: Achievement, Attendance, Suspensions and Truancy

ESE provided longitudinal, student-level MCAS data for both the ELT and the matched comparison schools. These datasets include student-level achievement (proficiency levels, raw scores, and scaled scores) on the Reading/English Language Arts, Math, and Science MCAS exams from 2001-02 through 2010-11 as well as student-level characteristics (e.g., special education status).

Data provided from ESE also included information from the end-of-year Student Information Management System (SIMS) files[25], such as student-level demographic variables and behavior variables including attendance rate, truancy rate, in-school suspension rate, and out-of-school suspension rate (percent of school days). Data are available for all students through the 2010-11 school year. Attendance data are available beginning in 2001-02, whereas data for the other variables are available beginning in 2003-04.

Data Collection Administration

Interviews

As shown in Exhibit 2.7, a variety of stakeholder groups were interviewed in the study's fifth year. Interviews were conducted with principals of all 18 ELT schools that were part of the study sample as well as with all 19 of their matched comparison schools included in the study this year. The coordination and scheduling of principal interviews as well as the provision of school schedules used to compute time allocations to instructional activities were facilitated by an internal study liaison at each ELT and matched comparison school. Principal interviews were conducted in person; they were generally an hour and thirty minutes long and were followed by a brief tour of the school building. The interviews occurred between March and June of 2011.

The study team also interviewed district leadership representatives from eight of nine districts with ELT schools by telephone as well as representatives from ESE, Mass 2020, and Focus on Results. Interviews ranged from 30 minutes to 60 minutes (for district and state and technical assistance personnel, respectively), and were conducted during the fall 2011. In total, 59 respondents participated in interviews.

[25] SIMS data are collected three times each school year: October 1, March 1, and at the end of the school year. For more information about the types of data available in the SIMS database, see the Massachusetts Department of Elementary and Secondary Education's website: http://www.doe.mass.edu/infoservices/data/sims/DataHandbook.pdf

Exhibit 2.7: Number of Interview Respondents, 2010-11

	Number of Interviews	Number of Respondents
ESE Representatives	3	5
Mass 2020 Representatives	3	3
Focus on Results Representatives	1	1
ELT District Administrators [a]	8	9
ELT Principals [b]	19	21
MC Principals [c]	19	20
Total	***53***	***59***

EXHIBIT READS: In 2010-11, three interviews were conducted with representatives from ESE, and there were a total of five respondents from ESE.

Notes:

[a] The study team conducted interviews with eight of nine administrators in districts with ELT schools. Additionally, one district administrator invited a colleague to participate in the interview.

[b] In the 2010-11 school year, the study conducted interviews with 19 principals in 18 schools (one K-8 school had two principals, one each for the elementary and middle grades). Additionally, two principals invited a member of their administrative team to also provide input during the interview.

[c] The study conducted interviews with all 19 matched comparison school principals, one of whom also invited a member of the administrative team to participate in the interview.

Prior to adult participation in one-on-one (or small group) interviews, informational materials, including consent forms, were distributed to participants, and interviews began only after participants provided verbal consent. Before data collection, Abt staff participated in a training session to ensure that they: 1) shared a common understanding of the study background, objectives, design, and schedule; 2) understood the purpose of the interviews; 3) were fluent in administering each question in the interview protocol and associated probe questions; 4) understood the logistics of scheduling and conducting interviews and the calendar for data collection; and 5) reviewed data security, data recording, and submission procedures. Most interviews were facilitated by two members of the Abt study team; generally, one person led the discussion while the other took notes. When interviews were conducted by a single individual, the discussions were tape recorded and used for reference to ensure that the notes accurately reflected discussions; tapes were not systematically transcribed. All interview responses were entered into a standardized Microsoft Access database.

Surveys

All staff members who provided instruction to students and all 5th and 8th grade students in the participating schools were asked to complete brief paper surveys between May and June of 2011. Survey administration activities in 2010-11 were standardized, involved systematic tracking, and offered participants a variety of incentives.

Teacher Surveys

All staff members who were responsible for providing instruction to students during academic classes, specials, and/or enrichment activities—regardless of individual staff members' participation in the expanded day schedule—were asked to complete the teacher survey. To standardize the definition of what was meant by "instructional staff" across schools, the study team obtained the most recent Educational

Personnel Information Management System (EPIMS) data available from ESE. Job classification and work assignment codes were used to create individual rosters for each participating school's instructional staff.

A designated study liaison, usually the ELT coordinator or principal, facilitated the data collection at each ELT and matched comparison school. The study team provided the liaison with instructions about survey administration and deadlines. School liaisons were asked to review rosters and indicate changes in personnel. Each instructional staff member was assigned a unique staff ID number used to track response rates.

The schools liaisons determined how best to distribute and collect teacher surveys; some schools asked teachers to complete surveys during regularly scheduled faculty meetings, while other school liaisons distributed surveys and asked instructional staff to return surveys within a specified time frame. The surveys themselves included an information sheet that communicated details about the study, the surveys, and the confidential and voluntary nature of the surveys; the completion of the survey itself served as an indication that the teacher consented to do so. The surveys took teachers approximately 20-30 minutes to complete. All completed surveys were sealed in envelopes to ensure respondent confidentiality.

Student Surveys

All 5th and 8th grade students in study schools were asked to complete the student survey. The study team created school-specific rosters of all 5th and 8th grade students by homeroom, and homeroom teachers were asked to review rosters and indicate changes in class enrollment as well as students' eligibility to participate in the study (e.g., students with disabilities or limited English language proficiency were exempt from participation if school staff felt it was inappropriate for them to answer the survey questions).

As with the teacher survey, a designated study liaison, usually the ELT coordinator or school principal, facilitated data collection at each school. Liaisons generally relied on students' homeroom teachers to administer and collect the student surveys, and to indicate, on their respective classroom rosters, which students had completed surveys. The surveys took students approximately 15-20 minutes to complete. All surveys and rosters were sealed in envelopes to ensure respondent confidentiality.

Strategies for Encouraging High Response Rates

High response rates ensure the representativeness of survey responses within a school. As described in greater detail below, a response rate under 70 percent for a given respondent group within a school was considered not sufficiently representative and resulted in the particular respondent group's exclusion from study analyses. An incentive structure was built into the survey administration process to encourage high response rates. As in past years, all participating schools received a school-specific report describing the most recent school year's survey results for that school. Liaisons at both ELT and matched comparison schools received an honorarium for assistance coordinating the survey administration. Matched comparison schools received an additional honorarium for their participation. Each instructional staff member who completed a survey received a small gift card. In 2010-11, as in 2009-10, the study team provided additional incentives at the classroom and school levels. All homeroom teachers who returned completed surveys from 75 percent or more of eligible students were offered a small stipend for

educational materials. Each school that returned completed surveys from 75 percent or more of eligible teacher *and* students was entered into a lottery; the selected winner received $2,000.[26]

The Abt study team was in regular contact with school liaisons during the survey data collection effort to monitor their progress and troubleshoot solutions to any barriers that arose. The unique staff ID numbers as well as the student rosters also allowed study staff to track each school's survey response rates and to engage in follow-up efforts to increase response rates. ESE also sent a memo to participating schools indicating the importance of the study.

Data Entry

Upon receipt of the completed surveys, staff at Abt Associates conducted initial processing to track survey response rates and prepare surveys for data entry. Data entry itself was conducted by Public Consulting Group. Public Consulting Group then provided the survey datasets to Abt Associates for analyses.

Survey Response Rates for Students and Teacher: Implications for Analysis and Interpretation of Findings

Exhibit 2.8 summarizes survey response rates by respondent group (teachers and students). Schools in which the response rate for a particular respondent group was below 70 percent were excluded from analyses of outcomes for that group, as were their matched pairs. The survey sample included 1,808 teachers (918 teachers from ELT schools and 890 teachers from matched comparison schools) and 4,840 students (2,300 students from ELT schools and 2,540 students from matched comparison schools).

[26] Two separate lotteries were held, one among ELT schools and one among matched comparison schools that met survey response rate thresholds.

Exhibit 2.8: Survey Response Rates, 2010-11

		Teacher Surveys			Student Surveys		
		Overall	Min	Max	Overall	Min	Max
ELT							
Overall	(N=18)*	89%	76%	100%	96%	85%	100%
Cohort 1	(N=8)	88	76	100	94	85	100
Cohort 2	(N=5)*	91	79	100	97	94	100
Cohort 3	(N=5)	91	84	96	97	96	99
Elementary	(N=10)*	90	76	100	99	96	100
Middle	(N=8)	89	79	96	94	85	98
MC							
Overall	(N=19)*	79	64	97	88	70	100%
Cohort 1	(N=8)	79	68	97	85	70	98
Cohort 2	(N=5)*	85	77	97	95	92	100
Cohort 3	(N=6)	75	64	81	87	75	100
Elementary	(N=11)*	77	64	97	97	85	100
Middle	(N=8)	81	72	91	83	70	94

EXHIBIT READS: Eighteen total ELT schools administered teacher surveys. These schools achieved an overall teacher survey response rate of 89%.

*Note: One ELT and one matched comparison school (Cohort 2 elementary schools) did not serve students in the target grade levels, 5th and 8th, and therefore did not administer student surveys.

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, and Abt Associates' Surveys of MA ELT and Matched Comparison School Students, Spring 2011.

Teacher Response Rates

Teachers from 37 schools (18 ELT and 19 matched comparison schools) were surveyed. The response rates across the schools ranged from 64 to 100 percent. Eighteen ELT schools and 17 matched comparison schools achieved response rates of at least 70 percent.[27] The subsample of schools included in the analysis differs slightly from those schools excluded from the analysis on a number of measurable characteristics (see Exhibit 2.9).

[27] The two matched comparison schools that were excluded from analyses based on response rate represent one Cohort 1 and one Cohort 3 school, and both are elementary schools.

Exhibit 2.9: Comparison of School-Level Characteristics of Schools Included and Excluded from the Analysis of Teacher Survey Responses, 2010-11

Characteristic	ELT Schools		MC Schools	
	Schools Included (n = 16)	Schools Excluded (n = 2)	Schools Included (n = 17)	Schools Excluded (n = 2)
Student enrollment	587	523	571	619
ELA CPI	79	75	80	75
Math CPI	70	70	69	71
Percent minority	64	59	61	40
Percent Limited English Proficient	19	7	17	4
Percent low income	77	75	70	60
Percent special education	19	16	21	23
Percent male	51	51	53	53
Percent of teachers in core academic subjects who are highly qualified	97	94	97	98

EXHIBIT READS: The average enrollment was 587 in ELT schools included in the analysis of teacher survey responses and 523 in schools excluded from the analysis. The average enrollment was 571 in matched comparison schools included in the analysis of teacher survey responses and 619 in matched comparison schools excluded from the analysis.

Notes: Means shown are averages of the school-level means within each respective group.

Source: School-level data from MA ESE website.

Sample: Thirty-seven schools across three cohorts.

Student Response Rates

Students from 35 schools (17 ELT and 18 matched comparison schools) were surveyed.[28] The average response rates across the schools ranged from 70 to 100 percent. Because all of the ELT and matched comparison schools achieved response rates of at least 70 percent, no schools were excluded from student survey analyses.

Approach to Analyzing ELT Implementation Data

All interview data were transcribed by study staff, and data were synthesized and entered into a standardized Access/relational database. Data were then cleaned to ensure that study staff accurately and consistently interpreted various study-related terminology, particularly concerning definitions of different instructional activities and how to calculate allocations of time across the school day. After interview data were reviewed, data in the master database were categorized by topic to produce topic-specific reports. Responses were then summarized both qualitatively and quantitatively for analysis and reporting. It is important to note that the perceptions of individuals presented in this report do not necessarily reflect the perceptions of all individuals within a given school or organization.

The study team reviewed interview and survey data about implementation in regular analytic meetings as well as whole-team debriefing meetings. The purpose of the whole-team meetings was to discuss emerging themes, share interviewing strategies, as well as to discuss any improvements to the logistics of

[28] One ELT and one matched comparison school did not serve students in the target grade levels, 5th and 8th, for the survey administration.

the visits and study protocols. The analytic meetings focused on discussion of patterns, developing analytic strategies for presentation of descriptive data, and revision and application of the implementation index (described in more detail in Chapter 3).

Approach to Estimating the Effects of ELT on Non-Academic and Academic Outcomes

As described above, addressing the key research questions described above for the outcomes study involves estimating the difference between outcomes for teachers and students in ELT and matched comparison schools so as to control for potential alternative hypotheses. The specific approaches used to model the effects of ELT on various outcomes for schools, students, and teachers are described below. The section begins by discussing the approaches used to assess the non-academic outcomes presented in Chapter 5. These outcomes, which rely primarily on student and teacher data, are generally cross-sectional, but most control for school, student, and teacher characteristics, and adjust for clustering at the school and, where appropriate, classroom level (see Appendix B for formal model specifications). The section continues by discussing the approaches used to model the outcomes assessed in Chapter 6, including the relationship between ELT and student mobility and the effects of ELT on school characteristics and MCAS scores. Because longitudinal data are available to assess the effects of ELT on school characteristics and MCAS scores, these short interrupted time series with a comparison group are the most rigorous models used in the study. The inclusion of school and year fixed effects allows for a more robust model specification than what is feasible when assessing the bulk of the non-academic outcomes. This section also discusses how analyses are conducted across cohorts by implementation year. The section concludes with a description of how to interpret the results of these analyses. In addition, to facilitate the interpretation of key findings later in the report, each outcome chapter (Chapters 5 and 6) includes a brief review of salient features of the approach.

As noted earlier, while attempts have been made to use the most rigorous quasi-experimental methods available, there might still be time-varying, school-specific, unmeasured variables that could be related to study outcomes that would not be addressed by controlling for pre-ELT and matched comparison school outcomes. These omitted variables could still introduce bias into the estimated effects.

Modeling the Effects of ELT on Non-Academic Outcomes: Time Use and Student and Teacher Survey Outcomes

Analyses comparing differences between ELT and matched comparison schools in time allocated to various instructional activities (e.g., ELA, math) draw on data from principal interviews and regresses time on an ELT indicator and dummy variables for each pair of matched schools. The ELT indicator flags significant differences in time between ELT and matched comparison schools, while the matched pair dummy variables reflect the design of the study, wherein it is assumed that there are unobserved characteristics unique to each matched pair.

To address questions about the effect of ELT on student and teacher survey outcomes, the study uses multi-level models wherein students are nested in classrooms, and schools and teacher are clustered in schools. Note that because of the cross-sectional nature of the survey data, these models are different from what is used for the academic outcomes. Since the study does not have pre-ELT survey data, it is not possible to use school or year fixed effects to control for observed and unobserved, persistent characteristics of schools or secular year-to-year trends. Consequently, these models do not produce as

rigorous evidence as the academic outcome models described below, and the findings should be interpreted with considerably more caution.

Student and teacher survey outcomes are regressed on a school level variable that indicates whether the student is in an ELT school, school characteristics,[29] student/teacher demographic variables,[30] and a dummy variable for each matched pair of schools. Student models appropriately adjust for clustering of students within classrooms and schools, while teacher outcomes adjust for the clustering of teachers within schools.

Prior to analysis, the study team identified the student and teacher survey items that corresponded with the ELT outcomes of interest (e.g., student engagement, collaborative leadership). Recognizing that there were too many items in each area of interest to present all of them in the main body of the chapter, the team used a technique called factor analysis to reduce the number of survey items presented. All survey items from teacher or student surveys that addressed a non-academic outcome of interest were grouped together in a single domain. The three survey items from the student or teacher surveys that loaded the highest for a particular domain were selected to be presented in the chapter.[31] If there were less than three survey items per survey type (e.g., three student survey items and/or three teacher survey items) in a particular domain, all three items were presented. A comprehensive presentation of all student and teacher survey items corresponding to outcomes of interest can be found in Appendix E.

Finally, while Chapter 5 primarily uses cross-sectional interview and survey data, there are a handful of non-academic outcomes (e.g., attendance, suspension rates) that draw on longitudinal SIMS data. As such, modeling of these outcomes more closely mirrors the impact models (see discussion below on academic outcomes) that include year fixed effects to control for secular year-to-year fluctuations in outcomes. In addition, unlike data drawn from other sources (including MCAS data), the SIMS data are unique in that students can be linked across multiple school years. As a result, these models also include student fixed effects, which control for all of the observable and unobservable persistent characteristics of individual students over time.

Modeling the Effects of ELT on Academic Outcomes: School Characteristics and MCAS Scores

The staggered implementation of the ELT initiative through multiple cohorts of schools beginning in multiple years provides the opportunity to analyze outcome data in two different ways: separately for each cohort in each calendar year, or pooled within one of three dimensions (cohort, calendar year, or implementation year). While it is possible to examine outcomes for a single cohort within a single calendar year, such analyses would have little statistical power to find effects given the small sample size.

---

[29] The school-level characteristics included in the model measured total enrollment, the percentage of students eligible for free and reduced priced lunch, and the percentage of minority students served by the school during the 2010-11 school year.

[30] Student demographic variables include gender, and whether or not the student reported speaking a language other than English most of the time at home. The teacher-level demographic variables measure the total number of years the teacher reported teaching/working in a school, including 2010-11 school year.

[31] One exception to this rule was a domain that included questions about teacher satisfaction for time available for instruction in various subjects, in which all subjects were presented as each represented a unique focus (whereas items in other domains pertained to one underlying construct).

Pooling increases the sample on which to base estimates, improving statistical power; however, it is then no longer possible to examine differences along the dimension across which the data are pooled. Pooling therefore improves the study's capacity to answer some research questions, while hindering its capacity to address others. Choosing the method by which to pool the data therefore must be driven by which research questions are of the highest priority.

As of 2010-11, all three cohorts of schools have implemented ELT for at least three years, yielding a reasonable sample on which to base estimates of effects of ELT after at least one, two, and three years of implementation. In addition, two cohorts of schools have completed four years of implementation and therefore can contribute to the estimate of the effect of ELT after four years of implementation. Since only one cohort of schools (Cohort 1) has completed five years of implementation, it is premature to present these findings in the main body of this report, and, as such, fifth year findings are included in Appendices D and E.

Models that assess the effect of ELT on school-level characteristics (e.g., the extent to which the implementation of ELT changes the characteristics of students and teachers in ELT schools) compares school-level data for ELT and matched comparison schools both prior to and after the implementation of ELT. Using both pre- and matched comparison school data allows the study to control for persistent, school-specific factors that could explain any observed and unobserved differences, thus reducing the number of plausible alternative explanations for the estimated effects. The model also includes school fixed effects, which control for the effects of all of the observed and unobserved persistent characteristics of these schools, including those that may differ between ELT and matched comparison schools. Year fixed effects control for any variation in outcomes that is unique to a specific calendar year but is consistent across schools (both ELT and comparison) in the analytic sample.

The effect of ELT on school-level outcomes is modeled using five variables: the first indicates whether the outcome is from an ELT school when it is in its first year of implementation (and is coded zero otherwise), the second whether the outcome is from an ELT school when it is in its second year of implementation, the third whether the outcome is from an ELT school in the third year of implementation, the fourth whether the outcome is from an ELT school in the fourth year of implementation, and the fifth whether the outcome is from an ELT school in the fifth year of implementation. These variables provide separate estimates of the effects of ELT across cohorts during their first, second, third, fourth, and fifth year of implementation over and above any changes in the outcomes that might be expected given outcomes prior to ELT and in schools not implementing ELT[32].

The effect of ELT on mobility rates is assessed by comparing average ELT student mobility rates in each implementation year to average student mobility rates in matched comparison schools. Differences in means are assessed using a two-tailed independent t-test that assumes equal variance between samples.

To address questions about the effect of ELT on student-level academic outcomes (MCAS scores), the study uses an approach almost identical to the one described for estimating ELT impacts on school-level

[32] Note, however, that because only Cohort 1 and 2 schools have outcomes in implementation years four and five, estimated impacts in these years are incomplete (i.e., they do not account for the full study sample); thus, one cannot make definite conclusions about the relationship between implementation years four and five and student outcomes.

characteristics. However, because data for these outcomes are on the student-level, models include student-level covariates to control for their effects on outcomes and to increase the precision of the estimates,[33] in addition to school and year fixed effects variables and variables to indicate what implementation year ELT schools were in. Further, the models appropriately account for clustering of students in schools using the cluster-robust variance estimator (also known as the "sandwich" standard errors; White, 1984 and Liang and Zeger, 1986).

In addition to the academic outcome models described above, Appendix F includes a number of specification and sensitivity models that test whether the results of the student achievement analysis would have differed had different analytic decisions been made. The specific scenarios tested included the following:

- Tests using an alternative specification of the model, one that included pre-ELT implementation group (ELT versus matched comparison) trends in performance;
- A test that included all ELT schools in all implementation years, rather than excluding schools from the analyses after they exited the sample; and
- Tests reducing the sample to only five and only three years of pre-ELT implementation data for each cohort, using both the primary model and the alternative specification with pre-ELT group trends.

Interpreting the Results

The goal of these analyses is to estimate the impacts (e.g., MCAS scores for students or perceptions from teachers) in ELT schools and to test whether these outcomes are different from what would be expected in the absence of ELT, often referred to as the counterfactual. The study can observe the actual outcomes for ELT students and teachers, but it is not possible to observe the outcomes for these same individuals without ELT. Since it is not possible to observe the outcomes of students and teachers in the absence of ELT, the study uses a statistical technique to estimate the counterfactual using data from students and teachers in schools that did not implement the program (i.e., the matched comparison schools). Once the models have been estimated, the responses are no longer referred to as averages for matched comparison schools, since they do not accurately reflect the real outcomes in matched comparison schools. Rather, they are regression-adjusted estimates of what would have happened in ELT schools if the initiative had not been implemented. Therefore, all findings are described in terms of the actual outcomes measured in ELT schools relative to the estimated outcomes in the counterfactual. If differences are observed, there is evidence that those differences can be attributed to the effects of the implementation of ELT.

Limitations

Despite attempts to control for as many unobserved variables that may affect outcomes as possible, there are a number of limitations to the study's analytic approaches that should be reiterated prior to presenting findings. For example, results that rely on student and teacher surveys are limited by a number of considerations, including the data structure and response rates. As discussed earlier in the chapter, models that assess survey outcomes are cross-sectional and thus do not include the school and year fixed effects

[33] These covariates included gender, minority status, low income status, limited English proficiency status, and special education status.

that are key to the short ITS design employed in the longitudinal analyses. As a result, these models cannot control for any pre-existent, persistent characteristics of schools that affect outcomes or secular changes in education policy that may affect all schools. In addition, the representativeness of these results is subject to survey response rates, which, while high, may arguably not generalize to all teachers or students in a particular school. Similarly, while analyses that use longitudinal data to assess the impacts of ELT on school and MCAS outcomes are more rigorous than those used to model survey outcomes, they may still omit important unobservable characteristics that affect outcomes. For example, despite the inclusion of school fixed effects, it is possible that there are important unobserved school characteristics that vary over the study period and thus are not controlled for by the school fixed effects. Likewise, if secular changes in a given academic year affect ELT and matched comparison schools differently, then the year fixed effects included in the models will not be sufficient to control for these differences.

Chapter 3. Implementation Index

This chapter presents summary information based on an index developed to quantify the level of implementation for each school and the initiative as a whole by comparing implementation of core ELT components at ELT and matched comparison schools. Chapter 4 analyzes in more detail, by core component, the extent of implementation in ELT schools.

Purpose

After several years of studying both the implementation and outcomes of the ELT initiative, ESE and Abt realized that the information collected thus far was insufficient to understand variation in implementation across the ELT schools. To that end, the Abt study team, working collaboratively with ESE and Mass 2020, developed an index during 2009-10 and used it to analyze data from the 2009-10 school year related to quantity of time and time use much more explicitly. This index was modified and restructured in 2010-11 to reflect the most current expectations of ELT schools and best capture the data collected from schools during this year.

The index builds on five foundational tenets of the ELT model articulated by Mass 2020 and encouraged by ESE, which are described in more detail below. The index uses data from interviews with principals as well as from surveys of teachers and students; as such, it provides a snapshot of ELT implementation using interviews and surveys at a particular point in time. It should be noted that information about school schedules (and time allocation) was collected only for fifth and eighth grade students, and only students in those grades completed surveys.[34]

The implementation index attempts to capture information about implementation both at the individual school level and for schools overall. Its criteria can be applied to both ELT and comparison schools, an important feature given that (1) some districts have begun to expand time in additional schools beyond those funded by the state's ELT initiative, and (2) some of the core expectations of ELT apply across multiple school reform initiatives, and consequently are not limited to the ELT initiative. As such, the index was used to measure levels of implementation in both ELT and matched comparison schools during 2010-11.

Description of Index

The implementation index (included in Appendix C) includes five criteria based on core expectations for ELT implementation by ESE, Mass 2020, and Focus on Results, including:

1) school-wide academic focus;
2) core academics;
3) enrichment activities;
4) teacher leadership and collaboration; and
5) school leadership.

[34] The index developed for this study is distinct from tools developed by ESE and Mass 2020 to monitor and measure school-level implementation.

Each criterion includes four levels, ranging from zero (indicating no or little discernable activity), to Level 1 (representing limited evidence that schools have implemented activities related to that criterion), to Level 2 (representing modest evidence that schools have implemented activities related to that criterion), to Level 3 (representing consistent evidence that schools have implemented activities related to that criterion). Each consecutive level assumes that all the conditions outlined in the prior level have been met. Three of the criteria described above (core academics, enrichment, and teacher leadership and collaboration) are measured by two components, amount of time engaged in the activity and how the time is used.

The index also includes a sixth criterion that is only examined for ELT schools. The sixth criterion focuses on the level of support for ELT within schools and districts. The implementation index is predicated upon the presence or absence of its structural elements; in most cases, it does not represent a measure of the perceived or observed quality of those elements.

Criterion 1: School-Wide Academic Focus

The academic focus criterion addresses whether a school-wide academic focus is present and consistently identified and disseminated (Level 1), whether the focus is linked to instruction (Level 2), and whether the focus is regularly monitored and used to adjust instructional practices (Level 3).

Criterion 2: Core Academics in Target Grades

The time component of the core academics criterion addresses whether students in target grades receive at least 300 minutes of ELA and at least 250 minutes of math instruction per week (Level 1), at least 350 minutes of ELA instruction, at least 300 minutes of math instruction, and at least 150 minutes of science or social studies instruction per week (Level 2), and at least 200 minutes of both science and social studies instruction in addition to Level 2 ELA and math thresholds (Level 3). The “how” component addresses teacher support for improvements to academic instruction and student receipt of at least 50 minutes of dedicated academic support time per week (Level 1), student receipt of at least 100 minutes of academic support time per week and whether specific particular instructional practices are used (Level 2), and student receipt of at least 150 minutes of academic support time in addition to a higher threshold for the use of particular instructional strategies (Level 3).

Criterion 3: Enrichment Activities in Target Grades

The time component of the enrichment criterion addresses whether the school offers at least 45 minutes of enrichment activities and 45 minutes of specials per week (Level 1), at least 90 minutes of each per week (Level 2), and at least 135 minutes of each (Level 3). The “how” component addresses student access to enrichment (Level 1), student choice about and school integration of enrichment (Level 2), and the extent to which enrichment activities are influenced by the school’s academic focus, connected to grade level standards and/or curriculum frameworks, and perceived by teachers to be of high quality (Level 3).

Criterion 4: Teacher Leadership and Collaboration

The time component of the teacher leadership and collaboration criterion addresses whether the majority of teachers attend collaborative planning meetings at least twice monthly for at least 45 minutes (Level 1), at least once per week and whether/how frequently collaborative planning time has been supplanted by other unrelated activities (Level 2), and more than once per week (Level 3). The “how” component

addresses the structure and content of collaborative planning time (Level 1), the culture of collaboration (Level 2), and opportunities for teacher leadership in a school (Level 3).

Criterion 5: School Leadership

The school leadership criterion addresses teacher perceptions of school leadership direction setting (Level 1), school leadership involvement in instructional practice and staff development (Level 2), and school leadership focus on strengthening school culture (Level 3).

Criterion 6: ELT Support

A subset of indicators of ELT implementation applicable only to funded ELT schools comprises the ELT support criterion. This criterion addresses the extent to which teachers are supportive of ELT and report that school leadership sets high expectations for ELT (Level 1), whether and how the leadership team involves others in designing and implementing ELT changes and teacher perceptions of district support for ELT implementation (Level 2), and if the majority of teachers report satisfaction with staffing provided to cover the entire school day (Level 3).

Applying the Implementation Index

The specific thresholds for components of the index were determined using an iterative process, and decisions were tempered by expectations of what might be reasonable for schools to achieve after three, four, or five years of implementation. Each school received a score for each criterion that ranged from zero (insufficient evidence of achieving Level 1) to three (corresponding to Level 3 of implementation); criteria with two components (amount of time and how time was used) generated two scores, resulting in eight separate scores, and a maximum total of 24 points. Note that a zero does not necessarily mean that a school did not implement a particular criterion at all; it simply means that it did not meet the threshold necessary for Level 1. Each criterion was weighted equally. The ELT support criterion applied only to ELT schools and was not used to calculate the overall score.

Two comparison schools could not be rated on the six criteria that required teacher survey data (criterion 1, 2 “how”, 3 “how”, 4, 4 “how”, and 5) because they did not meet the 70 percent or higher teacher survey response rate threshold. Two schools (one ELT and one comparison school) could not be rated on criterion 2 and 3 about the amount of time allocated to core academics and enrichment because they did not serve students in the target grades about which information regarding time allocations was gathered. Since these four schools are missing scores on individual criterion, they were not assigned an overall implementation index score.

Key Findings

Key findings about implementation based on application of the implementation index include:

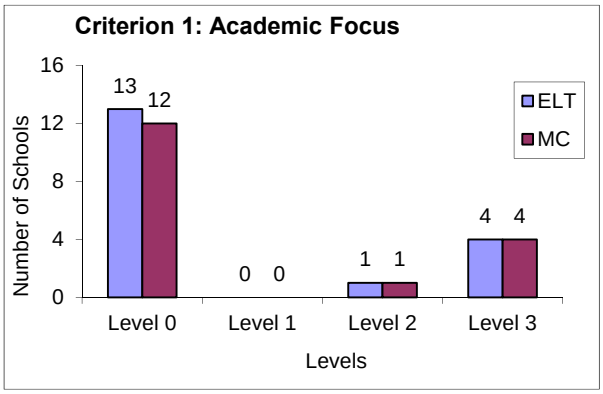
- The range of total scores for ELT schools was from 5 to 22, and for comparison schools, the range was from 2 to 12 out of a total possible score of 24.
- The average total score for ELT schools was 11.4 and for comparison schools was 6.9.
- ELT schools, on average, scored higher than comparison schools on six of the eight criteria.

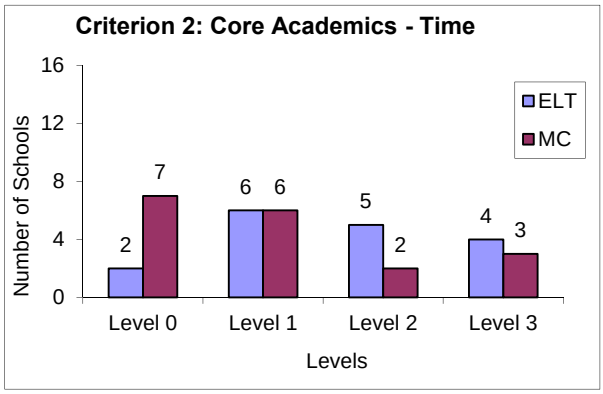
- Comparison schools scored notably lower on the enrichment-related criteria.
- In almost all cases, the average score on each criterion across ELT schools was between one and two (or between Level 1 and Level 2). In almost all cases, the average score on each criterion across comparison schools was between zero and one (or between Level 0 and Level 1).
- Many comparison schools also appeared to be implementing at least some of the key components that are considered core expectations of the ELT initiative. For two criteria, the average comparison school was higher than the average ELT score.

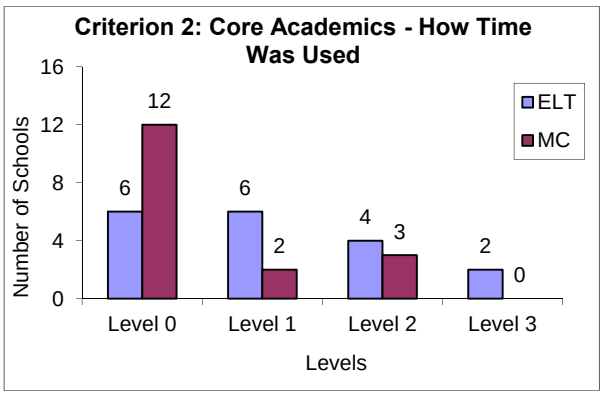
The range of total scores for both ELT and comparison schools was large. ELT school scores ranged from a total of 5 to 22, and comparison schools ranged from 2 to 12. Six ELT schools scored higher than 12, the score of the highest comparison school. Ten ELT and four comparison schools scored higher than the mean overall average total score, which was almost 9. The average total score for ELT schools was 11.4 and for comparison schools was 6.9.

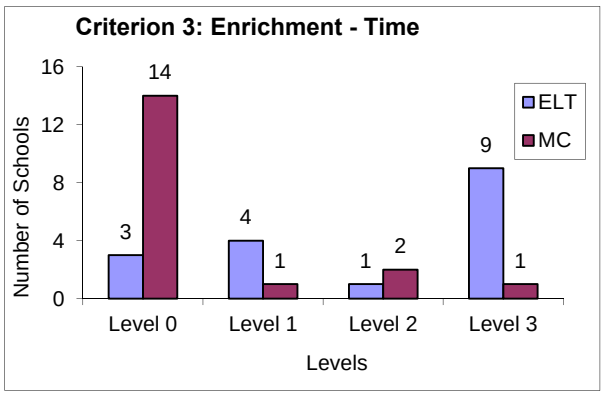
Exhibit 3.1 displays the number of ELT and matched comparison schools that achieved each level on each of the eight criteria as well as the ELT support criterion. ELT schools, on average, scored higher than comparison schools on six of eight criteria. Comparison schools scored, on average, higher than ELT schools on the school-wide academic focus and school leadership criteria. Comparison schools scored very low (between Level 0 and Level 1) on how core academic time was used, enrichment time, and teacher leadership and collaboration time criteria (averages of 0.47, 0.44, and 0.53, respectively). ELT schools on average scored lowest (between Level 0 and Level 1) on the school-wide academic focus criterion (0.78). Differences were not tested for statistical significance, so the meaning of any differences between schools or groups of schools is unclear.

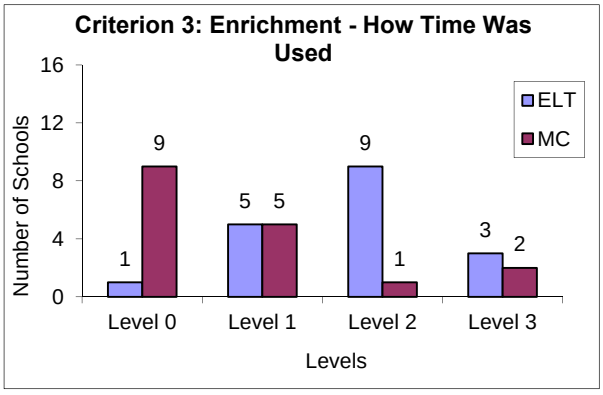
Exhibit 3.1: Summary of Implementation Index Levels of Schools, by ELT Status and Index Criteria, 2010-11

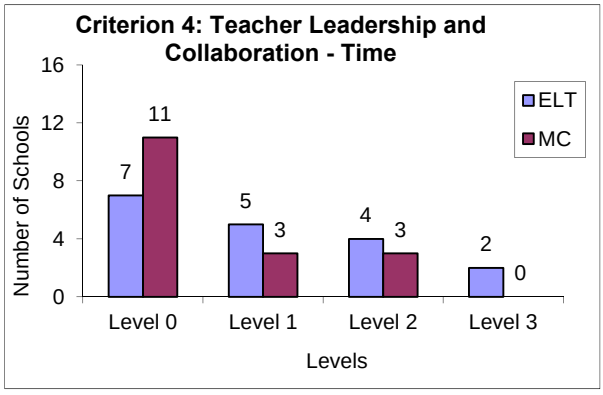


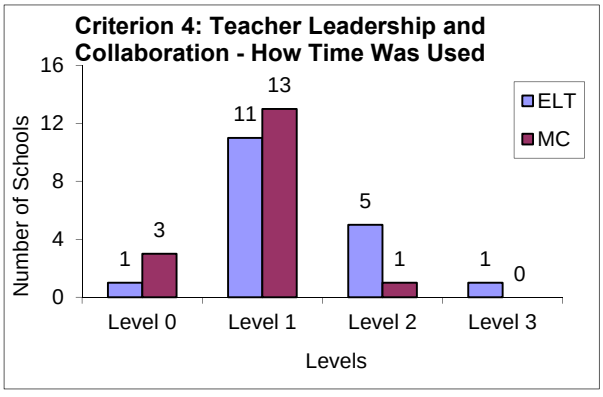












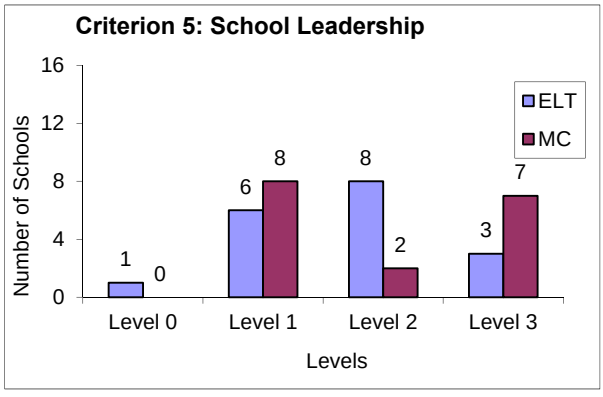


Exhibit 3.1: Summary of Implementation Index Levels of Schools, by ELT Status and Index Criteria, 2010-11

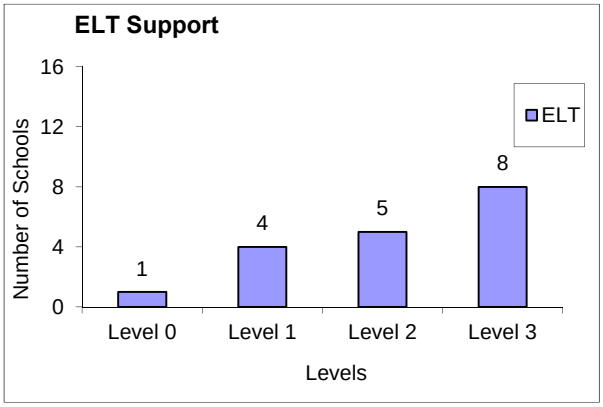


EXHIBIT READS: On the implementation index, 13 ELT schools and 12 matched comparison schools scored Level 0 on Criterion 1: School-wide Academic Focus.

Sources: Abt Associates' Interviews of MA ELT and Matched Comparison School Principals, Spring 2011; Abt Associates' Surveys of MA ELT School Teachers, Spring 2011; Abt Associates' Surveys of Matched Comparison School Teachers, Spring 2011.

Sample: 18 ELT schools and 19 matched comparison schools with the exception of Criterions 2 and 3, for which the sample is 17 ELT and 18 matched comparison schools and Criterions 1, 3 (in addition to time), 4, 5, and 6, for which the sample is 17 ELT and 16 matched comparison schools.

Many comparison schools appeared to be implementing at least some of the key components that are considered core expectations of the ELT initiative. Seven comparison schools met Level 3 on the school leadership criterion. Four comparison schools met Level 3 on the school-wide academic focus criterion. However, more ELT schools also met Level 3 thresholds across the index criteria. Of note, 9 ELT schools met Level 3 on the time component of the enrichment criterion.

Pie charts depicting which level each ELT and comparison school met for each criterion are shown in Exhibits 3.2 and 3.3. A comprehensive matrix that includes the scores for each anonymous school along with additional summary data by level of implementation can be found in Appendix C.

Exhibit 3.2: ELT School Implementation Pie Charts, by Index Criterion, 2010-11

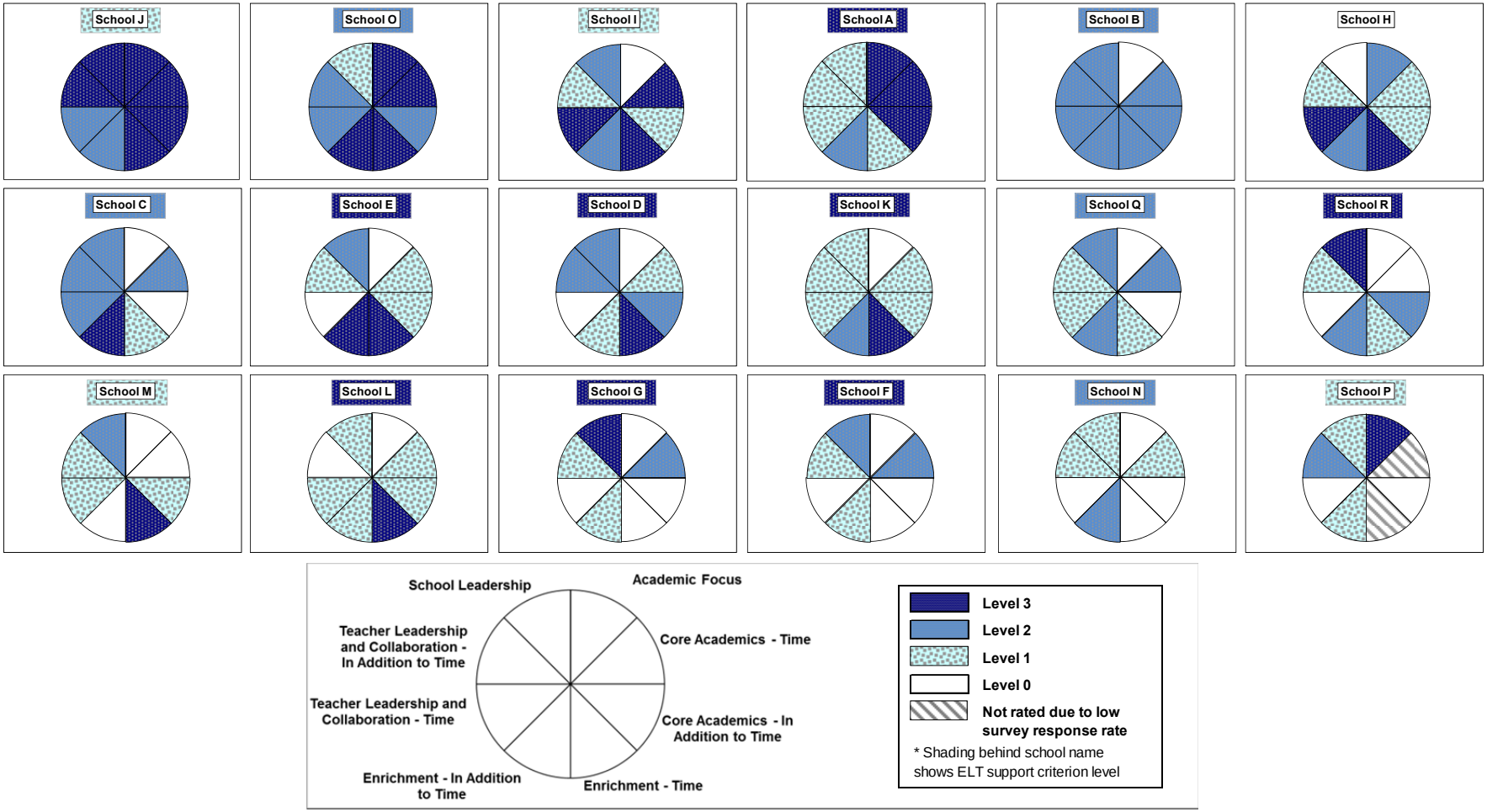


EXHIBIT READS: On the implementation index, School J scored a Level 3 for the Academic Focus criterion.

Notes: School IDs (letters) have been randomly assigned in order to present school-level implementation data anonymously. Pie charts are organized in descending order of total score from left to right.

The color scheme for this Exhibit is deliberately distinct from other exhibits to enhance readability in both color and black and white.

Sources: Abt Associates' Interviews of MA ELT and Matched Comparison School Principals, Spring 2011; Abt Associates' Surveys of MA ELT School Teachers, Spring 2011

Sample: 18 ELT schools with the exception of Criterions 2 and 3, for which the sample is 17 ELT schools.

Exhibit 3.3: Matched Comparison School Implementation Pie Charts, by Index Criterion, 2010-11

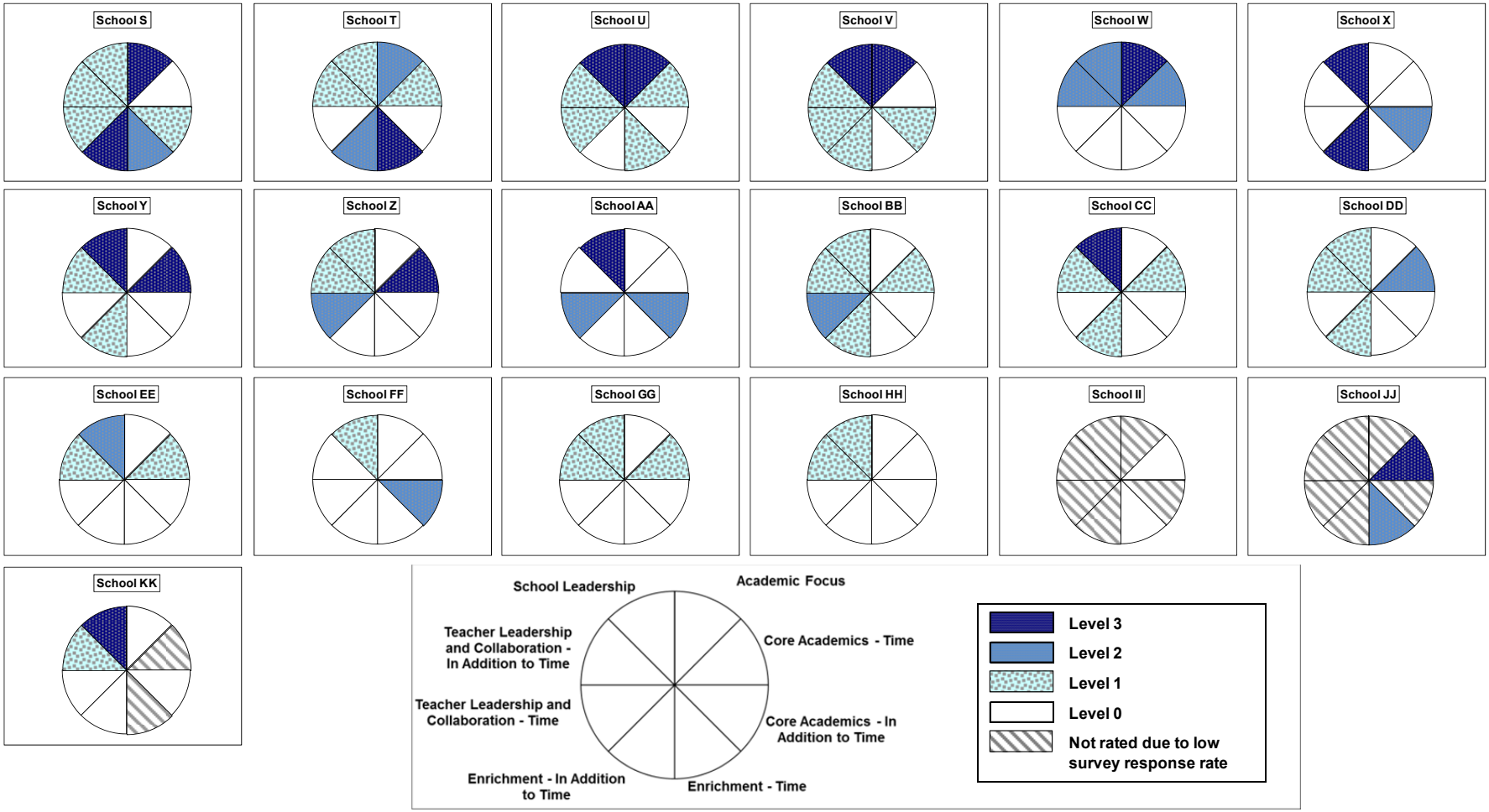


EXHIBIT READS: On the implementation index, School 32 scored a Level 3 for the Academic Focus criterion.

Notes: School ID numbers have been randomly assigned in order to present school-level implementation data anonymously. Pie charts are organized in descending order of total score from left to right.

The color scheme for this Exhibit is deliberately distinct from other exhibits to enhance readability in both color and black and white.

Sources: Abt Associates' Interviews of MA ELT and Matched Comparison School Principals, Spring 2011; Abt Associates' Surveys of Matched Comparison School Teachers, Spring 2011.

Sample: 19 matched comparison schools with the exception of Criterions 2 and 3, for which the sample is 18 schools and Criterions 1, 3 (in addition to time), 4, 5, and 6, for which the sample is 16 schools.

Chapter 4. Detailed Implementation Findings

This chapter describes in depth how the ELT schools implemented core ELT components during the 2010-11 school year. These components include: expanding the length of the school day, additional time and supports for core academics, implementation of a school-wide academic focus, enhanced enrichment activities, and opportunities for teacher leadership and collaboration. Implementation is described across ELT schools as well as by school configuration when relevant. School configuration refers to schools serving different grade levels. For the purposes of this report, schools are generally grouped as elementary or middle schools. Schools serving grades K-4, K-5, K-6, and K-8 are considered elementary schools. Schools serving grades 4-7, 5-8, 6-8, and 7-8 are considered middle schools. The chapter does not describe cohort-level findings, as the number of schools within cohort varies substantially, as do the grade level configurations within cohort, thereby rendering cohort-level differences less meaningful. (See Appendix D for more specific information on cohort-specific findings).

Describing how schools have implemented ELT components allows the study to assess whether the initiative overall has been able to translate core principles into operational practice and whether the processes outlined in the conceptual model are demonstrably in place. The chapter also includes brief descriptions of matched comparison schools' practices related to the ELT core components based on principal interviews in textbox format. Descriptions of teacher and student survey responses about ELT implementation are limited to ELT schools. Note that no side-by-side presentations of ELT and matched comparison schools' survey data appear in this chapter; Chapters 5 and 6 present statistical comparisons of implementation and outcomes at ELT and matched comparison schools.

The findings reported in this chapter draw on principal interview as well as teacher and student survey data. Unless otherwise stated, reported findings from teachers and students represent responses from multiple teachers and students, whereas school-level responses are generally from individual principals. Key findings are presented at the beginning of each section.

Time Use in ELT Schools

Key Findings

- The ELT school day was just under eight hours, on average, in 2010-11.
- On average, almost five of the nearly eight hours of a typical school day were allocated to core academics (English Language Arts (ELA), math, science, and social studies). Twenty more minutes per day, on average, were allocated to core academics in 5th than in 8th grade.
- Overall, the plurality of time in an ELT school day was allocated to ELA, followed by math, then science and social studies. Specifically, of the five hours allocated to core academics:
  - The amount of time scheduled for English Language Arts (ELA) was 1 hour and 45 minutes, on average.
  - Nearly 90 minutes were allocated to math instruction, on average.
  - An average of nearly 1 hour was scheduled for science and 45 minutes to social studies per day.

- Time allocations for core subjects varied somewhat by grade. Specifically,
  - An average of about 45 minutes more each day was allocated to ELA in 5th than in 8th grade.
  - Slightly more time (12 minutes, on average) was allocated to math in 5th than in 8th grade.
  - About 20 fewer minutes were allocated to science and 15 minutes fewer to social studies in 5th than 8th grade, on average.
- While there are broad core principles guiding ELT implementation, ELT schools have flexibility in how they implement core components. As in past years, schools varied considerably in how they allocated time to various instructional activities.

This section first describes the total amount of time within ELT school days and then discusses time allocations to instructional activities and core academic subjects. Next, it describes teachers' instructional practices and the types of supports provided to students.

Overall Length of the ELT School Day

As part of their participation in the Massachusetts ELT initiative, schools were expected to add 300 hours to their schedules over the course of the 2010-11 school year; this increase in time is over 1.5 additional hours per school day.[35] According to principal responses for the target grades,[36] overall, ELT schools' day was just under 8 hours in 2010-11; on average, ELT schools started between 7:30 and 8:00 in the morning and ended between 3:30 and 4:00 in the afternoon. Interviews with principals at ELT and matched comparison schools revealed that ELT schools' days were consistently longer than those at schools without ELT.

The table below illustrates what various daily time increments represent when aggregated to weekly and annualized levels.

Difference in Amount of Time Allocated		
Daily	**Weekly**	**Yearly**
10 minutes	50 minutes	30 hours (one week)
15 minutes	75 minutes	45 hours (one-and-a-half weeks)
20 minutes	100 minutes	60 hours (two weeks)
30 minutes	2.5 hours	90 hours (three weeks)
45 minutes	3.75 hours	135 hours (four weeks)
60 minutes	5 hours	181 hours (six weeks)
100 minutes	8 hours, 20 minutes	300 hours (ten weeks)

As Exhibit 4.1 shows, the average ELT school day ranged from about seven-and-a-half to eight-and-a-half hours in length. The school day was about 15 minutes longer, on average, for 8th than 5th graders, or over an hour more each week. In Exhibit 4.1, the vertical line represents the full distribution, running from the minimum on the bottom, to the maximum, on the top, of the number of hours reported by principals for the typical 5th and 8th grade students in their schools. The box represents the middle 50 percent of the distribution, the line through the middle of the box represents the median, and the diamond represents the mean value. The lines extending from the bottom and the top of the box represent the

[35] ELT schools were given the option of adding days to their school year but have thus far chosen to add hours within the existing school year, which averages 180 days.

[36] Time data include 17 ELT schools (12 5th and 11 8th grades for a total of 23 data points). Time data analyses exclude schools that have neither 5th nor 8th grade students (n=1). .

bottom and top quartiles (from the minimum to the 25th percentile and from the 75th percentile to the maximum, respectively).

Exhibit 4.1: Range in Length of Time Allocated to School Day in ELT Schools, by Grade, 2010-11

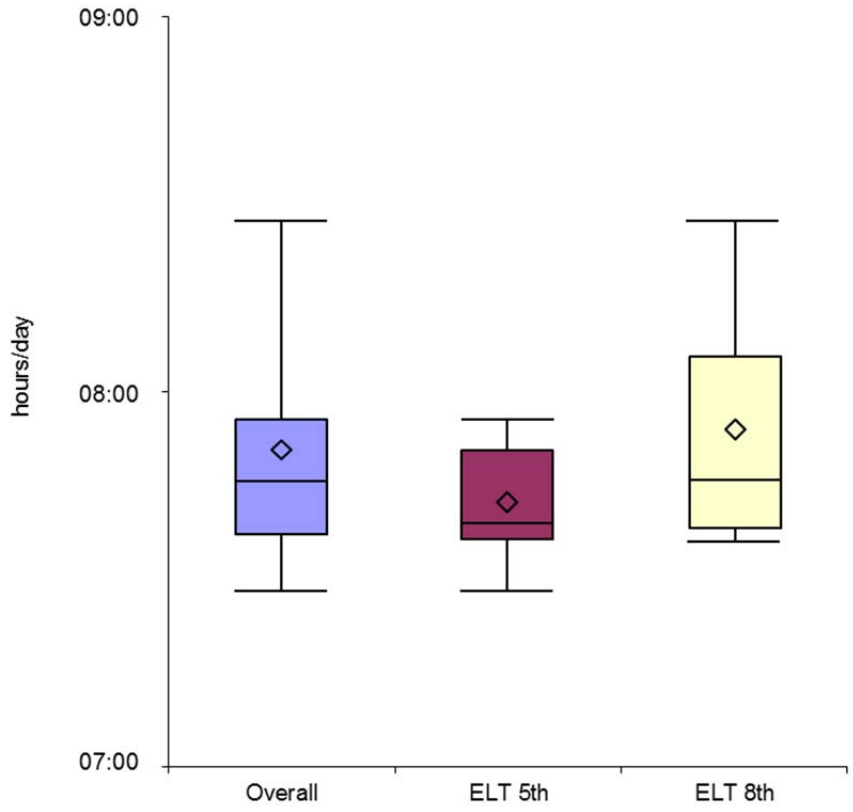


EXHIBIT READS: The figure presents the range of the length of the school day across all ELT schools, as well as for a typical 5th and 8th grade student. The shaded box represents the middle 50 percent—from the 25th to the 75th percentiles—of the distribution of school day length, and the lines to the bottom and top represent the bottom and top quartiles, respectively, extending to the minimum and maximum values. The line in the middle of the shaded box represents the median value for each distribution, and the diamond shape represents the mean value. The median value for all ELT students is about 7 hours, 46 minutes; for 5th grade is about 7 hours, 39 minutes; and for 8th grade is 7 hours, 46 minutes.

Source: Abt Associates' Interviews of MA ELT School Principals, Spring 2011, Item 9a through 9e.

Sample: Time data analyses include 17 ELT schools (12-5th and 11-8th grades for a total of 23 data points). Time data analyses exclude one ELT schools without either 5th or 8th grades.

In 2010-11, students' opinions of the length of the school day were more negative than positive, based on survey data. Exhibit 4.2 illustrates that, overall, about half of students reported disliking the length of the day. Student opinions about the length of the school day were consistent across grade configuration (not shown).

Exhibit 4.2: Student Satisfaction with Length of School Day, 2010-11

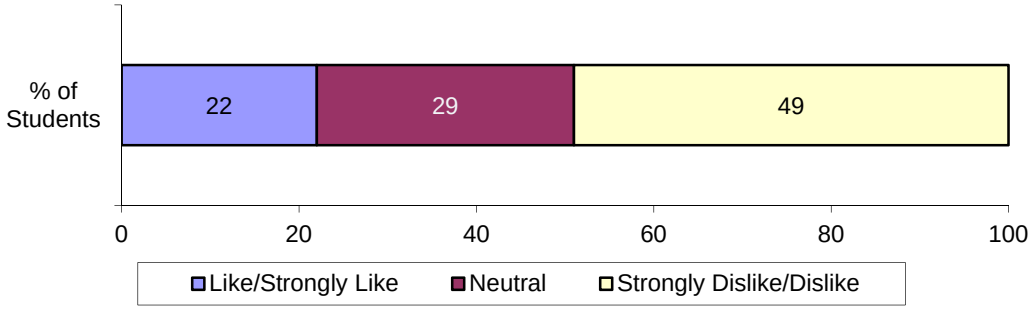


EXHIBIT READS: In spring 2011, across all ELT schools, 22 percent of students reported that they like or strongly like the length of the school day.

Source: Abt Associates' Surveys of MA ELT School Students, Spring 2011, Item 5.

Sample: 2,300 students from ELT schools. Nonresponse rate was 1.4 percent.

ELT School Time Allocated to Different Instructional Activities

Given the longer school day, ELT schools had different options about how to allocate additional time across the following categories of instruction and other activities:

- Core academic subjects: ELA, math, science, and social studies;
- Dedicated academic support, an extra block of academic time that targeted specific academic skills based on student needs;
- Specials ,which included physical education, art, music, computers, and foreign language; [37]
- Enrichment classes, which were academic or non-academic in nature, with the goal of building student interests and skills and deepening engagement with learning as well as their relationships with the individuals (teachers or staff from community partner organizations) they learned with; and
- Other activities, which included lunch, recess, snack, homeroom, and transitions.

[37] Four of 17 ELT schools included in the analysis of time data had required academic courses other than the four core subject areas. Generally, such courses included foreign language (i.e., Spanish, Portuguese, Chinese, and French) and technology courses. . Since all of the students within grade level attended these courses, and since so few schools offered these courses, this category was combined with the specials category. Note that these four ELT schools also offered traditional specials: physical education, art, music, and computers.

Panel 1 of Exhibit 4.3 presents the amount of time and Panel 2 presents the percentage of time ELT schools allocated to each of the above activities per day.[38] As noted above, over half of the nearly eight available hours each day (about 61 percent of available time) was allocated to core academics. About an hour each day was allocated in ELT schools to specials[39] and about an hour to the "other" category, which included all administrative and lunch/recess activities (5 percent and 10 percent of the day, respectively). About a half hour each day was allocated to enrichment and a half hour to academic support (5 percent and 6 percent of the day, respectively).

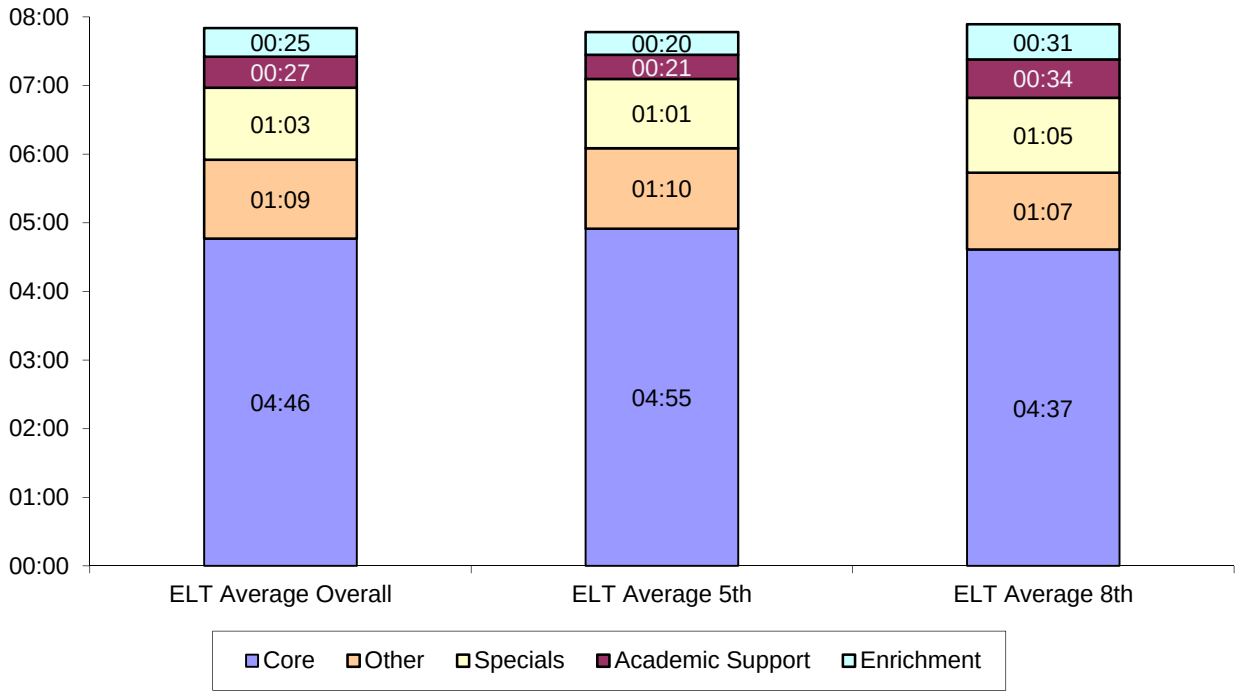
The amount of time allocated to core academics was about 20 minutes more each day for 5th graders than for 8th graders, on average, corresponding to 4 hours and 55 minutes for 5th graders and 4 hours and 37 minutes for 8th graders per week. Of note, the amount of time allocated to 5th graders for enrichment and academic support was less, on average, than for 8th graders (about 20 minutes each for 5th graders, and 30 minutes each for 8th graders). Across both grades, about the same amount of time was allocated for specials and for "other" activities (about 60 minutes each).

[38] According to principals, not all types of instruction were necessarily offered daily; however, for purposes of summarizing how schools allocated time, amounts of time for such activities were converted into daily metrics.

[39] As mentioned above, four ELT schools had what could be termed "non-core academic courses"; at those schools, an average of 40 minutes per day was allocated to "non-core academics" as well as an average of one hour per day to traditional specials.

Exhibit 4.3: Amount and Percentage of Time Allocated to Instructional Activities in ELT Schools, Per Day, by Grade, 2010-11

Panel 1



Panel 2

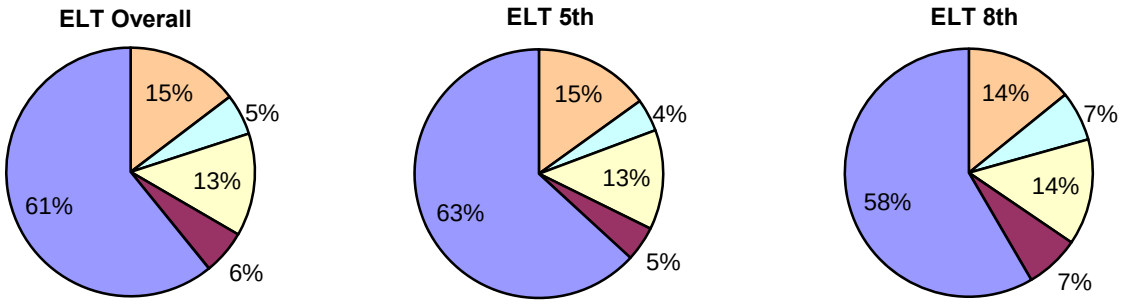


EXHIBIT READS (Panel 1): In spring 2011, across all ELT schools, 4 hours and 46 minutes per day were allocated to core academics.

EXHIBIT READS (Panel 2): In spring 2011, across all ELT schools, 61 percent of the school day was allocated to core academics.

Source: Abt Associates' Interviews of MA ELT School Principals, Spring 2011, Item 11.

Sample: Time data analyses include 17 ELT schools (12-5th and 11-8th grades for a total of 23 data points). Time data analyses exclude one ELT schools without either 5th or 8th grades.

The data described above represent aggregated findings across all ELT schools; the displays below illustrate variation across individual schools. ELT schools received school-specific guidance and flexibility about how to implement specific ELT components, and therefore it is not surprising that schools varied considerably in how they allocated time to various instructional activities. Exhibit 4.4 summarizes the range of time allocated to each broad category of instruction for 5th and 8th graders in 2010-11. Exhibit 4.5 presents data on individual school-level allocations across these categories for 5th and 8th graders. The amount of time allocated to enrichment and academic support ranged from 0 to 41 minutes and 0 to 68 minutes per day, on average, for enrichment, and from 0 to 57 and from 0 to 64 minutes per day for academic support (for 5th and 8th graders, respectively).[40] In general, there was less variation across schools in how time was allocated in 5th grade than in 8th grade. Of note, in 2009-10, two 5th and two 8th grades reported allocating no time for enrichment, and five 5th and two 8th grades reported no academic support.

For the purposes of presenting information about ELT implementation in this chapter, each school is identified by a randomly assigned (unique) letter, and the individual school displays use these identifiers. School-by-school results presented in subsequent chapters do not use the same identification scheme as used here.

[40] According to principals, one ELT school (serving both 5th and 8th graders) did not provide any enrichment to its students; another ELT school (also serving both 5th and 8th graders) provided enrichment to 5th but not to 8th graders. Also, two ELT schools (serving both 5th and 8th graders) and two ELT schools (serving only 5th graders) did not have a discrete block during which students were provided academic support.

Exhibit 4.4: Range in Amount of Time Allocated to Instructional Activities in ELT Schools Per Day, by Grade, 2010-11

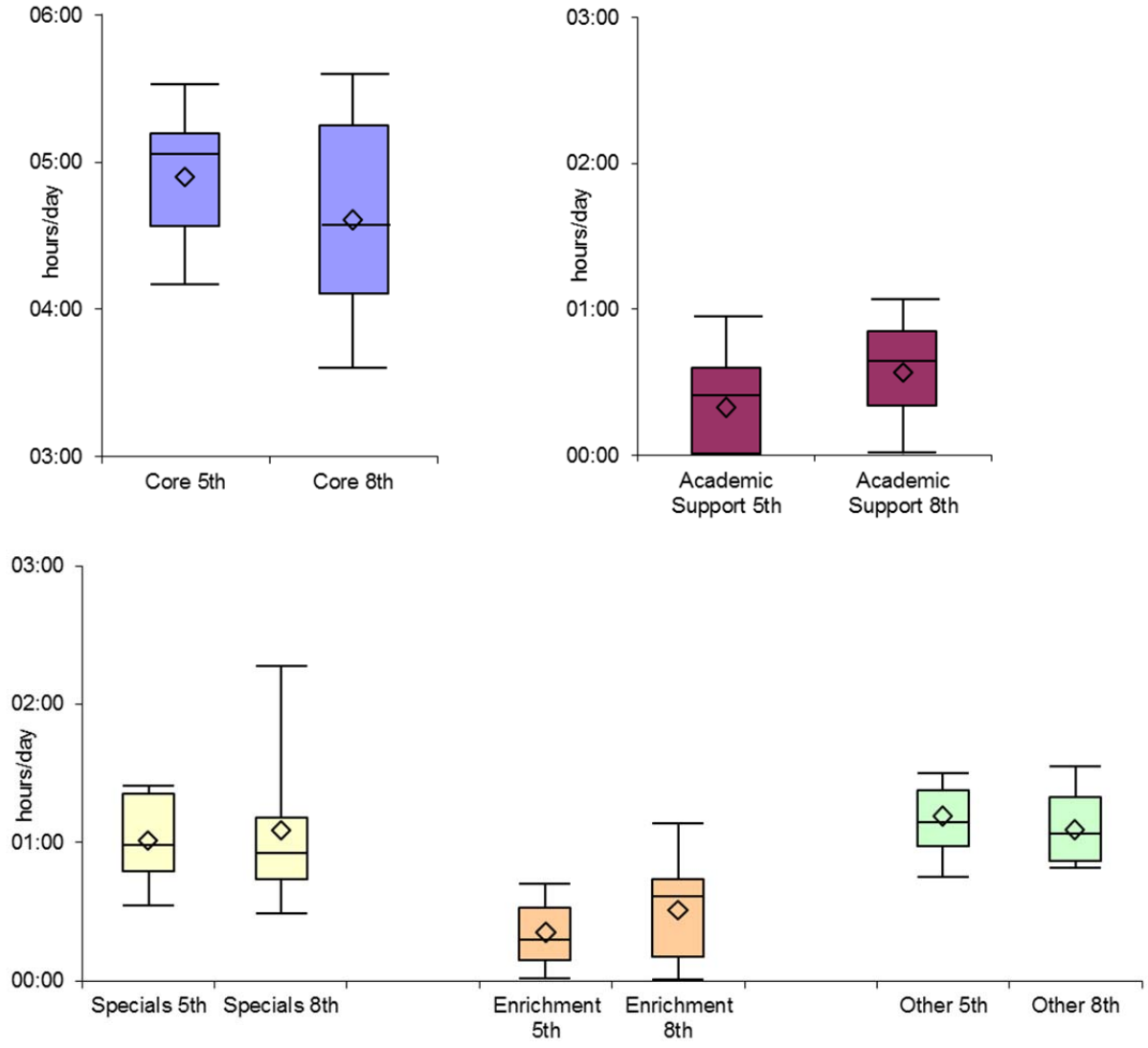


EXHIBIT READS: The figure presents the range of the amount of time, per day, for several types of instruction: core academic subjects, academic support, special, enrichment, and all other types of instruction for a typical 5th and 8th grade student. The shaded box represents the middle 50 percent—from the 25th to the 75th percentiles—of the distribution of school day length, and the lines to the bottom and top represent the bottom and top quartiles, respectively, extending to the minimum and maximum values. The line in the middle of the shaded box represents the median value for each distribution, and the diamond shape represents the mean value. The median value for core instruction in 5th grade is about 5 hours, 3 minutes and the median value for 8th grade is about 4 hours, 35 minutes.

Source: Abt Associates' Interviews of MA ELT School Principals, Spring 2011, Item 11.

Sample: Time data analyses include 17 ELT schools (12-5th and 11-8th grades for a total of 23 data points). Time data analyses exclude one ELT schools without either 5th or 8th grades.

Exhibit 4.5: Amount of Time Allocated to Instructional Activities in ELT Schools Per Day, by School and Grade, 2010-11

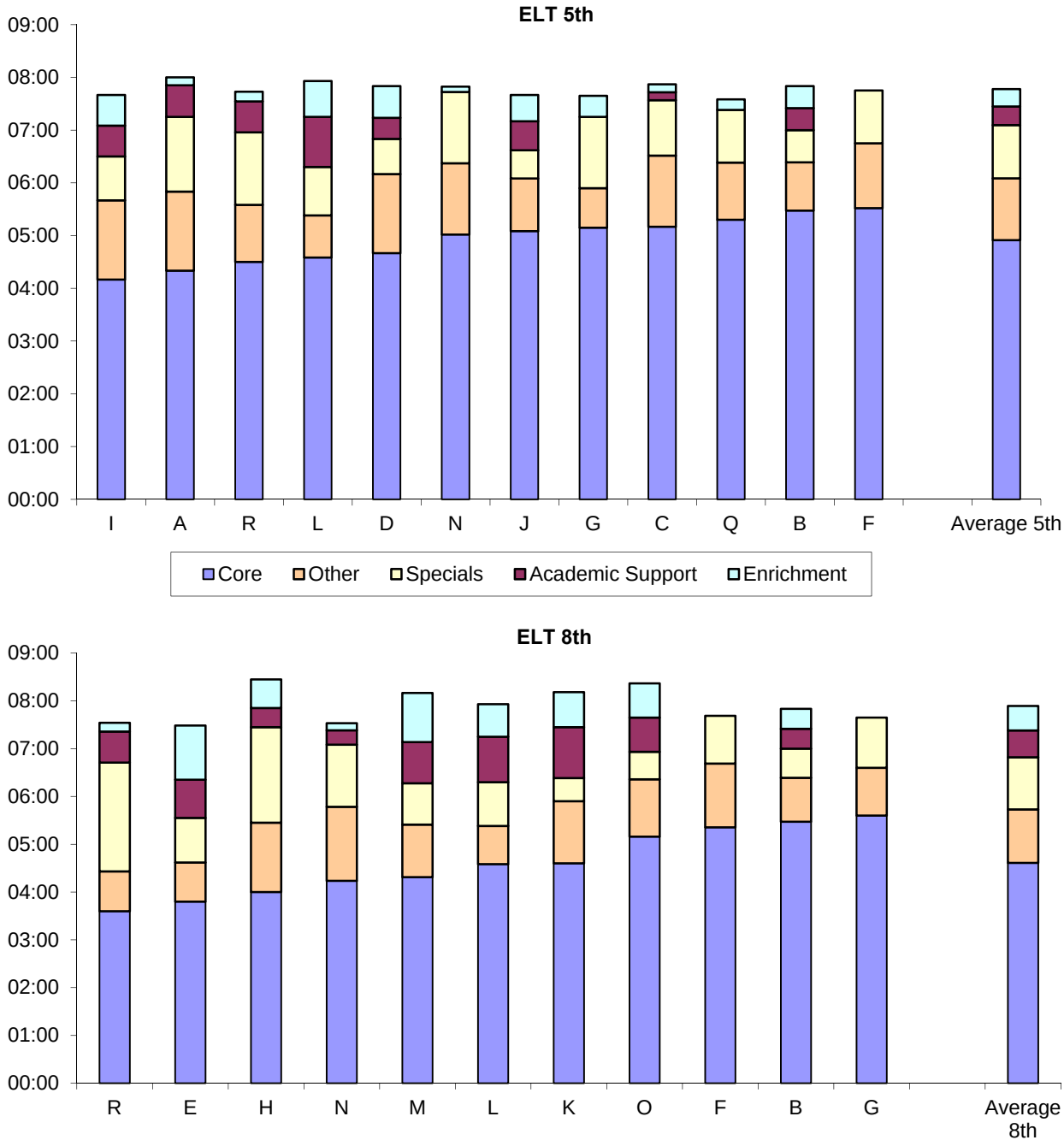


EXHIBIT READS: In spring 2011, the largest amount of time in School I for 5th grade was allocated to core academics (the blue color block), which corresponds to 4 hours and 10 minutes of the 7 hour, 40 minutes school day.

Notes: School IDs have been randomly assigned in order to present school-level implementation data anonymously. Schools are presented in ascending order by amount of time allocated to core academics.

Source: Abt Associates' Interviews of MA ELT School Principals, Spring 2011, Item 11.

Sample: Time data analyses include 17 ELT schools (12-5th and 11-8th grades for a total of 23 data points). Time data analyses exclude one ELT schools without either 5th or 8th grades.

ELT School Time Allocated to Core Academics

This section examines time allocation for core academics in ELT schools, drawing from principal-provided information on school schedules for prototypical 5th and 8th grade students. A core expectation for ELT implementation is that each ELT school "[use] additional time in order to accelerate learning in core academic subjects."[41] Key indicators for this ELT component include: 1) the school schedule for student learning provides adequate time for the delivery of instruction, and 2) the schedule provides adequate time for individualized support, be it remedial skill development or skill acceleration.

On average, ELT schools allocated nearly five of the eight available hours each day (about 60 percent of available time) on core academics. The majority of core instructional time was scheduled for ELA instruction, followed by math, and the remainder of the time was split about evenly between science and social studies, with slightly more time allocated to science.

Panel 1 of Exhibit 4.6 presents the amount of time, and Panel 2 presents the percentage of time ELT schools allocated to four core academic subjects per day.[42] Overall, an average of one hour and forty-five minutes per day were devoted to ELA, just under 90 minutes to math, nearly an hour to science and about three-quarters of an hour to social studies.

Generally, a larger proportion of core instructional time was allocated to ELA for 5th than 8th grade students, corresponding to 42 and 30 percent of instructional time, respectively. Just under one-third of instructional time in each grade level was devoted to math. On average, less core instructional time for 5th than for 8th grade was devoted to science and social studies (about 15 percent and 20 percent in each subject, respectively).

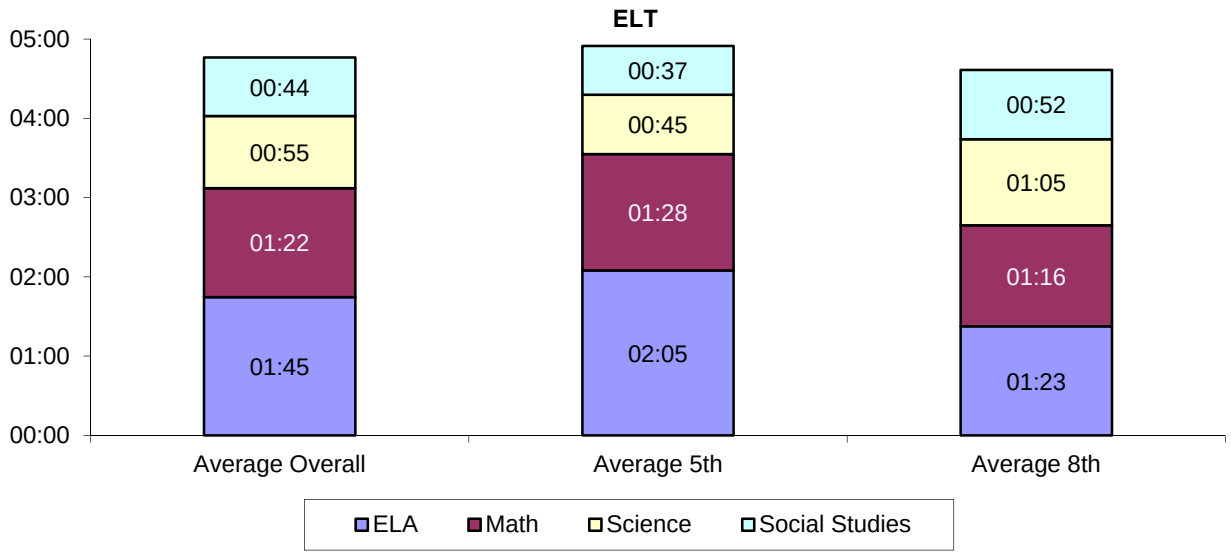
There were grade level differences in how much time was allocated to core academic subjects. Overall, the total amount of time allocated to core academics was about 20 minutes more for 5th than for 8th grade. On average, nearly 45 minutes more per day were allocated to ELA in 5th than in 8th grade (2 hours and 5 minutes and 1 hour and 23 minutes, respectively). On average, slightly more time, about 12 minutes per day, was allocated for 5th than for 8th grade to math (1 hour and 28 minutes and 1 hour and 16 minutes, respectively). About 20 minutes fewer were allocated to science and 15 minutes fewer to social studies in 5th than 8th grade.

[41] *ELT Expectations for Implementation*, Mass 2020 website: http://www.mass2020.org/node/14, Retrieved 12/15/11. The Expectations were developed by ESE, Mass 2020, and Focus on Results

[42] According to principals, not all types of instruction were necessarily offered daily; for purposes of summarizing how schools allocated time, amounts of time for such activities were converted into daily metrics.

Exhibit 4.6: Amount and Percentage of Time Allocated to Core Academics in ELT Schools Per Day, by Grade, 2010-11

Panel 1



Panel 2

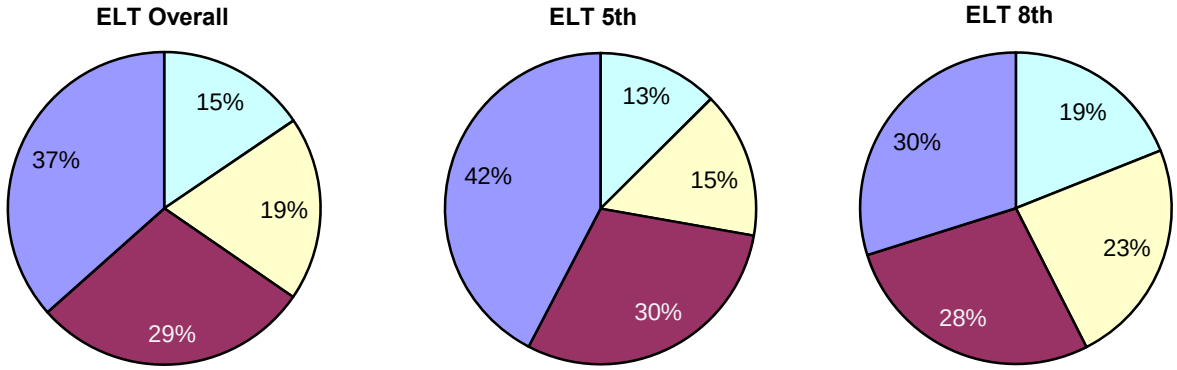


EXHIBIT READS (Panel 1): In spring 2011, across all ELT schools, 1 hour and 45 minutes per day were allocated to instruction in ELA.

EXHIBIT READS (Panel 2): In spring 2011, across all ELT schools, 37 percent of the time allocated to core academics was allocated to instruction in ELA.

Source: Abt Associates' Interviews of MA ELT School Principals, Spring 2011, Item 11.

Sample: Time data analyses include 17 ELT schools (12-5th and 11-8th grades for a total of 23 data points). Time data analyses exclude one ELT schools without either 5th or 8th grades.

Exhibit 4.7 summarizes the range of time allocated to each core academic subject in 5th and 8th grade, and Exhibit 4.8 presents data on individual school-level allocations of time across core academic subjects for these grades. While there was some variation by school, 5th and 8th grade time allocations were generally similar to the overall cross-school allocation.

Exhibit 4.7: Range in Amount of Time Allocated to Core Academics in ELT Schools Per Day, by Grade, 2010-11

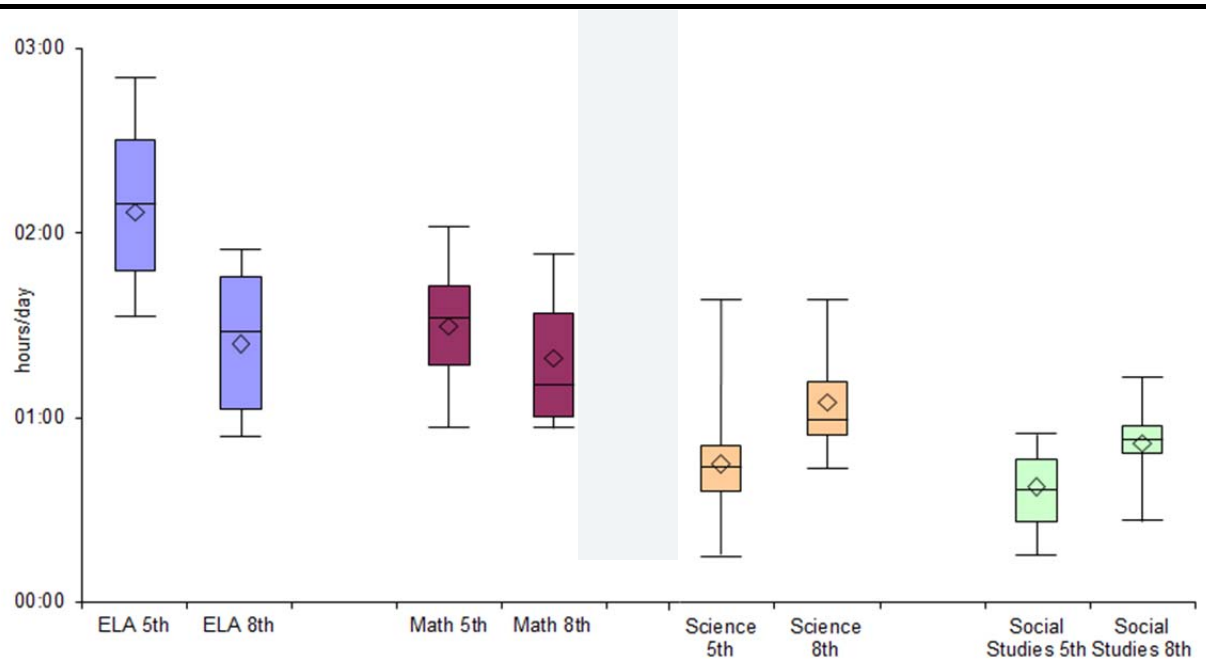
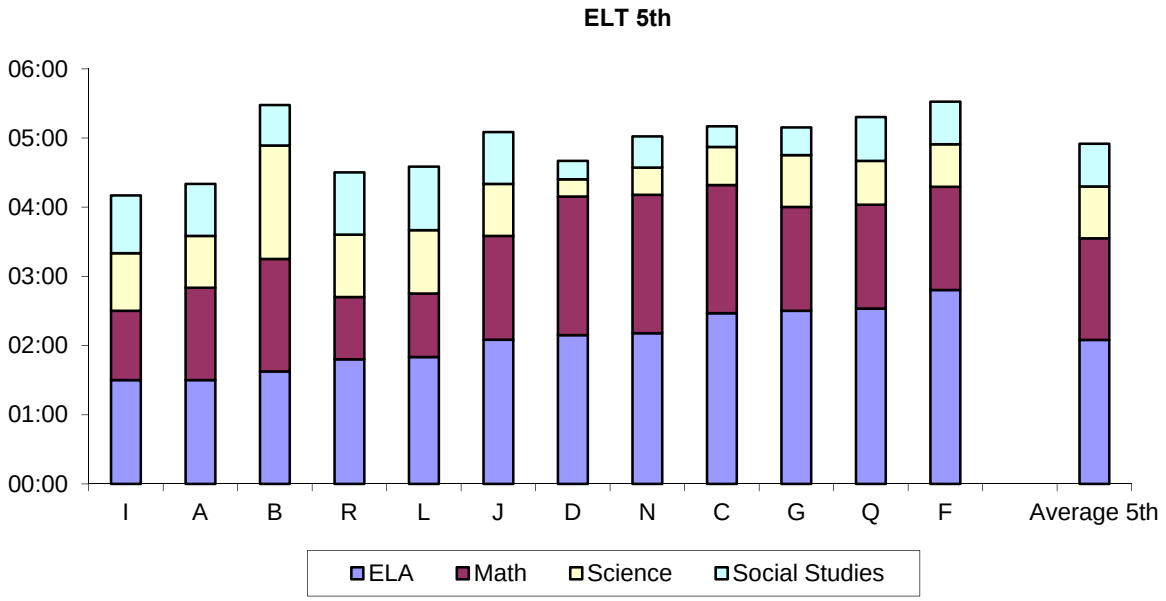


EXHIBIT READS: The figure presents the range of the amount of time, per day, for instruction in core academic subject areas, including English Language Arts (ELA), Math, Science, and Social Studies for a typical 5th and 8th grade student. The shaded box represents the middle 50 percent—from the 25th to the 75th percentiles—of the distribution of school day length, and the lines to the top and bottom represent the top and bottom quartiles, respectively, extending to the minimum and maximum values. The line in the middle of the shaded box represents the median value for each distribution, and the diamond shape represents the mean value. The median value for ELA instruction in 5th grade is about 2 hours, 7 minutes and the median value for 8th grade is about 1 hour, 26 minutes.

Source: Abt Associates' Interviews of MA ELT School Principals, Spring 2011, Item 11.

Sample: Time data analyses include 17 ELT schools (12-5th and 11-8th grades for a total of 23 data points). Time data analyses exclude one ELT schools without either 5th or 8th grades.

Exhibit 4.8: Amount of Time Allocated to Core Academics in ELT Schools Per Day, by School and Grade, 2010-11



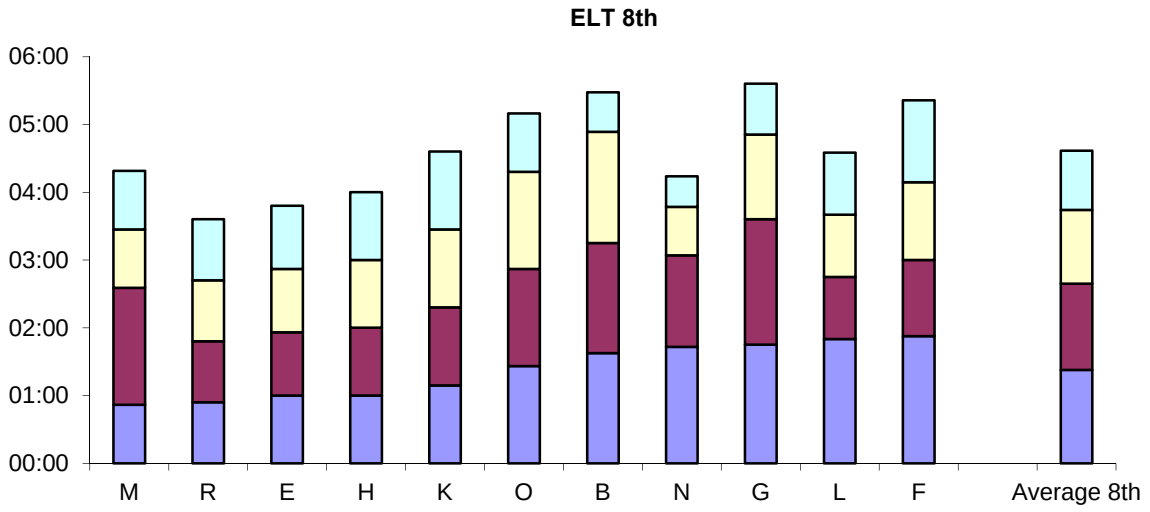


EXHIBIT READS: In spring 2011, the largest amount of time in School I for 5th grade was allocated to instruction in ELA (the blue color block), which corresponds to about 1 and a half hours of the 4 hours, 10 minutes allocated to core academics.

Notes: School IDs have been randomly assigned in order to present school-level implementation data anonymously. Schools are presented in ascending order by amount of time allocated to ELA.

Source: Abt Associates' Interviews of MA ELT School Principals, Spring 2011, Item 11.

Sample: Time data analyses include 17 ELT schools (12-5th and 11-8th grades for a total of 23 data points). Time data analyses exclude one ELT schools without either 5th or 8th grades.

While there were some differences in the proportion of teachers who reported satisfaction with the amount of instructional time available for each core academic subject, overall, satisfaction with instructional time in core subject areas was high (70 percent or more teachers reporting satisfaction). Teacher satisfaction with the amount of instructional time available for core academics was higher for ELA and math than for science and social studies, according to survey data. As shown in Exhibit 4.9, overall, 90 percent or more of teachers were satisfied with the amount of time available for instruction in ELA and math. About 80 percent of teachers were satisfied with time available for science and three-quarters (71 percent) with time available for social studies. A higher proportion of middle school than elementary teachers reported satisfaction with the amount of instructional time available for instruction for science and for social studies (86 and 76 percent, and 75 and 68, respectively).

As shown in Exhibit 4.9, however, overall, less than half of teachers (42 percent) were satisfied with the amount of time available during the day for physical activity. Elementary school teachers were more satisfied than middle school teachers with the amount of time during the day for physical activity (52 and 28 percent, respectively).[43]

Exhibit 4.9: Teacher Satisfaction with Instructional Time Available for Core Academics and Physical Activity, by School Configuration, 2010-11

	Percent of Teachers		
	Overall	Elementary	Middle
Time available for instruction in math.	93%	94%	90%
Time available for instruction in ELA.	90	92	87
Time available for instruction in science.	81	76	86
Time available for instruction in social studies.	71	68	75
Time available for physical activity.	42	52	28

EXHIBIT READS: In spring 2011, across all ELT schools, 93 percent of teachers reported that they are satisfied or very satisfied with the amount of time available for instruction in math.

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 10b, 10a, 10c, 10d and 10g.

Sample: 918 teachers from ELT schools. Nonresponse rates across items ranged from 8.2 to 24.1 percent.

Student reports indicate some subject-specific variation in the amount of time students need to learn a given subject (see Exhibit 4.10). For example, about two-thirds of students reported that they need more time in Specials and other non-academic activities, about half of student respondents indicated that they

[43] All time data have been presented by grade (5th and 8th), whereas survey responses are calculated by school configuration (elementary and middle). The time data analyzed by grade revealed no differences between 5th and 8th grades in the average amount of time allocated to specials and "other" activities (e.g., homeroom, recess, lunch, and transitions). Time data calculated by school configuration, however, suggest that 15 more minutes per day are allocated to specials in elementary than in middle schools (60 vs. 45 minutes per day, respectively). Likewise, time data calculated by school configuration suggest that 10 more minutes per day are allocated to "other" activities in elementary than middle schools (52 vs. 42 minutes per day, respectively). Differences in elementary and middle school teachers' satisfaction with the amount of time during the day for physical activity might reflect the differences in time allocated to specials and other activities. That said, even though elementary teachers were more satisfied with time available during the day for physical activity than middle school teachers, overall satisfaction is low.

need more time to learn science, math, and social studies well, and fewer students reported that they need more time to learn reading, vocabulary, and writing.

Exhibit 4.10: Student Perceptions of Whether They Need More Time for Core Academics and Specials, 2010-11

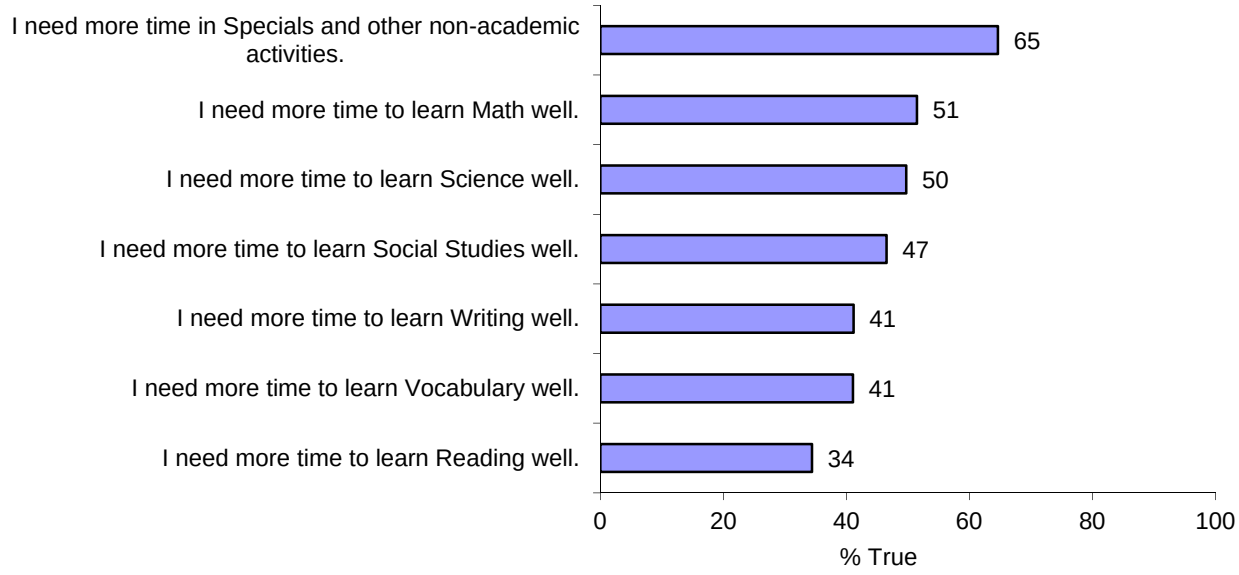


EXHIBIT READS: In spring 2011, across ELT schools, 65 percent of students reported that they needed more time in Specials and other non-academic activities.

Source: Abt Associates' Surveys of MA ELT School Students, Spring 2011, Item 10a through 10g.

Sample: 2,300 students from ELT schools. Nonresponse rates across items ranged from 1.6 to 2.0 percent.

Effects of Longer Day on Instructional Practice of ELT Teachers

Adequate time for instruction is likely to be constructive for student learning only if the time is used effectively. Administrators and teachers in ELT schools are expected to identify and implement effective instructional practices school-wide. Implementation typically requires substantial support to teachers from principals, coaches, and school-based professional development that includes feedback through frequent classroom visitation, modeling of effective practices, and assistance in analyzing and using performance data. Teachers can also improve practices by sharing with and learning from their peers. Teacher reports on the amount and quality of instructional time spent with students are described in this section; a subsequent section presents findings on supports provided to ELT teachers for instructional improvement.

Survey responses indicate that teachers in ELT schools overwhelmingly agreed (91 percent) that they spent sufficient instructional time with their students for them to be able to learn; teachers also generally agreed that students had sufficient time to learn beyond the minimal requirements (76 percent) Teachers also consistently reported that they were able to use a variety of instructional strategies (e.g., project-

based, small-group learning)[44], differentiate instruction for students of different abilities, cover the amount of instructional material their school expected, and cover the amount of instructional material their students needed to learn (92, 89, 82 and 74 percent, respectively). Further, the large majority of teachers (80 percent) reported that the length of the school day allowed them to accomplish their teaching goals. More elementary than middle school teachers reported that they were able to cover both the amount of instructional material their school expected and that their students needed to learn (87 and 75 percent and 81 and 65 percent, respectively) (not shown).

Academic Support for Students in ELT Schools

Another core ELT expectation is that adequate time be allocated for the provision of individualized support and that this time be tailored to individual student needs. Academic support is intended to build on the quality instruction and foundational skills established in core courses, and is not meant to replace such courses. This section focuses on dedicated blocks of time to academic support time distinct from academic support provided in a more integrated manner during other classes (i.e., "push in" support). Like academic support classes, homework can also allow students to practice what they learn in their academic classes and further their skills. Information on homework policies is presented in Appendix D.

According to survey data, less than half of students (43 percent) reported needing extra help to learn reading, math, science, and/or social studies. Just over two-thirds (67 percent), however, reported that they needed more time to learn subjects that were hard for them. These data suggest that student perceptions align with core expectations regarding academic support; tailored, individualized academic support is essential if students are to progress in subject areas with which they struggle.

Time Allocated to Academic Support

Principals at more than three-quarters of the ELT schools (14 of 18)[45] reported that they provided dedicated blocks of academic time targeting specific academic skills. All eight middle schools, whereas just over half of the elementary schools provided dedicated academic support (6 of 10). At the majority of the schools that provided dedicated academic support (12 of 14), academic support time was provided to all students (at the other two it was provided to half or nearly two-thirds of the students). Across the 14 schools that provided dedicated academic support, on average three hours (of the 40 hour week) were allocated to dedicated academic support (not shown). More time (about 45 minutes) was allocated to academic support each week for 8th than 5th grade (three hours and 25 minutes and two hours and 39 minutes, respectively) (not shown).

The data described above represent aggregated findings across all ELT schools; the displays below (see Exhibit 4.11) indicate considerable school-level variation in time allocated to academic support for students both within and across grade level. Interestingly, the average amount of time allocated to dedicated academic support increased by an hour for 5th grade, and nearly an hour for 8th grade since 2009-10 (from 1 hour and 39 minutes to 2 hours and 39 minutes, and from 2 hours and 38 minutes to 3 hours and 25 minutes, respectively).

---

[44] According to survey data, slightly less than two-thirds of students (62 percent) reported that they needed *more* time to do project-based and hands on activities in classes; these data were consistent across school configurations.

[45] At one school dedicated academic support was provided to the 8th but not to the 5th graders attending the school.

Exhibit 4.11: Amount of Time Allocated to Academic Support in ELT Schools Per Week, by School and Grade, 2010-11

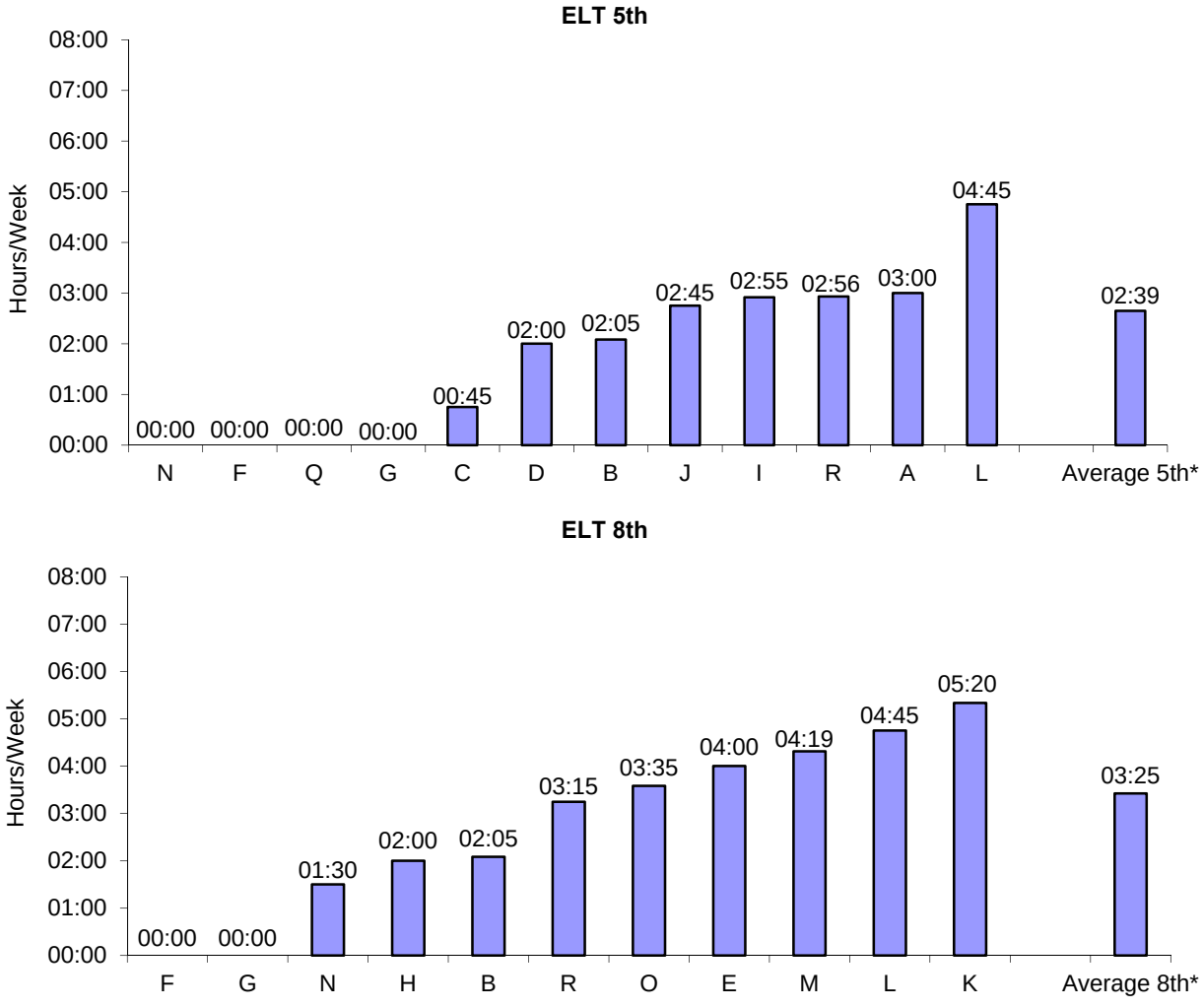


EXHIBIT READS: In spring 2011, School N allocated 0 hours per week for academic support time for 5th graders.

Notes: * Averages are calculated only among schools providing academic support.
School IDs have been randomly assigned in order to present school-level implementation data anonymously.
Schools are presented in ascending order by amount of time allocated to academic support.

Source: Abt Associates' Interviews of MA ELT School Principals, Spring 2011, Item 11.

Sample: Time data analyses include 17 ELT schools (12-5th and 11-8th grades for a total of 23 data points). Time data analyses exclude one ELT schools without either 5th or 8th grades.

According to survey responses, about three-quarters of teachers agreed that all students had access to dedicated academic support and that the length of time for and frequency of dedicated academic support allowed enough time for meaningful instruction (72 and 78 percent, respectively).

Content, Student Grouping, and Grading of Academic Support Classes

According to principals, during the 2010-11 school year, academic support classes offered both remediation and acceleration to students in math and ELA (see Exhibit 4.12). Few academic support offerings focused on science, and almost none focused on social studies. The focal subjects in academic support classes were similar across school configuration (not shown).

Exhibit 4.12: Focal Subjects in Academic Support in ELT Schools, 2010-11

	ELT Schools Providing Dedicated Academic Support (N=14)			
	Math	ELA	Science	Social Studies
Remediation	14	12	2	2
Acceleration	8	6	4	1

EXHIBIT READS: In spring 2011, across the 14 ELT schools in which principals reported having a dedicated block of academic support, 14 reported that remediation in math was a focal subject of this academic support.

Source: Abt Associates' Interviews of MA ELT School Principals, Spring 2011, Item 12i.

One aspect of high quality academic support time is the deliberate grouping of students and that grouping decisions take into account student performance data as well as teacher input. The expectation for academic support is that effective grouping is organized by ability level or by specific target skill, and not by homeroom, grade level, or happenstance.[46] Additionally, these groupings should be revisited over the course of the year with the flexibility to reassign students according to their changing needs.

In 12 of 14 schools that provided academic support, principals explained that students were grouped by ability level in the specific subject in which they needed support; the other two, both elementary schools, reported that students were kept with their regular homerooms during academic support time. Student assignment to academic support was based on academic performance (13 of 14) and secondarily, on teacher recommendations (nine of 14); other considerations included grade level, Limited English Proficiency (LEP) status, and parent concerns. In 10 of 14 schools, students were reassigned to academic support classes throughout the course of the year. Principals typically reported that reassignment happened at least quarterly; reassignment was linked to timing of assessments used to determine reassignment. Principals reported that the amount of academic support students received was based on the schedule (e.g., four 45-minute blocks per week).

According to survey responses, the majority of teachers agreed that students were appropriately grouped in academic support classes and that their performance in academic support was assessed regularly (78 and 81 percent).

[46] *Using Increased Learning Time for Individualized Instruction and Tiered Support*, Massachusetts 2020 presentation on October 15, 2010 and *Framework for Assessing Tiered Interventions and Academic Support*, Massachusetts 2020, October 15, 2010.

Another core tenet is that academic support be led by qualified, professional staff who are knowledgeable about the core curriculum and about instructional strategies that support struggling students.[47] Decisions about which teachers should teach which content and to which students should be made deliberately and with consideration for performance data as well as for teacher and student personalities. Partner staff may be involved in the provision of academic support but are expected to have experience or be trained in this area.

In 2010-11, principals reported that teachers were generally assigned to dedicated academic support classes within their own subject area and grade level. A few middle school principals explained that teachers volunteered to teach academic support classes. As shown in Exhibit 4.13, principals reported that academic support classes were taught by regular classroom teachers in all 14 of the schools in which academic support was provided. Principals also reported that special education teachers were responsible for teaching academic support in nine of 14 schools. In five schools, principals indicated that, academic support classes were taught by math or ELA coaches. In fewer schools, paraprofessionals and other staff (e.g., tutors, masters candidates) were hired/placed specifically to provide academic support. Overall, all principals reported that all staff providing academic support were licensed in the respective content areas; when academic support was provided by non-specialists (in that content area), principals described efforts to support collaboration between academic support providers and colleagues with content expertise who were also teaching academic support periods.

Exhibit 4.13: Background of Academic Support Instructors in ELT Schools, 2010-11

	ELT Schools Providing Dedicated Academic Support		
	Overall (N=14)	Elementary Schools (N=6)	Middle Schools (N=8)
Regular classroom teachers	14	6	8
Special education teachers	9	4	5
Math or ELA coaches	5	4	1
Staff specifically hired to teach dedicated academic support classes	3	1	2
Paraprofessionals	3	2	1

EXHIBIT READS: In spring 2011, across the 14 ELT schools in which principals reported having a dedicated block of academic support, all 14 reported that regular classroom teachers teach these academic support classes.

Note: Responses add up to more than 14 because respondents were allowed to select multiple responses and because some of the categories overlap (e.g., regular classroom teachers might also have subject matter expertise).

Source: Abt Associates' Interviews of MA ELT School Principals, Spring 2011, Item 12f.

Overall, according to survey responses, the majority of teachers agreed that dedicated academic support classes were taught by individuals knowledgeable both about the core curriculum and about instructional

[47] *Using Increased Learning Time for Individualized Instruction and Tiered Support*, Massachusetts 2020 presentation on October 15, 2010 and *Framework for Assessing Tiered Interventions and Academic Support*, Massachusetts 2020, October 15, 2010.

strategies to support struggling students (88 and 84 percent). Teacher responses were consistent across school configuration.

As with core academic classes, it is expected that teachers will be provided the support to improve their instruction in academic support classes through regular classroom visitation by administrators and teacher leaders to provide feedback. Less than half of teachers (46 percent), however, agreed that administrators regularly visited academic support classes to provide feedback.

Another important component of quality academic support is that teachers have opportunities to collaborate, both to discuss student progress as well as to share instructional techniques. Overall, about one-third of teachers (36 percent) reported coordinating their instruction with academic support personnel during common planning time (not shown). Of those, about a quarter indicated that engaging in this activity helped their teaching. These patterns did not differ by school configuration.

Use of Data in ELT Schools

In addition to state-mandated student achievement measures, ELT schools used a variety of other assessment tools during the 2010-11 school year. The most commonly used assessment tool was the DIBELS (Dynamic Indicators of Basic Early Literacy Skills) which was used in 10 schools. In terms of content focus, science was assessed more often by these additional tools at the middle school level (6 of 8 schools) than at the elementary school level (4 of 10 schools). Similarly, social studies was assessed at most middle schools (6 of 8 schools) and 2 of 10 elementary schools.

Additional assessment data were reviewed and used by ELT school staff with varying frequency. Of the 18 ELT schools, twelve schools used assessment data weekly, three schools monthly, and three schools quarterly. Assessment data were used by nearly all schools to strengthen instruction (17 schools) and to group students for academic support (16 schools).

Academic Support for Students in Matched Comparison Schools

Principals at six matched comparison schools indicated that they provided dedicated academic support time to all or most of their students. Several others indicated that they provided a subset of students with extra support, or that academic support was integrated into core academic classes. Twelve principals indicated that they used test scores to identify students who were in need of extra support, and six indicated that teacher recommendations identified students who need academic support.

At nine comparison schools, principals indicated that academic support was taught by regular classroom teachers. Four principals specified that teachers provide academic support in their respective area of content expertise, two of whom further specified that the most skilled teachers support the most struggling students. At four other schools, principals indicated that academic support was generally provided by staff who were hired specifically to do so, including part-time staff.

Twelve comparison school principals reported that academic support focused on ELA remediation, and 13 on math remediation.

Several comparison schools offered summer or vacation programming to students, typically those who had failed to pass core academic courses during the semester or school year.

School-Wide Academic Focus

Key Findings

- In the 2010-11 school year, most ELT schools had a school-wide academic focus, according to both principals and teachers. Teacher and principal reports of the focus were consistent at 11 of 16 schools.
- Both teachers and principals reported that the most common focus area was literacy, although writing, math, and higher order thinking skills were also common foci.
- Elementary school teachers reported a literacy-related focus more frequently than middle schools, and middle school teachers reported that higher order thinking skills was the focus more frequently than elementary schools.
- Students were most likely to report that the focus was math; however, student reports were rarely consistent with those of principals and teachers or internally consistent within a school.
- At most schools, the focus was posted publicly, often in hallways, teachers' classrooms, and the administrative offices.
- According to principals, most ELT schools had implemented school-wide instructional practices, and the vast majority of teachers reported that their instructional practice was influenced by the focus.
- A substantial majority of teachers reported that they used data specific to the focus area to monitor student progress and adjust instructional practices. Most also reported that dedicated academic support was influenced by the school-wide focus.

During the 2010-11 school year, ELT schools were, as in prior years, expected to establish and support a school-wide academic focus that "drives instructional improvement and continuous measurable growth in student learning throughout the redesigned day and year." The academic focus area represents an instructional need identified on the basis of student assessment data, and that school leadership and staff have jointly determined to improve instruction and raise student achievement. The focus should be clear and easy to communicate to staff, students, parents, and the community. Schools are expected to align ELT implementation with the overall academic focus.[48] Student performance data should be posted in the school to track progress toward meeting the focus goals throughout the year, and teachers should utilize assessment data to adjust instructional practices accordingly. Schools were asked to consider the academic focus as "one thing [they] do excellently, expertly, better than anyone else, in every classroom for every student," and with it, should come built-in accountability.[49] Mass 2020 and Focus on Results continued to help schools develop and support their selected focus area(s) through ongoing coaching visits and leadership training sessions.

---

[48] *ELT Expectations for Implementation*, Mass 2020 website: http://www.mass2020.org/node/14 Retrieved 11/14/11. The Expectations were developed by ESE, Mass 2020, and Focus on Results.

[49] *Instructional Focus: What it is – what it isn't*, Focus on Results website. http://www.focusonresults.net/curriculum/index.html Retrieved 11/14/11.

Sixteen of 18 ELT school principals reported that their schools had established a school-wide academic focus.[50] All middle schools had a focus. The majority of teachers (81 percent) reported that their school had an academic focus, with no substantial differences by school configuration. Fourteen percent of teachers reported not knowing whether their school had an academic focus area.

Nearly half of the principals discussed their school's academic focus area(s) as comprising multiple topic areas.[51] Seven of 16 principals reported that literacy was a focus, and six reported that writing was a focus. Seven reported other foci such as higher order thinking skills, open response questions, or the use of instructional tools like T-charts.[52] Three principals reported math, and one reported vocabulary. No principals reported that science or social studies was the school's focus. Some schools used both "student friendly" and adult terminology to describe their focus.

Overall, teacher survey reports about the school's academic focus were similar to principal reports, and are summarized in Exhibit 4.14. However, teacher reports were not always consistent with principal reports within schools.[53] Responses were consistent at 11 of 16 schools. The most common focus reported by teachers was literacy (36 percent), followed by math (14 percent) and higher order thinking skills (11 percent). Twenty-four percent of teachers reported that the focus was something other than the topics listed on the survey.

[50] Given the relatively small number of ELT schools overall, this discussion presents information in terms of number of schools rather than percentages.

[51] In interviews, principals responded to an open-ended question regarding their academic focus. Teachers reported the academic focus through surveys and were asked to choose one of eight specific topics listed or to write in an additional topic if their school's focus was not listed.

[52] Foci were not always mutually exclusive. For example, a focus on open response questions may overlap with a focus on writing/literacy.

[53] To determine within-school consistency, teacher reports from surveys were compared to principal reports from interviews for each school. Responses were considered "consistent" if more than 50% of teachers reported a topic that aligned with the principal. For this analysis, literacy, writing, and vocabulary were broadly considered to be English Language Arts. Since foci were not always mutually exclusive, other foci such as open response or T-charts were examined on a case-by-case basis to determine if they should be considered a match.

As reported by teachers, school academic focus areas varied somewhat by school configuration (see Exhibit 4.14). Elementary school teachers reported a literacy focus more frequently than middle school teachers (47 and 23 percent, respectively). Middle school teachers reported higher order thinking skills more often than elementary teachers (19 compared to 5 percent). Student survey responses indicate less consistent recognition of the academic focus areas identified by principals and teachers (see Exhibit D.3 in Appendix D)

Exhibit 4.14: Teacher Reports of Academic Focus, by School Configuration, 2010-11

	Percent of Teachers Reporting		
	Overall	**Elementary**	**Middle**
Literacy	36%	47%	23%
Math	14	12	16
Higher Order Thinking Skills	11	5	19
Writing	9	8	9
Vocabulary	3	0	6
Test Taking Skills	2	2	3
Science	0	1	0
Social Studies	0	0	0
Other	24	24	23

EXHIBIT READS: In spring 2011, across all ELT schools, 36 percent of teachers reported that literacy was the academic focus at their school.

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 19.

Sample: 918 teachers from ELT schools. Nonresponse rate was 1 percent.

According to principals, the academic focus was posted publicly at most schools (13 of 16), usually in the hallways (12 schools), teachers' classrooms (11 schools), and/or administrator's office (10 schools). Less than half of the schools posted the focus on-line or in the teachers' lounge (7 and 6 schools, respectively). Other ways that schools spread awareness of the focus were through the distribution of parent newsletters, posting the focus in the school gym, or reciting the focus during school announcements. Three-quarters of teachers reported that the focus was posted publicly.

Principal interviews and site visits revealed that the academic focus had moderately more visibility at middle schools than elementary schools. For instance, the focus was posted in hallways, classrooms, and administrative offices somewhat more often at middle schools than elementary schools.

Exhibit 4.15 summarizes teachers' perceptions about the school's academic focus. Overall, teachers reported that the academic focus had a significant influence on the school. The vast majority of teachers reported that their instructional practice was influenced by the school-wide academic focus (95 percent), which was a substantial increase from 2009-10 (65 percent). A large majority of teachers also reported that they used data specific to this year's school-wide academic focus area to monitor student progress, adjust instructional practices, and inform dedicated academic support (each at 90 percent). Roughly three-quarters of teachers reported that enrichment activities were influenced by the academic focus (73 percent), more than the 62 percent reported in 2009-10. Reports from teachers across school configuration were similar.

Nearly all principals (15) reported that they had school-wide instructional practices in place. Examples of such practices included the use of tiered instruction, T-charts or other instructional tools, specific note-taking techniques, reciprocal teaching, and the workshop model in which students present at the end of every class. Three ELT principals mentioned that the practices were supported by providing teachers with related professional development or training.

Academic Focus at Matched Comparison Schools

Fifteen of 19 comparison schools reported the establishment of a school-wide academic focus in 2010-11. Comparison school principals, like ELT principals, sometimes reported more than one focus area, including literacy (11 schools), followed by writing (four schools), vocabulary and math (three schools each). Two schools had other specific foci such as T-charts, open response, and student-to-student discourse. Teacher reports of the focus were consistent with principal reports at 12 schools (80 percent of the schools with a focus); the proportion of schools with consistency was higher than for ELT schools. In no comparison schools were student reports about the content of the focus consistent with teacher and principal reports.

Most comparison schools with an academic focus publicly posted it in at least one location (12 of 15 schools). More than half of schools posted the focus in classrooms (eight schools), and fewer in hallways, on-line, in the teachers' lounge, and in the administrative office (five, five, four and four schools, respectively). Other locations for the focus included conference rooms, communications sent home to parents, and on cards taped to each student's desk.

Fourteen comparison principals reported that their schools implemented school-wide instructional practices, including practices similar to those used at ELT schools, such as specific note-taking techniques, word walls, reciprocal teaching, the workshop model of instruction, and strategies from the Bay State Reading Institute. Five principals mentioned providing professional development to teachers to support school-wide instructional practices. For example, one school trained teachers in a reading strategy called QAR (Question Answer Relationship) and posted the strategy in all classrooms throughout the school.

Exhibit 4.15: Teacher Perceptions of Academic Focus, 2010-11

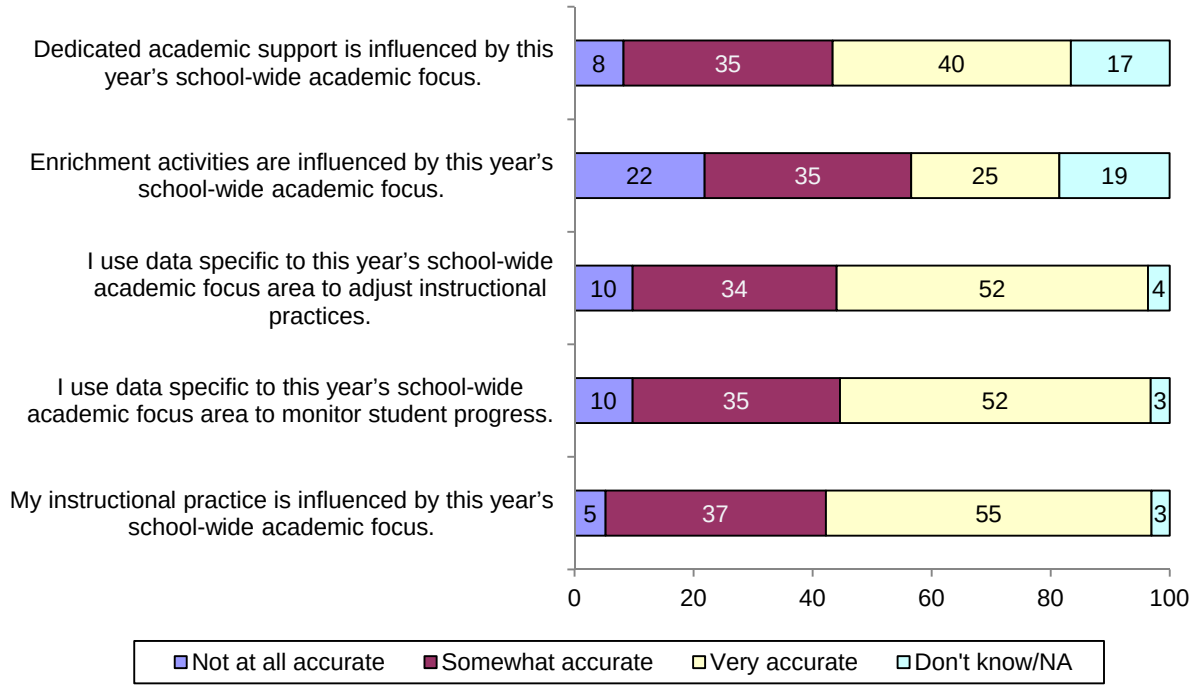


EXHIBIT READS: In spring 2011, across all ELT schools, 40 percent of teachers reported that the statement, "Dedicated academic support is influenced by this year's school-wide academic focus," was very accurate.

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 20a through 20e.

Sample: 918 teachers from ELT schools. Nonresponse rates across items ranged from 5.8 to 20.6 percent.

Enrichment

Findings

- Most ELT schools have implemented separate enrichment classes. Nearly all students participated in enrichment classes/instruction, though the amount of time varied. Some schools also embedded enrichment activities within core classes.
- The amount of time a typical student spent in enrichment varied considerably, from daily to weekly. Similar to last year, middle school students appeared to spend more time in enrichment than elementary students.
- Approximately half of all ELT teachers reported that they taught at least one enrichment activity. Middle school teachers taught enrichment more often than elementary teachers.
- Regular teachers/staff taught some enrichment activities at most ELT schools, and over half the ELT schools relied on partner organizations to provide some enrichment; of those latter schools, regular meetings were scheduled for partner staff and teachers to collaborate, an increase over reported efforts to integrate partners from the previous year.

- Most teachers reported that they and their students had some choice about selecting enrichment activities. The vast majority of teachers reported that all students had access to enrichment activities, and enrichment activities were of high quality.

Context and Definition

ELT schools are expected to add time to their schedules for enrichment both within core academic classes and/or in specialty classes. Enrichment opportunities should "connect to state standards, build student skills and interests, and deepen student engagement in school/learning in support of school-wide achievement goals."[54] Separate enrichment classes, sometimes referred to as "electives," are activities with either academic or non-academic content (e.g., yoga, robotics, math club, newspaper, or sewing) that only some students attend. All students might attend an enrichment class, although not all students necessarily attend the same [enrichment] activity or class. Using this definition, 17 principals reported having separate enrichment classes or electives. Five schools also had "embedded enrichment" or enrichment within core academic classes, in addition to enrichment classes or electives.

Time

According to principals, time for enrichment at ELT schools during 2010-11 ranged from 0 to 340 minutes (or 5 hours and 40 minutes) per week, and schools allocated approximately 2 hours and 20 minutes each week (139 minutes) for a typical student, on average. More time was allocated to enrichment each week for 8th than 5th grade (3 hours and 8 minutes and 1 hour and 48 minutes, respectively (not shown).

The data described above represent aggregated findings across all ELT schools; the displays below (see Exhibit 4.16) indicate considerable school-level variation in time allocated to enrichment for students both within and across grade level.

[54] ELT Expectations for Implementation, Mass 2020 website: http://www.mass2020.org/node/14 Retrieved 12/12/11. The Expectations were developed by ESE, Mass 2020, and Focus on Results.

Exhibit 4.16: Amount of Time Allocated to Stand-Alone Enrichment in ELT Schools Per Week, by School and Grade, 2010-11

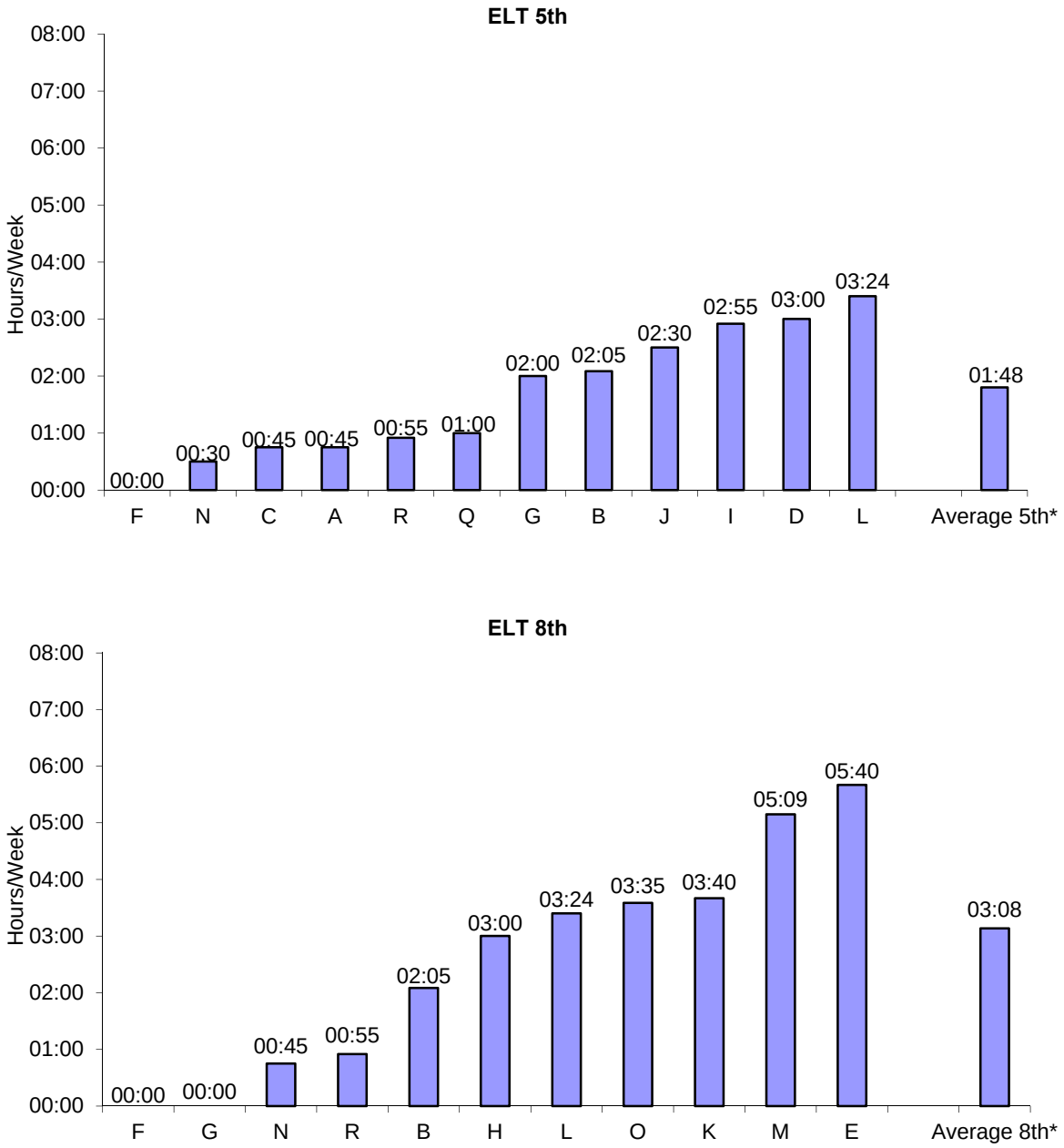


EXHIBIT READS: In spring 2011, School F allocated 0 hours per week for enrichment time for 5th graders.

Notes: * Averages are calculated only among schools providing enrichment.
School IDs have been randomly assigned in order to present school-level implementation data anonymously.
Schools are presented in ascending order by amount of time allocated to enrichment.

Source: Abt Associates' Interviews of MA ELT School Principals, Spring 2011, Item 11.

Sample: Time data analyses include 17 ELT schools (12-5th and 11-8th grades for a total of 23 data points). Time data analyses exclude one ELT schools without either 5th or 8th grades.

The frequency of enrichment ranged from daily to weekly. Even within a single school, the amount of time a student spent in enrichment sometimes depended on academic performance, as schools tried to balance the need for enrichment with the need for academic support. Ten principals reported that all students spent the identical amount of time in enrichment, whereas four indicated that students who needed more academic help or remediation had correspondingly less time for enrichment. Seven reported that students had weekly enrichment activities, six principals reported that students participated in enrichment two or three times a week, and in four schools, students had enrichment nearly every day.

Approximately one quarter of teachers reported that the amount of time a typical student spent in enrichment each week was one block, two , or three blocks per week (29, 25, and 24 percent, respectively) (see Exhibit 4.17). Elementary teachers more often reported one block per week (45 compared to 10 percent of middle school teachers).

Exhibit 4.17: Teachers' Reports about Students' Time in Enrichment, By School Configuration, 2010-11

	Percent of Teachers Reporting		
	Overall	**Elementary**	**Middle**
One time block of at least 45 minutes	29%	45%	10%
Two time blocks of at least 45 minutes each	25	17	34
Three or more time blocks of at least 45 minutes each	24	15	35
It is difficult to say because the amount of time varies widely across students	16	13	19
No Time	7	10	3

EXHIBIT READS: In spring 2011, across all ELT schools, 29 percent of teachers reported that a typical student in their class spent one time block of at least 45 minutes in enrichment activities each week.

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 13.

Sample: 918 teachers from ELT schools. Nonresponse rate was 7.0 percent.

The most popular time for enrichment was at the end of the day, especially at elementary schools, although some schools offered enrichment activities throughout the day. According to principals, 13 schools had some enrichment at the end of the day, and 12 schools offered enrichment during either the middle or first part of the school day (7 and 5, respectively). The time of day for enrichment in terms of scheduling generally reflected either grade-level or staffing (i.e., teacher- or partner-led) considerations. There are no clear patterns of timing for enrichment activities across school configurations.

555657

Decision-Making about Enrichment Activities

The process of determining enrichment options varied by school. At about half of the schools (10), teachers presented ideas for enrichment classes, through submission of proposals to the principal to create courses aligned with their personal interests. Principals mentioned that course options were based at least partially on student interest at five schools. The majority of teachers reported that teachers have some choice about which enrichment activities they teach (86 percent).

Thirteen principals indicated that student preference was a major factor in determining students' entry into specific enrichment activities. For example, students were sometimes asked to indicate their top three choices for enrichment. The majority of teachers (69 percent) agreed that students have some choice about which enrichment activities they take, though the level of agreement varied across schools (See Exhibit 4.18). Overall, teacher reports indicated more student choice in 2010-11 than in the previous year (an increase of 15 percentage points). More middle school teachers reported student choice than elementary teachers (78 compared to 62 percent). Across all ELT schools, about one-third of students reported that they were able to choose some of their

Enrichment at Matched Comparison Schools

In 2010-2011, seven of 19 comparison schools had implemented separate enrichment activities or electives into their school day. In addition, one school had embedded enrichment within core academic classes but did not offer electives. Examples of enrichment classes included chorus, band, drama, visual arts, science club, and bike repair. Enrichment classes were most often taught by regular classroom teachers (in five of seven schools). One school used paraprofessionals, and one used staff from partner organizations to teach some enrichment classes.[54]

Some students at comparison schools never had enrichment, while some had it every day. Three comparison schools offered enrichment classes twice a week, two offered enrichment weekly, and one offered daily enrichment activities to students.[55] The end of the day was the most common time for enrichment to be scheduled.

At four comparison schools, all students participated in enrichment whereas at two schools, only some students participated.[56] Six principals mentioned student choice as a factor when assigning enrichment classes. The student to teacher ratio for enrichment classes was at or above 20:1.

All comparison schools also reported providing voluntary after-school opportunities for their students, either through Community partnerships or led by school staff. Efforts to integrate partners into the ongoing school day varied. Five principals reported that communication between teachers and partner staff was on an as-needed basis, four that they provided formal orientation for partners, and two each that they provided training or professional development to partner staff and/or that they had regular meetings for teachers and partner staff.

Comparison schools used school and district resources (two and three schools respectively) as well as other funds such as private grant funding in order to compensate partner organizations. Six principals reported providing no compensation to some partners.

55 These data were missing from two comparison schools with enrichment.

56 This information was missing from one comparison school that offers enrichment activities. .

57 This information was missing from one comparison school that offers enrichment activities.

classes at school, although over three times as many middle school students reported this than elementary students (51 and 16 percent).[58]

Exhibit 4.18: Teachers' Reports about Student Choice in Enrichment, By School

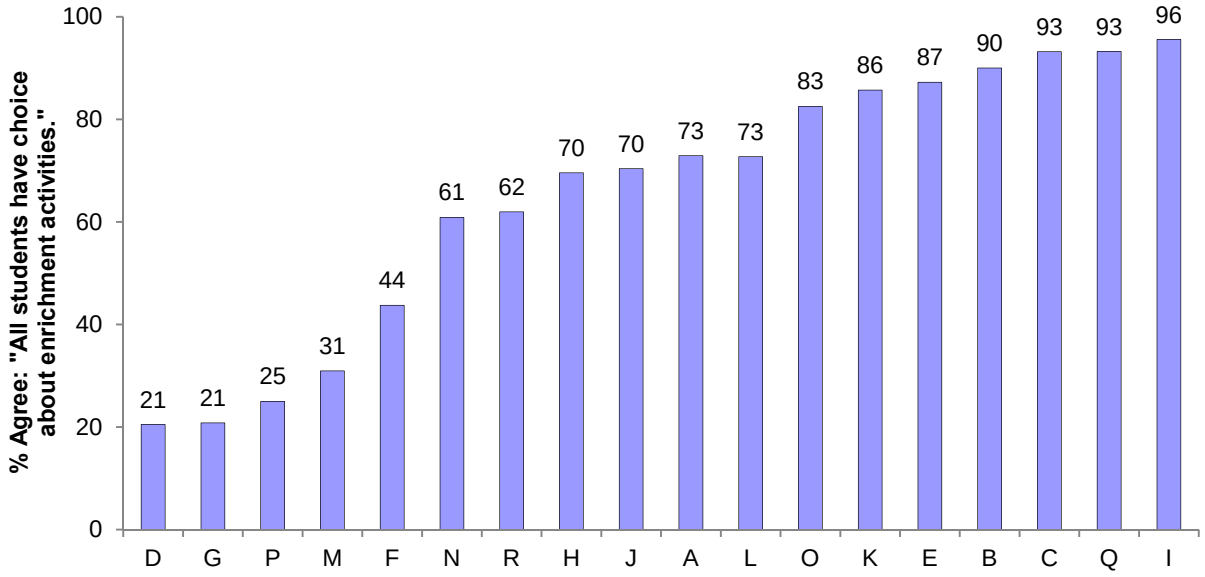


EXHIBIT READS: In spring 2011, 21 percent of teachers from School D agreed that "All students have some choice about which enrichment activities they take."

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 14b.

Sample: 918 teachers from ELT schools. Nonresponse rate was 20.4 percent.

Content of Enrichment

Enrichment classes at ELT schools were both academic and non-academic. Academic offerings included courses such as science club, ocean life, robotics, math league, urban ecology, astronomy, engineering, and architecture. Non-academic enrichment classes included arts-based activities such as knitting, drama, dance, puppetry, African drumming, woodworking, mask making, rock band, and origami. Physical activities were also offered such as swimming, basketball, lacrosse, soccer, and wellness/fitness.

Some non-academic enrichment courses were deliberately structured to make connections with the academic frameworks. The majority of teachers reported that enrichment was clearly connected to grade level standards and/or curriculum frameworks (79 percent). Elementary teachers reported this more often than middle school teachers (87 compared to 68 percent).

Staffing

At many ELT schools, a mix of different types of staff taught enrichment, as in previous years. Nearly all of principals (16) reported that regular classroom teachers/staff taught some enrichment. About half of schools also relied on partner organizations for enrichment (10 schools). Some schools relied upon such

[58] Note: This includes all classes and is not limited to enrichment.

staff as subject specialists, special education teachers, math or ELA coaches, or paraprofessionals to teach enrichment. At nine middle schools and seven elementary schools, classroom teachers taught at least some enrichment. In fewer schools (six middle and four elementary) teachers reported that they worked with partner staff.

Similar to last year, just over half of all ELT teachers reported that they taught or co-taught one or more enrichment activities (53 percent). More middle school teachers reported that they taught enrichment than elementary teachers (59 compared to 49 percent).

Participating Students

All students participated in enrichment at 15 of the 17 schools, according to principals. At one school, it was nearly all students (98 percent of students), and at another school, it was most students (85 percent). The majority of teachers (85 percent) agreed that all students have access to enrichment activities, though the level of agreement varied across individual schools (See Exhibit 4.19).

Enrichment classes were often smaller than core academic classes. In most schools, the student to teacher ratio for enrichment was 15:1 or smaller. Most teachers reported that the number of students in enrichment activities was conducive to effective instruction (78 percent), representing an increase of 22 percentage points from the previous year.

Exhibit 4.19: Teachers' Reports about Student Access to Enrichment, By School

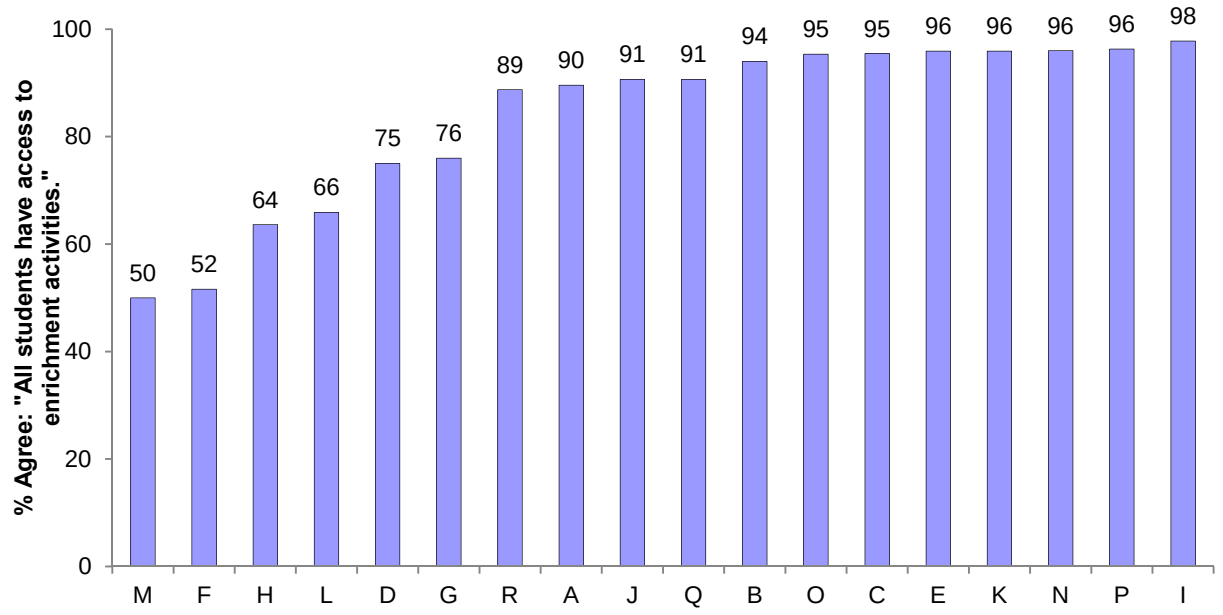


EXHIBIT READS: In spring 2011, 50 percent of teachers from School M agreed that "All students have access to enrichment activities."

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 14a.

Sample: 918 teachers from ELT schools. Nonresponse rate was 18.0 percent.

Partnership Integration and Compensation

During the 2010-11 school year, most ELT schools worked with partner organizations to provide instruction and/or additional learning opportunities during the school day. Twelve schools reported that they held meetings between regular classroom teachers and partner staff for sharing and collaboration to help integrate partners into the ongoing school day, and 11 schools reported that they held a formal orientation for partner organizations. Other schools provided professional development and/or training to partner staff and used communication on an as-needed basis between partners and classroom teachers (eight schools each). More middle schools provided professional development than elementary schools (six middle and two elementary schools). Overall, schools appear to have increased efforts to integrate partners in 2010-11 as compared to the previous year.

Schools relied upon different resources to compensate partner organizations, including school-specific resources and additional district resources (nine and five schools, respectively). Other funding sources named by schools included the ELT grant, Title I funding, fundraisers/parent-teacher organizations, and other grants. The fact that the per-pupil grant amount for ELT was unchanged over several years meant that schools reported needing creative solutions for funding enrichment activities. Schools varied in which funding sources were used to compensate outside organizations according to the specific partner organizations involved, and two schools reported that they provided no compensation to at least some of their partners.

Teacher Perceptions of Enrichment

Overall, teachers reported that high quality enrichment was a valuable part of their extended school day, and most teachers responded positively about enrichment at their school (see Exhibit 4.20). The majority of teachers reported that most enrichment activities were of high quality (81 percent). Most teachers also agreed that enrichment activities were well integrated into the school schedule (79 percent) and occurred frequently enough to be valuable (76 percent). Middle school teachers reported that enrichment was frequent enough to be valuable more often than elementary teachers, which is consistent with the greater amount of time spent in enrichment by middle school students. Nearly three-quarters of all teachers agreed that the way in which students were grouped in enrichment was appropriate (73 percent), with elementary teachers reporting this more often (80 compared to 65 percent of middle school teachers). Overall, this was a 21 percentage point increase from the previous year. The vast majority of teachers also reported that most enrichment activities were taught by teachers/instructional staff in their school (88 percent).

Fewer than half of teachers reported that student behavior was problematic during enrichment (46 percent). Similar to last year, middle school teachers encountered more behavior problems than elementary teachers (57 compared to 37 percent). At most schools, student performance in enrichment was not assessed similarly to core academic classes; systematic assessment of students in enrichment classes seems to be a continued challenge. Across ELT schools, only 45 percent of teachers were satisfied with the time available for students to pursue topics of interest to them.

Exhibit 4.20: Teacher Perceptions of Enrichment, By School Configuration, 2010-11

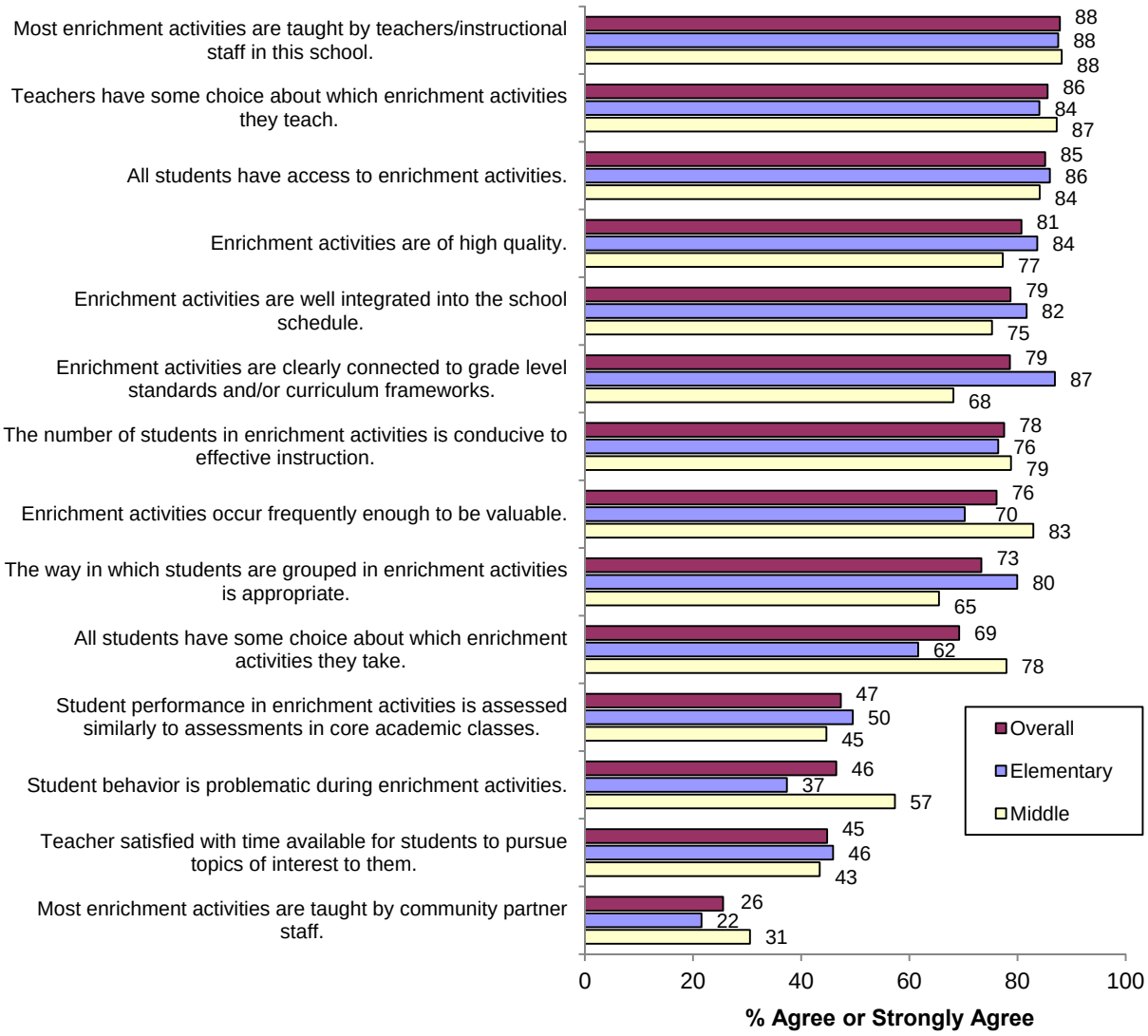


EXHIBIT READS: In spring 2011, across all ELT schools, 88 percent of teachers agreed or strongly agreed that most enrichment activities were taught by teachers/staff in the school.

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 14a through 14m and Item 10e.

Sample: 918 teachers from ELT schools. Nonresponse rates across items ranged from 10.1 to 24.3 percent.

Teacher Leadership and Collaboration

Key Findings

- More than half of ELT teachers (65 percent) participated in collaborative planning time weekly or more often. More than three-quarters of teachers participated monthly or more often (85 percent)
- Only a small proportion of teachers (16 percent) reported never having participated in collaborative planning.
- Teachers reported participating in multiple activities during collaborative planning time, including analyzing student data, strategizing about instructional practices, and/or reviewing student work. The majority of teachers who reported participating in an activity also reported that the activity was useful.
- Teacher perceptions of principal leadership varied across schools. Teachers were more consistently positive about principals' ELT-focused leadership than they were about principals' leadership in general.

Context

One guiding principle of ELT is using time to broaden opportunities for teacher planning and preparation as well as school leadership (Mass 2020, 2011). ELT schools are expected to build a professional culture of teacher leadership and collaboration focused on improving instructional practice and meeting school-wide goals. Teacher surveys and principal interviews focused on participation in and perspectives about collaborative planning time, professional development, and leadership at the district, school, and individual level.

Principals reported that collaborative planning time at their schools followed specific structures, including using designated facilitators, pre-articulated or approved agendas, and pathways for communicating the meeting's content to administrators and others not in attendance. One school, for example, had a permanent elected facilitator position, while teachers rotated as facilitators at another school. Several principals described sharing documentation to communicate about collaborative planning meetings, while others used in-person debriefings. This section describes the frequency, organization, and focus of collaborative planning time in ELT schools.

Collaborative Planning Time

Time/Frequency

Overall, the large majority of teachers (84 percent) reported participating in collaborative planning at least monthly (see Exhibit 4.21). Less than one-fifth of teachers (16 percent) reported never having participated in collaborative planning. More middle school teachers reported that such meetings occurred at least once a week than did elementary teachers, on average (45 and 30 percent, respectively)

Exhibit 4.21: Frequency of Teacher Participation in Collaborative Planning Time, By School Type, 2010-11

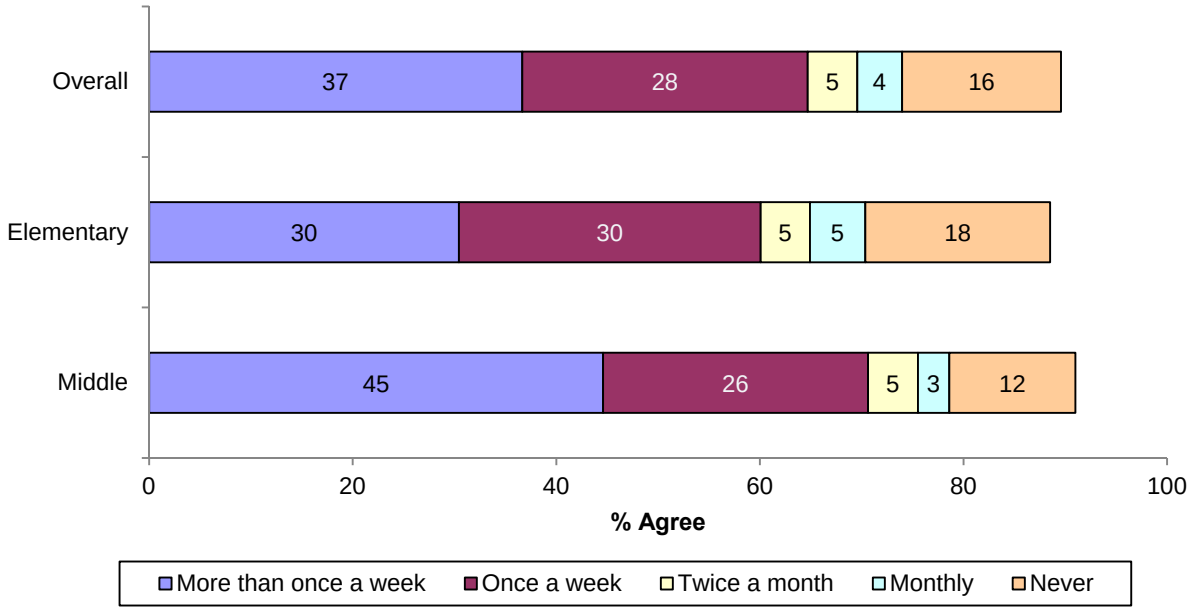


EXHIBIT READS: In spring 2011, across all ELT schools, 37 percent of teachers reported that they participated in collaborative planning time more than once a week.

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 23.

Sample: 918 teachers from ELT schools. Nonresponse rate for this item was 3.7 percent.

Exhibit 4.22 presents information on how much time teachers reported spending in each collaborative planning time meeting overall and by school configuration. Each vertical line represents the full range of minutes reported by teachers in each respective group, and the box in the middle of the line represents the middle 50 percent of the distribution. The top of the box represents the 75th percentile, and the bottom line of the box represents the 25th percentile of the distribution. Within each box, both the median and the mean number of minutes for collaborative planning time are indicated.

Teachers reported spending from 0 to 200 hundred minutes in each collaborative planning meeting across ELT schools. This range is large in part because the frequency of collaborative planning varies, so for example it is likely that the longer meeting blocks occur less frequently (e.g., three hours once per month). As Exhibit 4.25 shows, middle schools' collaborative planning meetings lasted between 45 and 60 minutes, and elementary level meetings were generally between 30 and 45 minutes long. ELT teachers reported spending an average of 50 minutes in each collaborative planning meeting. On a weekly basis, ELT teachers reported spending an average of an hour and a half collaboratively planning.

Exhibit 4.22: Range of Minutes Spent in Collaborative Planning Time Meetings, By School Type, 2010-2011

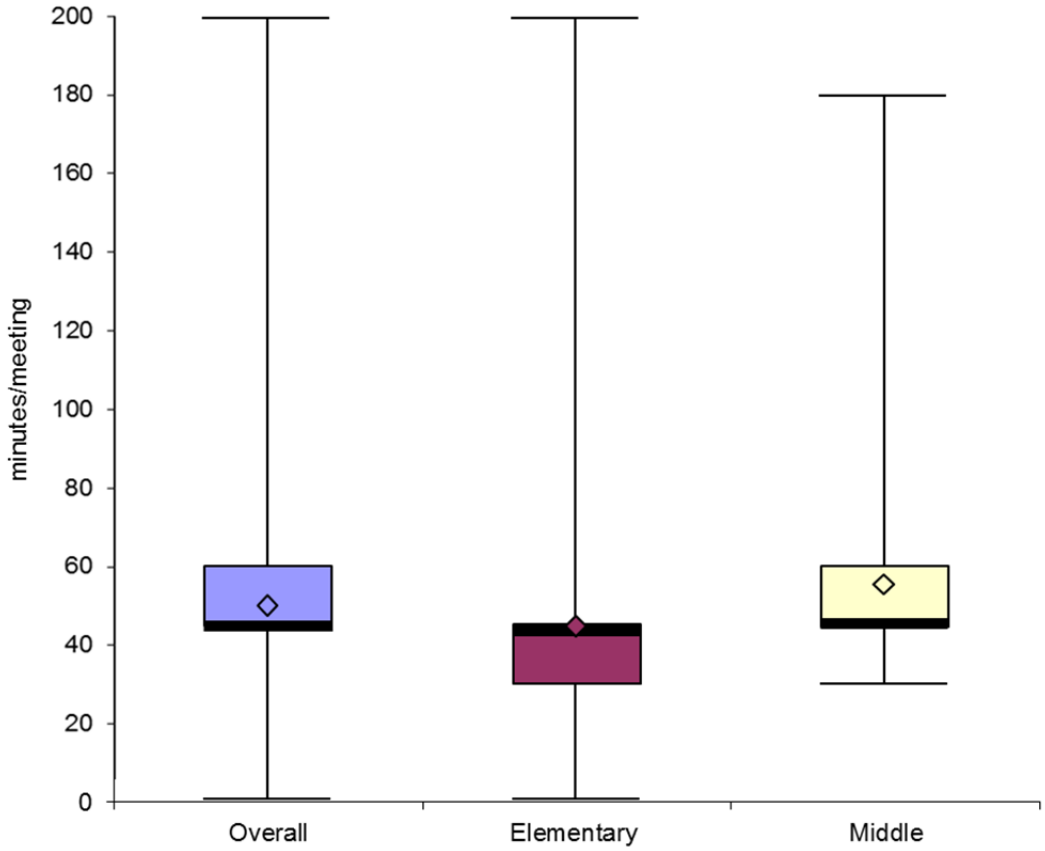


EXHIBIT READS: The figure presents the range of the amount of time, per week, that teachers reported spending in collaborative planning meetings. The shaded box represents the middle 50 percent—from the 25th to the 75th percentiles—of the distribution of school day length, and the lines to the bottom and top represent the bottom and top quartiles, respectively, extending to the minimum and maximum values. The double thick line at the edge of the shaded box represents the median value for each distribution aligning with either the 25th or 75th percentile. The diamond shape represents the mean value. The median value for collaborative planning meetings across all ELT schools is about 45 minutes, and the mean value is 50 minutes per week.

Source: Abt Associates' Interviews of MA ELT School Principals, Spring 2011, Item 22c.

Sample: Time data analyses include 17 ELT schools (12-5th and 11-8th grades for a total of 23 data points). Time data analyses exclude one ELT schools.

Content and Structure

The most frequent uses of collaborative planning time reported by teachers included analyzing assessment data for students in their classes (66 percent); strategizing about effective instructional practices and/or assessments (65 percent); and/or reviewing student work for students they teach (61 percent). Fewer teachers reported using collaborative planning time to participate in peer-to-peer mentoring (26 percent); perform administrative tasks (26 percent); and/or participate in coaching (24 percent).

As Exhibit 4.23 shows, generally, a majority of teachers who reported having participated in an activity during collaborative planning time also indicated that the activity was useful to them; about 70 percent (or more) of the teachers who participated in an activity also found it helpful.

Exhibit 4.23: Participation in and Usefulness of Collaborative Planning Activities, 2010-2011

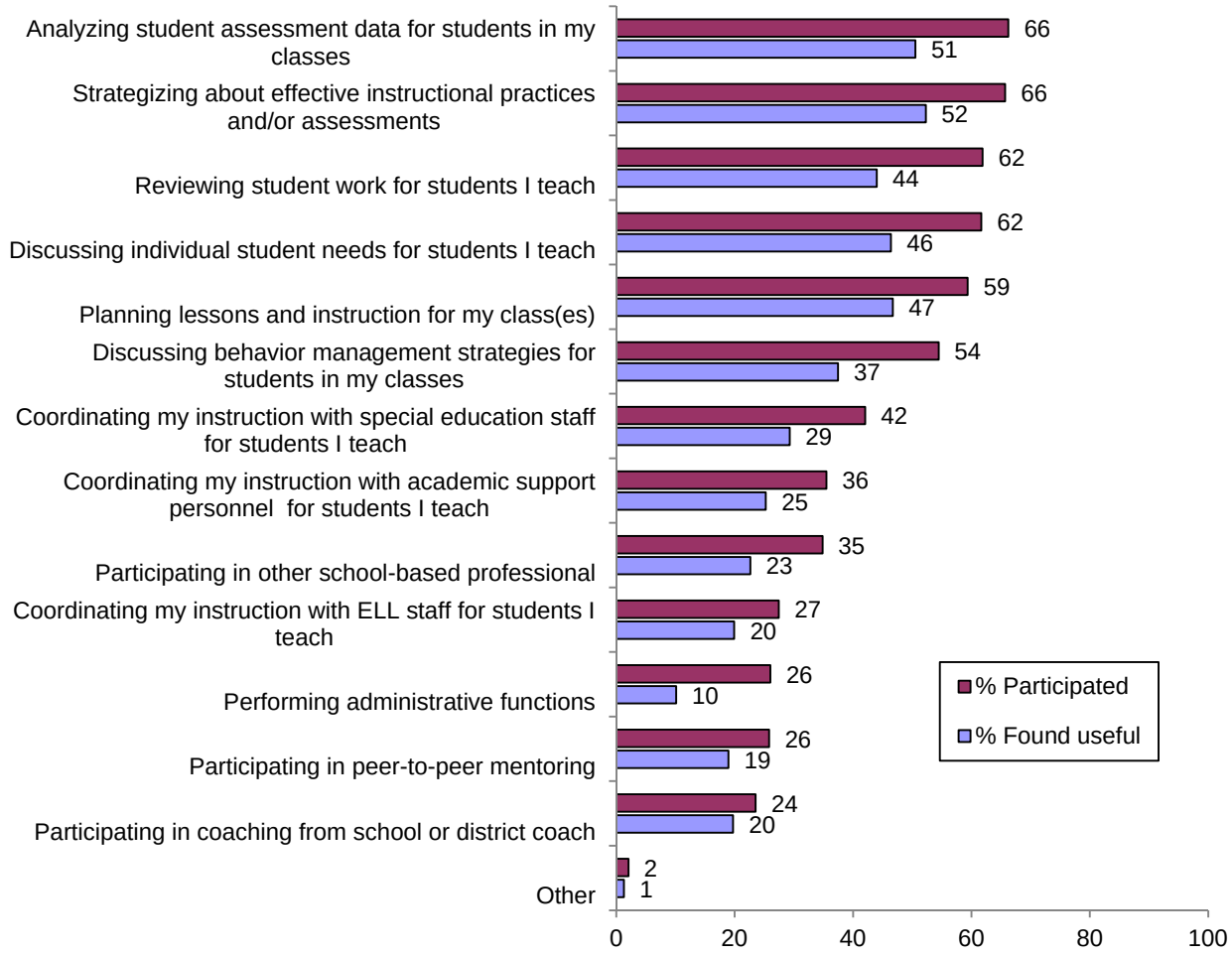


EXHIBIT READS: In spring 2011, across all ELT schools, 66 percent of teachers reported participating in analyzing student assessment data for students in their classes. 51 percent of the teachers who participated found the activity to be useful.

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 25.

Sample: 918 teachers from ELT schools. The binary nature of the survey items does not allow for the reporting of nonresponse rates.

Over three-quarters of teachers reported that collaborative planning meetings had a structured format. Collaborative planning time meetings often had designated facilitators, set agendas, and mechanisms for informing the principal or coaches of what happened at these meetings such as logs, minutes, or debrief meetings. Additionally, at 10 of the 18 ELT schools, the Instructional Leadership Team (ILT) was involved in collaborative planning time because they intentionally shared staff members. For example, one principal explained that academic coaches on the ILT were also responsible for running collaborative planning meetings. At another school, one representative from each grade level on the ILT communicated

about ILT initiatives during collaborative planning meetings and raised staff issues from collaborative planning to the ILT.

Overall, elementary school teachers reported somewhat higher levels of satisfaction with collaborative planning time than middle school teachers (62 percent and 52 percent, respectively; not shown). Additionally, 14 percent more elementary teachers than middle school teachers agreed that meetings were used in ways that contributed to the development of a professional learning community of teachers (84 and 70 percent, respectively; not shown).

How teachers shared and discussed instructional practices and how they used instructional strategies across subject areas varied across schools (Exhibit 4.24). At one school, for example, every teacher reported that teachers at their school shared and discussed instructional practices and that they used common instructional strategies across subject areas. At another school, about half the teachers reported such sharing and use of common instructional practices. Across ELT schools, the proportion of teachers who reported sharing and discussing instructional practices at their school ranged from 40 to 100 percent; and the proportion reporting that teachers used common instructional strategies across subject areas ranged from 62 to 100 percent. Typically, by school, a similar proportion of teachers agreed that teachers both shared and discussed instructional practices and that they used common instructional strategies.

Exhibit 4.24: ELT Schools' Variation in Teachers' Perception of Collaboration (ELT Schools Only)

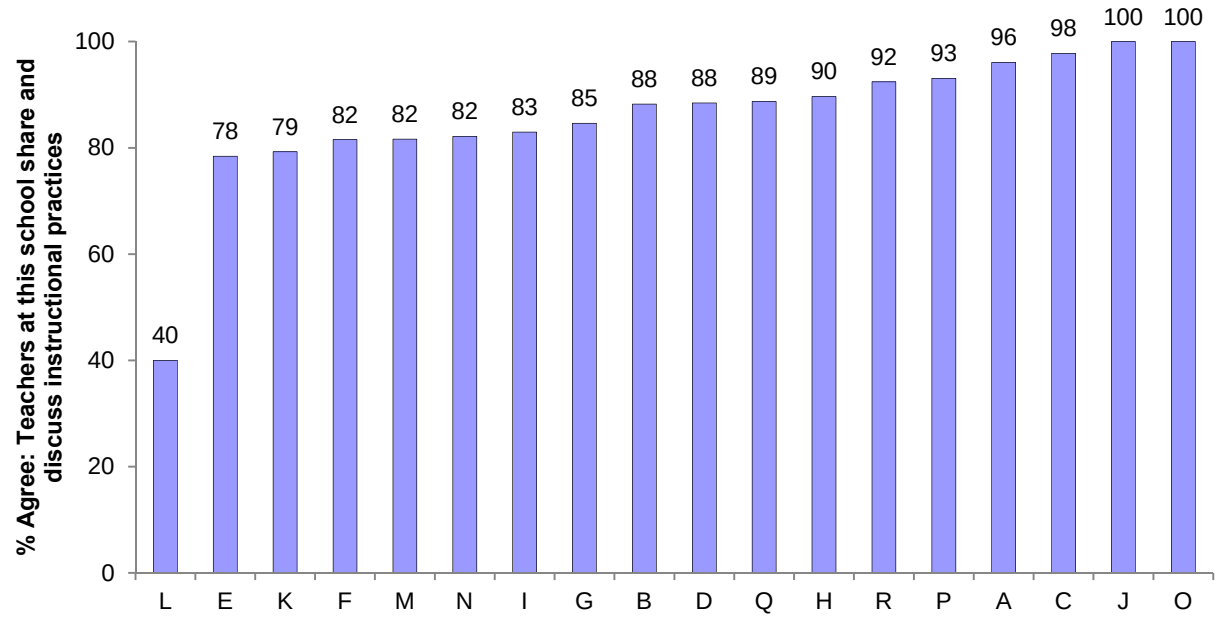


EXHIBIT READS: In spring 2011, 40 percent of teachers from School L agreed that "Teachers at this school share and discuss instructional practices."

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 7b

Sample: 918 teachers from ELT schools. Nonresponse rates ranged from 5.7 to 9.7 percent.

Exhibit 4.24 (cont'd): ELT Schools' Variation in Teachers' Perception of Collaboration (ELT Schools Only)

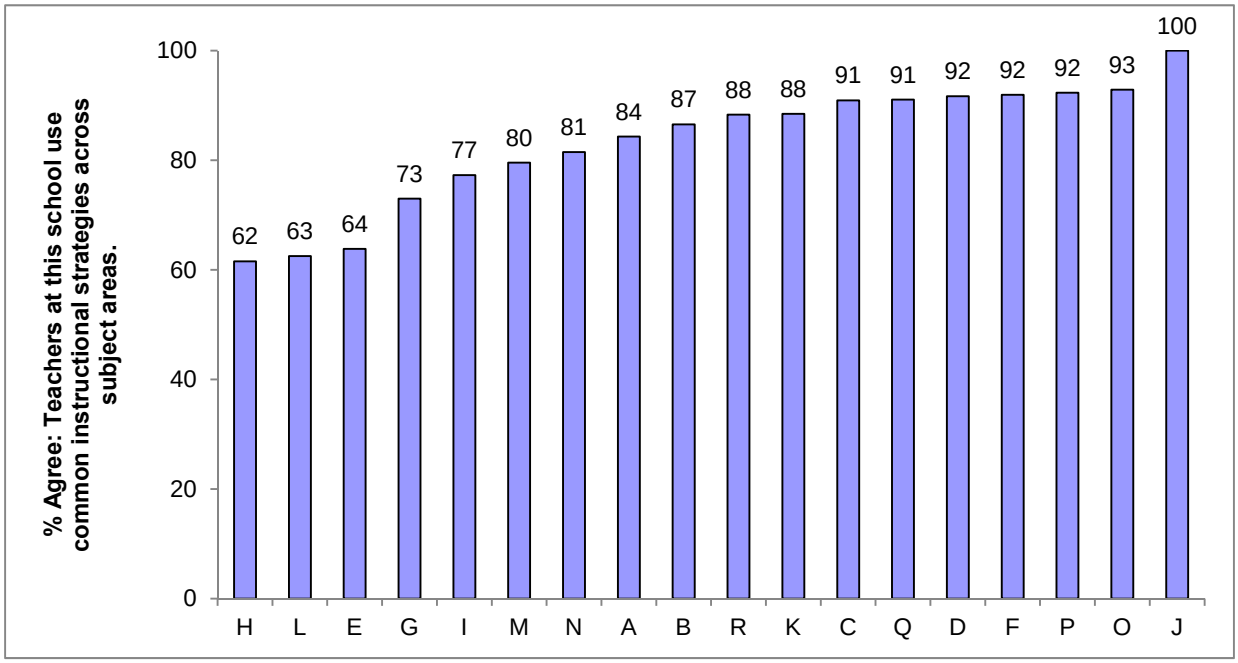


EXHIBIT READS: In spring 2011, 62 percent of teachers from School H agreed that "Teachers at this school use common instructional strategies across subject areas."

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, item 7c.

Sample: 918 teachers from ELT schools. Nonresponse rates ranged from 5.7 to 9.7 percent.

Professional Development

Time and Frequency

Teacher engagement in professional development and its contribution to a school-wide learning community at ELT schools was widespread. The distribution of teachers' reported hours of professional development participation did not vary by school configuration; generally, about 85 percent of teachers participated in at least 10 hours of professional development over the course of the year. Overall, half of teachers reported having completed more than 26 hours of professional development over the course of the school year, 12 percent reported completing between 51 and 75 hours of professional development, 11 percent completed more than 75 hours of professional development. The majority of ELT teachers participated in between 10 and 50 hours of professional development during 2010-11. More than three-quarters of ELT teachers (77 percent) agreed that in-school professional development contributed to the development of a professional learning community of teachers.

Content and Structure

According to principals, ELT schools have considerable autonomy over the content and structure of professional development. Across ELT schools, principals indicated that professional development was led by someone on their school staff: themselves, the ILT, the redesign or subject area coach, a teacher, or

some combination. Two principals noted that some of their professional development days were organized and led by the district, and three noted that professional development was sometimes led by a guest facilitator. At seven ELT schools, principals indicated that school partners participated in professional development meetings, and at an additional school, this kind of integration was in the planning stage. Interestingly, different schools that partnered with the same local organization did not necessarily follow the same policies regarding including the partner organization in professional development.

School staff reported that they usually chose the topic and developed the agenda for professional development meetings. Principals noted a range of key topics covered by professional development, including focusing on data, instructional strategies, writing, and bullying.

Principals at 17 of the 18 ELT schools reported visiting classrooms in their schools at least weekly. The purposes of these visits varied, from formal teacher evaluations to general assessments of classroom climate and atmosphere. At seven schools, principals used classroom visits to ensure that teachers were using common instructional strategies, focusing on particular curricula, and teaching lessons that were adequately rigorous.

Observational visits by teachers to other teachers' classrooms occurred less frequently. At 16 schools, these visits occurred on a monthly basis or less. Seven principals indicated that they hoped peer observations would happen more often in the future.

According to survey data, teachers accessed a variety of professional development opportunities over the course of the year. The most frequent professional development activities included: attending out-of-school professional development (53 percent), peer modeling (49 percent), and academic coaching from in-school coaches (48 percent). Figure 4.25 shows few differences in participation between middle schools and elementary schools, except that academic coaching was slightly more common at the elementary school level than in middle schools (53 and 41 percent of teachers, respectively, reported participation).

Exhibit 4.25: Sources Teachers Use to Support Instruction, by School Type, 2010-11 (ELT Schools Only)

	Percent Used		
	Overall	Elementary	Middle
Out-of-school professional development	53%	52%	56%
Peer support (e.g., peer coaching, peer modeling, peer demonstration lessons)	49	47	52
Academic coaches in school	48	53	41
Principal and/or other administrative support (e.g., coaching, modeling)	27	28	26
Special education aide	27	27	27
Partner staff	26	27	24
Technical assistance from outside district	9	8	11
Other	3	3	3

EXHIBIT READS: In spring 2011, across all ELT schools, 53 percent of teachers reported using out-of-school professional development to support instruction during the 2010-11 school year.

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 28.

Sample: 918 teachers from ELT schools. The binary nature of the survey items does not allow for the reporting of nonresponse rates.

Satisfaction

Overall, nearly 80 percent of teachers agreed that in-school professional development activities contributed to the development of a professional learning community of teachers, and , the majority of teachers reported being satisfied with the amount of time allotted for professional development (66 percent overall). Less than half (40 percent) of teachers surveyed reported being unable to attend the professional development opportunities they wanted to attend; this proportion did not vary by school type. Teacher satisfaction with the amount of time for professional development did not appear to vary by school type (not shown).

Leadership

Teacher Perceptions of District Leadership

Teachers' perceptions about the quality of general district leadership, including communication, management, and guidance varied, and were generally positive. Notably, 85 percent of teachers overall agreed that the district leadership was supportive of ELT. Over half of teachers overall agreed that district leadership was responsive to their school and teacher concerns (see Exhibit 4.26).

Exhibit 4.26: Teacher Attitudes about District Leadership, by School Type, 2010-11 11 (ELT Schools Only)

The district leadership…	Percent Agree		
	Overall	Elementary	Middle
actively supports ELT implementation at this school	85%	88%	81%
communicates a clear vision for our district's schools	73	74	71
is interested in the professional development of teachers at this school	69	71	67
effectively manages our schools	62	64	58
provides timely guidance on instructional practice, curriculum, etc.	60	66	53
is responsive to this school and teacher concerns	51	52	51

EXHIBIT READS: In spring 2011, across all ELT schools, 85 percent of teachers reported that district leadership actively supports ELT implementation at their school.

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 7cc through 7hh.

Sample: 918 teachers from ELT schools. Nonresponse rates across items ranged from 13.7 to 21.1 percent.

Teacher Perceptions of Principal Leadership

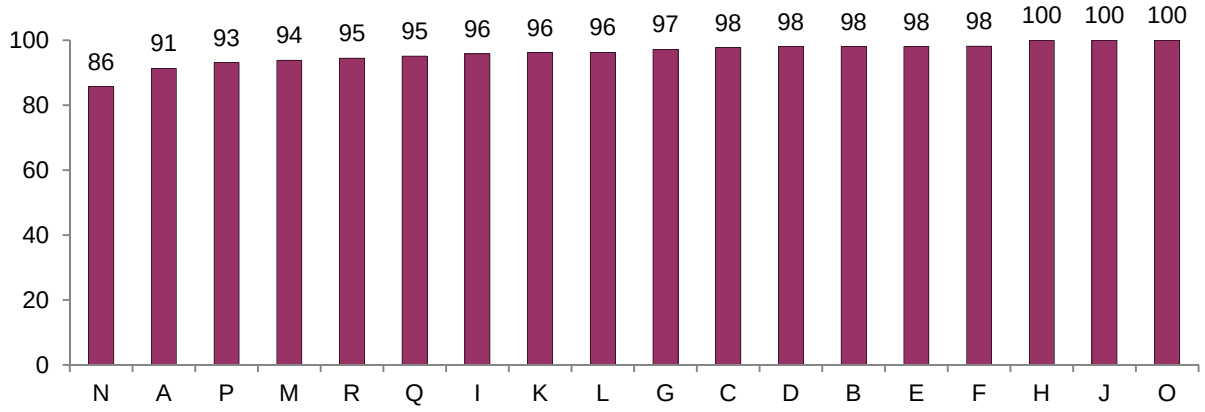
Over two-thirds of teachers generally agreed that their principals possessed leadership capabilities, evidenced by instructional leadership, management skills, and providing opportunities for teacher leadership and recognition (74, 69, and 67 percent, respectively). Teachers' perceptions of principal leadership were consistent across school type.

Teacher perception of principal leadership varied by school and was generally positive. Interestingly, across schools, teachers were more consistently positive about their principal's ELT leadership than they were about their principal's leadership more generally. As Exhibit 4.27 below shows, across schools, teachers were generally in agreement about various aspects of ELT leadership; there was more variation in teacher perception of principals' management, communication, and staff development skills. Within a school, from 39 to 99 percent of teachers agreed that their principals were effective managers, 50 to 99 percent agreed that their principals communicated effectively, and 44 to 94 percent of teachers agreed that their principals monitored teacher progress and provided feedback.

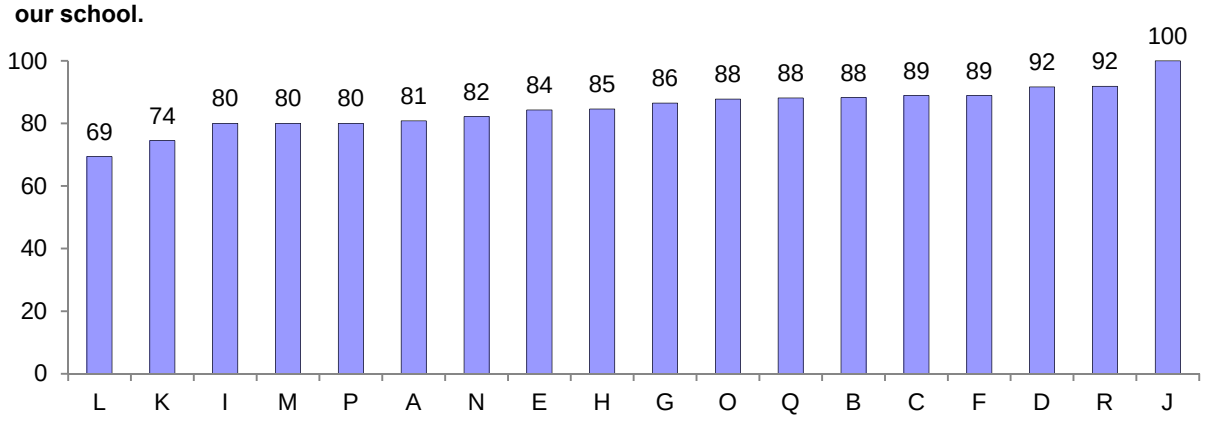
Exhibit 4.27: Teachers' Perceptions of Principal's Leadership

Panel 1: Teachers' Perceptions of Principal's ELT Leadership

The principal and/or school leadership team are strong advocates of ELT.



The principal and/or school leadership team communicate a clear vision of ELT for our school.



The principal and/or school leadership team monitor performance and progress of implementation of ELT in the school.

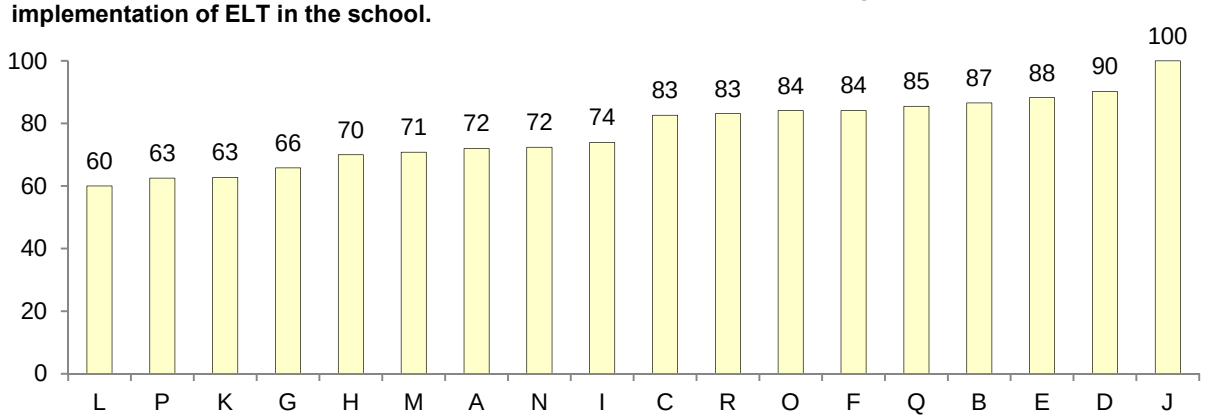


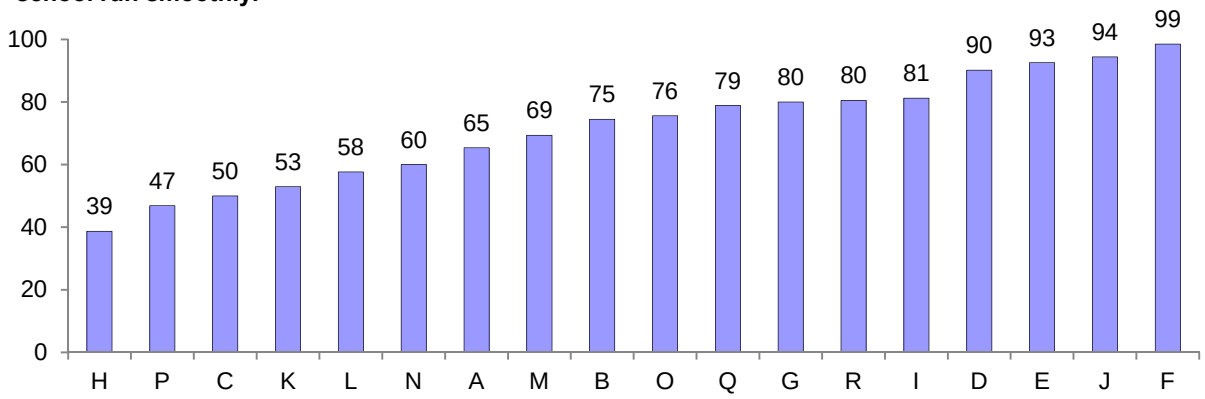
EXHIBIT READS (Panel 1): In spring 2011, 86 percent of teachers at School N reported that the principal and/or school leadership team were strong advocates of ELT.

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 7g, 7l, 7m.

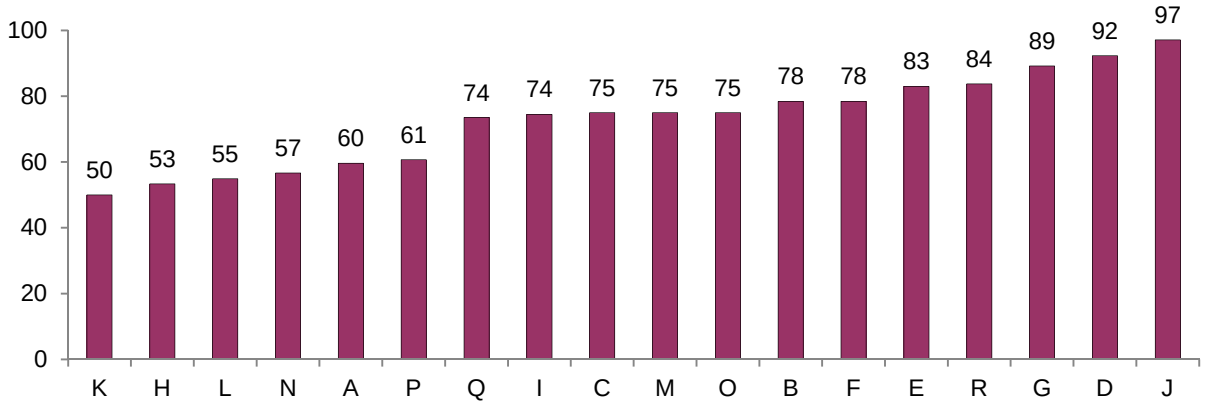
Sample: 918 teachers from ELT schools. Nonresponse rates across items ranged from 3.7 to 8.8 percent.

Panel 2: Teachers' Perceptions of Principal's Leadership in General

The principal and/or school leadership team are effective managers who make the school run smoothly.



The principal and/or school leadership team communicate effectively with teachers about improving instructional practices at this school.



The principal and/or school leadership team monitor and provide feedback to teachers about their performance.

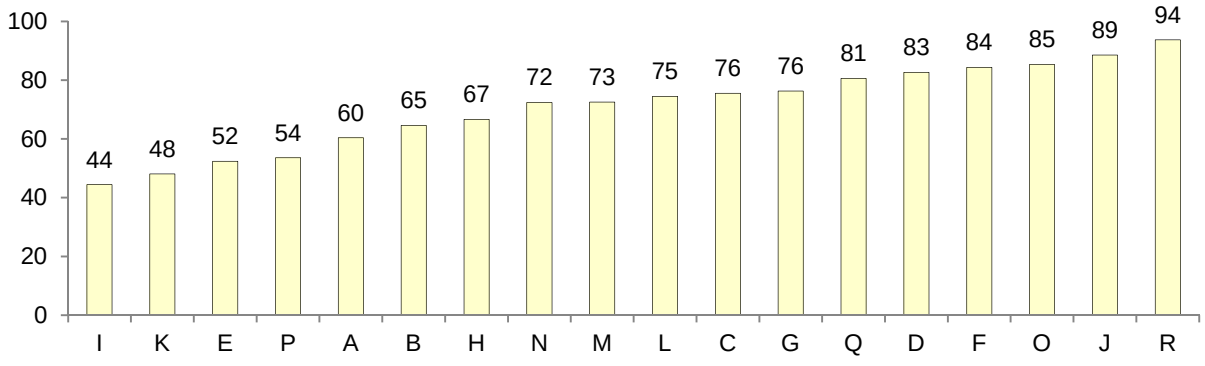


EXHIBIT READS (Panel 2): In spring 2011, 39 percent of teachers at School H reported that the principal and/or school leadership team were effective managers who made the school run smoothly.

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 7v, 7r, 7n,.

Sample: 918 teachers from ELT schools. Nonresponse rates across items ranged from 3.7 to 8.8 percent.

Collaborative Planning Time and Professional Development at Matched Comparison Schools

According to principals, at 18 of the 19 comparison schools, teachers also participated in collaborative planning time. .. Collaborative planning meetings appeared to have a distinct structure, with a facilitator, agenda, and method of communicating the meeting's content to the school administration. At one school collaborative planning time was informal, in that teachers were welcome, but not required, to arrange meetings during their shared preparation time.

Professional development in comparison schools was typically facilitated by some combination of the principal, teachers, ILT, and the academic coaches. All principals noted that topics and agenda for professional development were identified by the ILT, the coaches, or the principal, and often included input from the teachers. One principal noted that the district played a leadership role in professional development. When asked about the focus of professional development, there was not a dominant topic; principals reported that professional development topics at their schools ranged from MCAS preparation, to common instructional strategies, to writing and oral skills, to student data analysis, to school climate and bullying.

Twelve principals at comparison schools noted that it was a priority for them to visit teachers' classrooms at least weekly, some as frequently as every day. The purposes of these visits, according to principals, varied from formal teacher evaluations to understanding the student experience. Some principals reported that teachers visited one another's classrooms in comparison schools

According to principals, teachers also visited each other's classrooms, though they reported that these visits were infrequent, informal, and/or by invitation. At three schools, principals mentioned structured "rounds" or learning walks that occurred a few times per year and required teachers to visit one another's classrooms. At five schools, principals noted that peer observation did not happen formally or as often as they would like.

Chapter 5. Non-Academic Outcomes in ELT and Matched Comparison Schools

This chapter examines the relationship between ELT and selected non-academic outcomes for schools, students and teachers, as outlined in the conceptual model and discussion of research questions in Chapter 2. The ELT theory of change hypothesizes that as a result of the initiative, students and teachers will experience a number of positive outcomes, including more time for meaningful peer-to-peer and teacher-student interactions; greater student engagement and satisfaction due to increased enrichment opportunities; increased school leadership and district supports; and greater teacher satisfaction about instructional time due to adequate time to plan, prepare and instruct. This chapter explores each of these themes in turn, using data collected from semi-structured principal interviews, student and teacher surveys,[59] and extant data (publicly available school-level data and Student Management Information System (SIMS) data). Data from all three cohorts are presented together to understand the effects of ELT after at least three years of implementation.

The chapter begins by describing the characteristics of the study schools by group status (ELT and matched comparison) using publicly available school-level data to provide context for the subsequent results. It then examines the allocation of instructional time at ELT schools using data from semi-structured principal interviews, followed by an assessment of non-instructional time using student survey data. Next, it examines how the expanded day may be related to teacher and student outcomes, focusing on teacher survey responses to questions about school and district leadership and teachers' satisfaction with various aspects of teaching, and then focusing on findings about student and teacher relationships and student satisfaction and engagement using survey data and state-provided SIMS data.

Current Characteristics of ELT and Matched Comparison Schools

Exhibit 5.1 presents key characteristics of the ELT and matched comparison schools across cohorts in 2010-11 to provide important context for outcome findings. Recall that the 2010-11 study sample includes 18 ELT schools and 19 matched comparison (MC) schools chosen based on their similarity to ELT schools prior to the start of ELT. The 2010-11 school year characteristics of these schools are presented below.

Consistent with prior years' findings, the majority of ELT schools have been identified for improvement, corrective action, or restructuring based on their ELA or math achievement scores over the previous two years. Further, the ELT schools tend to serve large proportions of low income and minority students. Note that characteristics of MC schools are generally similar to those of the ELT schools.

[59] Because the study team substantially revised the surveys before the 2010-11 administration, it was not possible to combine data from prior survey administrations in the current analyses.

Exhibit 5.1: Current Characteristics of Sample Schools, by ELT Status

	ELT	MC
Grade Span		
Elementary school	6	6
K-8 school	4	6
Middle school	8	7
School Location		
City	9	11
Suburb	6	7
Town	2	1
Rural	1	0
School Size		
600 students or more	7	7
400-599 students	8	9
200-399 students	2	3
Fewer than 200 students	1	0
Low Income Student Population		
75 percent or more	9	8
50-74 percent	9	9
Less than 50 percent	0	2
Minority Student Population		
75 percent or more	7	4
50-74 percent	5	9
25-49 percent	4	5
Less than 25 percent	2	1
SPED Student Population		
20 percent or more	7	11
10-19 percent	10	8
Less than 10 percent	1	0
LEP Student Population		
20 percent or more	7	4
10-19 percent	3	6
Less than 10 percent	8	9
Met Aggregate Adequate Yearly Progress (AYP) in 2011		
English language arts	7	4
Math	2	6
ELA Accountability Status in 2011		
No status (AYP met for previous two years)	2	4
Identified for improvement, corrective action, or restructuring	16	15
Math Accountability Status in 2011		
No status (AYP met for previous two years)	1	4
Identified for improvement, corrective action, or restructuring	17	15

EXHIBIT READS: In the 2010-11 school year, the study sample includes 6 ELT elementary schools and 6 matched comparison elementary schools.

Source: School-level data tables downloaded from the MA ESE website (http://profiles.doe.mass.edu/).

Sample: Eighteen ELT and 19 matched comparison schools.

Comparing Time in ELT and MC Schools

Key Findings

- The length of the ELT school day was significantly longer for 5th and 8th grade students than would be expected in the absence of ELT.
- ELT schools allocated significantly more time for ELA, math, and science classes for 5th and 8th graders than would be expected in the absence of ELT.
- ELT schools allocated significantly more time for non-core classes and specials for 5th grade students than would be expected in the absence of ELT.
- ELT schools allocated significantly more time for enrichment activities for 5th and 8th grade students than would be expected in the absence of ELT.
- ELT schools allocated significantly more time for transitions, recess, snack, lunch, and homeroom for 5th and 8th grade students than would be expected in the absence of ELT.
- A statistically smaller proportion of students in ELT schools reported that they attend an academic club than would be reported in the absence of ELT.
- Significantly fewer students in ELT schools attended an after-school program than would be the expected in the absence of ELT.

Instructional Time

Principal responses from semi-structured interviews conducted in the spring of 2011 are used to compare school-level averages of time allocated to various instructional activities in ELT and matched comparison schools. Differences in school-level averages are assessed using models that regress instructional time on an ELT indicator and dummy variables for each pair of matched schools. Because study schools allocated different amounts of time for particular grades, models are run separately for 5th and 8th grade students.

Exhibit 5.2 displays the actual average number of hours and minutes allocated for various activities in ELT and matched comparison schools, as well as the difference in means and the results of the regression (discussed above) that assesses differences in school-level averages. In addition to the length of the school day, differences in the time allocated to the following activities were examined:

- Core academic subjects: courses focused on four core subject areas (English or ELA, math, science, and social studies) that **all** students are required to take;
- Non-core classes and specials: courses other than the four core subjects that **all** students in a school or grade are required to take (e.g., foreign languages, philosophy, physical education (PE) or gym, art, music);
- Academic support period: an extra block of academic time that targets specific academic skills according to student needs/skills. Is generally not the choice of students (e.g., MCAS prep, academic leagues);
- Enrichment: courses/activities with either academic or non-academic content (e.g. yoga, robotics, math club, newspaper. sewing) that only some students attend. All students might attend an elective but not all attend the same elective;
- Transitions: lunch, recess, snack, transitions, and;
- Homeroom: homeroom/advisory

Exhibit 5.2: Differences between ELT and Matched Comparison Schools in Hours and Minutes Allocated to Various Activities, 2010-11

	Actual ELT School Mean	Actual Matched Comparison School Mean	Difference in Means	Statistical Significance (p-value)
Grade 5				
Length of school day	7:42	6:04	1:38 ***	<.0001
All Core Academic Subjects	4:55	4:15	0:40 ***	<.0001
ELA	2:05	1:50	0:15 **	0.009
Math	1:28	1:13	0:15 ***	0.001
Science	0:45	0:34	0:11 *	0.036
Social Studies	0:37	0:37	0:00	0.967
Non-Core and Specials	1:01	0:44	0:17 ***	<.0001
Academic Support Time	0:21	0:11	0:10 *	0.030
Enrichment Time	0:20	0:04	0:16 ***	<.0001
Transitions Time	0:49	0:42	0:07 ***	0.001
Homeroom	0:22	0:11	0:11 ***	<.0001
Grade 8				
Length of school day	7:54	6:21	1:32 ***	<.0001
All Core Academic Subjects	4:37	3:43	0:53 ***	<.0001
ELA	1:23	1:01	0:22 ***	<.0001
Math	1:16	0:59	0:17 ***	<.0001
Science	1:05	0:52	0:13 ***	<.0001
Social Studies	0:52	0:51	0:01	0.589
Non-Core and Specials	1:05	1:04	0:02	0.748
Academic Support Time	0:34	0:32	0:02	0.834
Enrichment Time	0:31	0:14	0:17 ***	<.0001
Transitions Time	0:47	0:36	0:11 ***	<.0001
Homeroom	0:20	0:13	0:08 ***	<.0001

EXHIBIT READS: ELT schools serving 5th grade students were in session for an average of about 7 hours and 42 minutes per day, compared to 6 hours and 4 minutes per day in matched comparison schools serving 5th grade students. The difference between the two groups was statistically significant.

Notes:
* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Abt Associates' Interviews of MA ELT and Matched Comparison School Principals, Spring 2011, Items 9d, 11.

Sample: Grade 5: 12 ELT and 12 matched comparison schools. Grade 8: 11 ELT schools and 11 matched comparison schools.

Results of models examining time allocation indicate that ELT schools were in session for over an hour-and-a-half per day longer than would be estimated in the absence ELT. This significantly greater length of the ELT school day translated into more hours allocated to almost all of the activities examined. However, the largest differences were observed in the amount of time ELT schools allocated to core academic classes. ELT schools allocated about three-quarters of an hour more for 5th and 8th grade students in these classes than would have been the case absent ELT in either grade.

A deeper examination of time allotted to core academic classes suggests that schools may prioritize extra time in particular subjects according to grade. While ELT schools allocated most of their additional 5th grade core academic time to Math and Science (15 more minutes for each than in the absence of ELT), ELT schools with 8th graders focused most of their additional time for core academics on ELA (22 more minutes than the counterfactual). The time data provided do not indicate that ELT schools allocated more time to Social Studies, a subject not tested in MCAS examinations.

The expanded time also led to increased time allocated for non-core classes and specials, enrichment, and other activities. Time in non-core classes and specials for 5th graders in ELT schools was 17 minutes more than would be expected in the absence of ELT. Notably, schools allocated almost 20 more minutes to enrichment classes, a key component of ELT implementation, than would be expected without ELT. Finally, as would be expected given the increased length of day, ELT schools devote more time to lunch, recess, snack, transitions, and homeroom time, than would be expected in the absence of ELT.

It should also be noted that although 8th grade students in ELT schools had most of their expanded time allocated to core academic classes (53 minutes), time allocated to other activities was also substantial (40 minutes). Conversely, as compared to the additional amount of time allocated to core academic classes (40 minutes), 5th grade students in ELT schools spent more of their expanded day in other activities (61 minutes).

Non-Instructional Time

The underlying theoretical model of ELT posits that students are provided more stimulating opportunities during school; it also may hold that the expanded day allows for increased participation in structured activities, such as academic clubs, and that the longer day limits time available for unstructured leisure, such as hanging out or spending time at home with family. Exhibit 5.3 presents the results of students' participation in structured activities, after-school activities, recreation and leisure activities, and time spent at home with friends and family—outcomes drawn from student surveys.

The effect of ELT on non-instructional activities is assessed using multi-level models that combine 5th and 8th grade student survey responses[60] and estimate the overall effect of ELT on student outcomes after accounting for the clustering of students within schools and classrooms. These models include an ELT indicator, dummy variables for each pair of matched schools, and school and student-level demographics.[61] As described in Chapter 2, the study team used factor analyses to determine which survey items would be presented in this chapter (see Appendix E for a presentation of all survey items corresponding to the ELT outcomes examined in this chapter). Thus, items presented below and in subsequent exhibits that draw from survey items are selected outcomes.

[60] While there are differences between 5th and 8th grade student responses, the effect of ELT does not differ across grades. Therefore, 5th and 8th grade student survey responses were combined to fit models estimating the overall effect of ELT on students. In addition, note that because only 5th and 8th grade students were surveyed, the responses cannot be assumed to represent the entire student populations in the study schools.

[61] The school-level characteristics included the total enrollment, the percentage of students eligible for free and reduced priced lunch, and the percentage of minority students served by the school. Student characteristics included gender, and whether or not the student reported speaking a language other than English most of the time at home.

Results presented in Exhibit 5.3, as well as in all other exhibits in the chapter, present actual ELT means for a particular outcome, along with the estimated non-ELT mean, the estimated difference, and the statistical significance of the estimated difference. The non-ELT estimated mean is a regression-adjusted estimate of what would have happened in ELT schools if ELT had not been implemented. As a result, findings are described in terms of actual ELT outcomes relative to the estimated outcomes in the counterfactual.

Exhibit 5.3: Participation in Non-Instructional Activities, 2010-11

	Percent of Respondents			
	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Participation in Structured Extracurricular Activities				
Attending an academic club (science club, math club, etc.)	12%	17%	-5.7 *	0.020
Participating in student government	11	13	-1.9	0.467
Working on a school newspaper or magazine	12	11	0.1	0.940
Participation in After-School Activities				
Do you go to any after-school activities this school year?	39	50	-11.7 *	0.025
Participation in Recreational or Leisure Activities				
Spending time online using a computer	80	78	2.6	0.520
Texting or talking to friends	87	85	1.7	0.521
Spending time with friends	90	90	-0.1	0.972
Time Spent At Home With Friends And Family				
Home alone or with younger siblings	43	39	3.6	0.316
With your friends and no adults	47	49	-1.4	0.701
With an older sibling or parent	70	69	0.7	0.818

EXHIBIT READS: Twelve percent of students in ELT schools indicated that they participated in an academic club, compared to an estimated 17 percent in the absence of ELT. The difference between the two groups was statistically significant.

Notes:
* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Abt Associates' Surveys of MA ELT and Matched Comparison School Students, Spring 2011, Items 12n, 12g, 12f, 13, 12r, 12p, 12d, 15a, 15b, 15c.

Sample: 4840 students. Nonresponse rates across ELT and matched comparison student survey items ranged from 3.2 to 21.1 percent.

Results of these models indicate that, despite the expanded length of the ELT school day, there were generally no differences between students' participation in activities as a function of their schools' ELT status. However, significantly fewer students in ELT schools indicated that they spent time before, during, or after-school in an academic club, compared to the counterfactual. Further, consistent with the finding on the expanded length of the ELT school day, fewer students in ELT schools reported that they attend an after-school program than would be estimated without ELT (39 percent versus 50 percent, respectively). Presumably, many of the activities students would attend outside of (non-ELT) school occur within the (ELT) school day. It is interesting to note that a higher percentage of students across ELT and MC

schools reported attending an after-school program compared to the student responses in 2009-10 (22 percent and 42 percent, respectively). It is possible therefore, that students this year may have misinterpreted the question and reported that they attended an after-school program that was actually part of schools' expanded time, rather than a stand-alone program occurring outside of the school day.

The majority of students across all schools reported spending time on the computer, interacting with friends, or being at home with an older sibling. Fewer students reported spending time at home alone with friends or younger siblings, a finding which may reflect the respondents' age.

In sum, while students' non-instructional time was generally not affected by expanded time, ELT students spent significantly more time in a variety of activities throughout their day, compared to what would be expected in the absence of the intervention. If implemented successfully, increases in the length of the school day may be related to a number positive student and teacher outcomes. These outcomes are reviewed in the following section, beginning with a discussion of teacher outcomes and concluding with an analysis of student outcomes.

Comparing Teacher and Student Non-Academic Outcomes between ELT and non-ELT Schools

Teacher Outcomes

Key Findings

- A significantly higher proportion of teachers in ELT schools reported that the length of the day allows them to accomplish their teaching goals and cover the amount of instructional material their students need to learn than would be expected in the absence of ELT.
- A significantly higher proportion of teachers in ELT schools reported that they are satisfied with the amount of time available for instruction in ELA, math, and science than would be expected in the absence of ELT.
- A significantly higher proportion of teachers in ELT schools reported that they are satisfied with the amount of time available for academic support, enrichment activities and for students to pursue topics of interest than would be expected in the absence of ELT.
- Significantly more teachers in ELT schools reported that they are satisfied with the amount of time available for collaborative planning and that the length of the day allows for coordination of instruction than would be expected in the absence of ELT. Conversely, significantly fewer teachers in ELT schools than the counterfactual reported that the amount of collaborative planning time is a problem area.

Perceptions of School and District Leadership

A key component of ELT implementation is the expectation of a professional culture of leadership and collaboration. School and district leaders are expected to include teachers, students, families, partners, and other community stakeholders in the ELT implementation process to help meet school-wide achievement goals. With these expectations in mind, ELT should increase opportunities for staff at all levels to collaborate and interact with school and district leaders. As such, teachers in ELT schools may be hypothesized to be more likely to perceive that school and district leaders are effective managers, actively engaged, adaptable, receptive to feedback and supportive of staff growth and development than in the absence of ELT.

Similar to analyses run on student surveys, models assessing the relationship between ELT and teacher outcomes use multi-level models that adjust for the clustering of teachers within schools and include an ELT indicator, dummy variables for each pair of matched schools, and school and teacher-level demographics.[62] Results in exhibits present the actual ELT mean relative to the regression-adjusted non-ELT mean for selected outcomes.

Some of the differences in teacher perceptions were fairly large, but none rose to the level of statistical significance because the minimal detectable effect size was even larger. Exhibit 5.4 presents the findings on teacher perceptions of school and district leadership. On the whole, there were no statistically significant differences in teachers' perceptions of school and district leadership as a function of ELT status. Nevertheless, some results merit further consideration. For example, the majority of teachers in ELT and non-ELT schools indicated that the principal and/or school leadership team were actively engaged, effective instructional leaders who make the school run smoothly. In addition, teachers in both school types were generally satisfied with the principal and/or school leadership team's ability to receive feedback, adapt school policies, and communication with staff. While perceptions of district leadership were slightly less positive, most teachers indicated that the district leadership effectively managed their (respective) school. Note that while some of the estimated differences in teacher perceptions were fairly large, none rose to the level of statistical significance because the minimal detectable effect size (MDES), a measure denoting how large changes in teacher outcomes must be in order to detect statistically significant differences, was larger than the estimated differences. Our calculations indicate that the MDES for the all the teacher outcomes tested (those reported both in this chapter and Appendix E) ranges from 4 to 24 percent, meaning that estimated differences would have to be between 4 and 24 percent in order to be detected as statistically significant. Among the factors contributing to the wide range of MDES are: differences in response rates, intra-class correlations, and the amount of outcome variance explained by pair fixed effects and other covariates included in the models.

[62] The school-level characteristics included in the model measured total enrollment, the percentage of students eligible for free and reduced priced lunch, and the percentage of minority students served by the school during the 2010-2011 school year. The teacher-level characteristics included in the model measured the total number of years the teacher reported teaching/working in a school, including the 2010-11 school year.

Exhibit 5.4: Teacher Perceptions of School and District Leadership

	Percent of Respondents			
	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Leadership				
The principal and/or school leadership team are effective managers who make the school run smoothly	75%	80%	-4.4	0.620
The principal and/or school leadership team are instructional leaders in our school	70	72	-2.4	0.701
Level of Adaptability				
The principal and/or school leadership team are actively engaged in school improvement initiatives	90	94	-4.2	0.343
The principal and/or school leadership team adapt or refine school policies and/or practices as needed	78	82	-3.9	0.519
The principal and/or school leadership team monitors progress of students	90	87	3.3	0.535
Communication				
The principal and/or school leadership team are receptive to feedback on teacher morale/school culture	68	78	-10.2	0.229
The principal and/or school leadership team provide feedback about teacher performance	72	80	-8.1	0.157
The principal and/or school leadership team communicate effectively about improving instructional practices	74	76	-1.6	0.828
Support for Staff Development				
The principal/school leadership team provide opportunities for staff leadership and/or recognition of staff successes	67	80	-12.6	0.136
The principal/school leadership team encourages the development of a professional learning community	85	83	2.3	0.650
The principal/school leadership team are supportive of staff growth and development	86	86	0.3	0.950
Perceptions of District Leadership				
District leadership effectively manages our schools	62	56	6.6	0.396
District leadership provides timely guidance on instructional practices	61	55	6.0	0.283
District leadership is responsive to this school and teacher concerns	52	49	2.6	0.748

EXHIBIT READS: Seventy-five percent of teachers in ELT schools reported that the principal and/or school leadership team were effective managers who made the school run smoothly, compared to an estimated 80 percent in the absence of ELT. The difference between the two groups was not statistically significant.

Notes:
* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Items 7g, 7k, 7h, 7i, 7n, 7j 7m, 7l, 7p, 27e, 7o, 7cc, 7ff, 7gg; Matched Comparison Teacher Surveys, Items 7e, 7i, 7f, 7g, 7l, 7h, 7k, 7j, 7n, 26e, 7m, 7v, 7y, 7z.

Sample: 1609 teachers. Nonresponse rates across ELT and matched comparison teacher survey items ranged from 5.8 to 20.7 percent.

Satisfaction with Time Available for Instructional Activities, Planning and Professional Development

One of the most important components of ELT is that it be used to broaden opportunities for teachers, particularly to improve instructional practice. Schools that successfully implement ELT should provide teachers with more time for instructional activities and more time to plan, collaborate, and participate in professional development opportunities.

Time Available for Instructional Activities, Planning and Professional Development

Exhibit 5.5 suggests that teachers in ELT schools were generally more satisfied with time available for instruction than would be the case in the absence of ELT. A significantly larger proportion of teachers in ELT schools reported that the length of their days allowed them to accomplish their teaching goals and cover the amount of instructional material their students needed to learn, than would have been expected in the absence of ELT. ELT teachers were similarly satisfied with the amount of time their schools allotted for various instructional activities. Ninety percent or more of teachers in ELT schools were satisfied with the amount of time available for instruction in math and ELA, compared to about three-quarters in the absence of ELT. Teachers in ELT schools were also more likely to report that they were satisfied with the amount of time available for instruction in science than were teachers in the comparison schools (81 and 54 percent, respectively). Teachers in ELT schools were also significantly more satisfied with the amount of time available for students to pursue topics of interest and with the time available for academic support and enrichment activities. Notably, while ELT teacher satisfaction with time available for instruction was significantly higher compared to what would be expected in the absence of ELT both this year and last year (and magnitudes of estimated differences are roughly equivalent), actual ELT percentages and estimated non-ELT percentages are higher this year than last.

There was no statistically significant effect of ELT on teachers' abilities to differentiate instruction for students of multiple abilities or to use a variety of instructional strategies. Over 90 percent of all teachers reported satisfaction in these areas.

Exhibit 5.5: Time Available for Instructional Activities

	Percent of Respondents			
	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Teacher Perceptions of Instructional Time				
Length of day allows me time to accomplish teaching goals	80%	66%	13.7 *	0.024
This year, I am able to cover the amount of instructional material my students need to learn	74	63	10.9 *	0.028
This year, I am able cover the amount of instructional material my school expects	82	75	6.5	0.261
Time Available for Instructional Activities				
Time available for enrichment activities	68	39	29.3 **	0.002
Time available for instruction in science	81	54	26.0 **	0.001
Time available for dedicated academic support	64	45	19.5 *	0.020
Time available for students to pursue topics of interest	44	28	16.3 *	0.015
Time available for instruction in ELA	89	74	15.5 *	0.010
Time available for instruction in social studies	71	56	15.2	0.060
Time available for instruction in math	92	78	13.6 **	0.008
Time available for physical activity for students	41	42	-1.7	0.808
Time Available for Differentiated Instruction				
This year, I am able to differentiate instruction for students of multiple abilities	89	86	2.9	0.311
This year, I am able to use a variety of instructional strategies (e.g., project-based learning, small-group learning) to teach my students	92	91	1.0	0.692

EXHIBIT READS: Eighty percent of teachers in ELT schools indicated that the length of the school day allowed them to accomplish their teaching goals, compared to an estimated 66 percent in the absence of ELT. The difference between the two groups was statistically significant.

Notes:
* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Items 5f, 9c, 9b, 10e, 10c, 10f, 10h, 10a, 10d, 10b, 10g, 9d, 9a; Matched Comparison Teacher Surveys, Items 5f, 8c, 8b, 9e, 9c, 9f, 9h, 9a, 9d, 9b, 9g, 8d, 8a.

Sample: 1609 teachers. Nonresponse rates across ELT and matched comparison teacher survey items ranged from 6.7 to 24.6 percent.

Time Available for Planning and Professional Development

In addition to providing more time for instructional activities, the ELT initiative is intended to provide teachers with more time to collaborate with one another and to provide targeted professional development to strengthen teachers' instructional practices. As a result, teachers in ELT schools are expected to be more satisfied with the amount of time available for collaborative planning, and professional development than would be expected in the absence of ELT

As hypothesized, teachers in ELT schools were significantly more satisfied with the time available for collaborative planning (57 percent) than would be expected without ELT (43 percent; see Exhibit 5.6). Further, 70 percent of teachers in ELT schools reported that the length of the school day allows for coordination of instruction with other teachers compared to 53 percent in the absence of ELT. Conversely, significantly fewer teachers in ELT schools reported that the amount of collaborative planning time is a problem area (46 percent) compared to the estimated counterfactual (66 percent). There were no statistically significant effects of ELT on teachers' reported satisfaction with the amount of time available for professional development, about 70 percent of the teachers at ELT and MC schools were generally satisfied with the time and opportunities available for professional development.

Exhibit 5.6: Teacher Perceptions of Time Available for Planning and Professional Development

	Percent of Respondents			
	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Time Available for Planning				
This year, this topic is a problem area: Amount of collaborative planning time	46%	66%	-19.6 **	0.004
Length of day allows coordination of instruction	70	53	16.7 **	0.008
Time available for collaborative planning	57	43	14.1 *	0.038
Time Available for Professional Development				
Time available for professional development	67	72	-4.8	0.538
This year, this topic is a problem area: Professional development opportunities	41	38	3.4	0.556

EXHIBIT READS: Forty-six percent of teachers in ELT schools agreed that the amount of time for collaborative planning was a problem area this year, compared to an estimated 66 percent in the absence of ELT. The difference between the two groups was statistically significant.

Notes:
* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Items 6i, 5g, 32b, 32c, 6j; Matched Comparison Teacher Surveys, Items 6i, 5g, 31b, 31c, 6j.

Sample: 1609 teachers. Nonresponse rates across ELT and matched comparison teacher survey items ranged from 7.0 to 13.4 percent.

Job Satisfaction

Given ELT's expectations for an improved professional culture of leadership and collaboration, along with an emphasis on increased time for instructional activities, planning, and professional development, it is possible that ELT teachers would report greater job satisfaction than would be expected in the absence of ELT. However, results presented in Exhibit 5.7 indicate that there are no statistically significant effects of ELT on respondents' satisfaction with teaching as a profession or with their current teaching position. Overall, 95 percent of teachers at all schools agreed or strongly agreed that they were very satisfied with being a teacher. Likewise, most teachers reported that they were satisfied with teaching at their current school.

Exhibit 5.7: Teacher Job Satisfaction

	Percent of Respondents			
	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Satisfaction With Teaching				
If I could start over again, I would still become a teacher	88%	89%	-1.1	0.761
Overall, I am very satisfied with being a teacher	95	96	-0.4	0.764
Stress and challenges are not worth it	15	15	0.2	0.941
Satisfaction With Teaching at This School				
Satisfied with salary	61	54	7.1	0.261
Satisfied with teaching at this school	87	85	1.5	0.725
Think about transferring	34	34	-0.4	0.935

EXHIBIT READS: Eighty-eight percent of teachers in ELT schools agreed that if they could start over again they would still become a teacher, compared to an estimated 89 percent in the absence of ELT. The difference between the two groups was not statistically significant.

Notes:
* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Items 5c, 5a, 5h, 5j, 5b, 5d; Matched Comparison Teacher Surveys, Items 5c, 5a, 5h, 5j, 5b, 5d.

Sample: 1609 teachers. Nonresponse rates across ELT and matched comparison teacher survey items ranged from 5.5 to 11.9 percent.

Student Non-Academic Outcomes

Key Findings

- A significantly higher proportion of teachers in ELT schools reported that teachers and students spend sufficient instructional time together than would be expected in the absence of ELT.
- Significantly more teachers in ELT schools reported that teacher and staff fatigue, as well as student fatigue, were problem areas than would be expected without ELT. Likewise, a significantly higher proportion of students in ELT schools reported that they were tired in school than the counterfactual estimate.

- Significantly fewer students in ELT schools reported that: they look forward to going to school; like being in school; that all of their classes are important to them; and that they like the length of their school day, than would be expected without ELT.
- A significantly smaller proportion of teachers in ELT schools reported that student academic performance and homework completion rates were problem areas than the estimated counterfactual.
- Students in ELT schools had statistically significantly higher suspension rates than would be expected in the absence of ELT; however, while statistically significant, the differences were extremely small in magnitude, and therefore are unlikely to have educational or practical significance.

Student-Educator Relationships

With more time available during the school day, students in ELT schools are hypothesized to spend more time interacting with educators and peers. As a result, they may have more opportunities for higher quality peer-to-peer and educator-student relationships. To test this hypothesis, teacher and student surveys asked respondents about their interactions with one another. Teacher responses are assessed using the teacher multi-level models discussed in more detail in the previous section, while student responses are assessed using the multi-level models discussed in the section about non-instructional time. Again, actual ELT averages are reported relative to the regression-adjusted non-ELT average for selected outcomes.

Results in Exhibit 5.8 suggest that peer-to-peer relationships in ELT schools are not significantly different than would be expected in the absence of the initiative. Notably, fewer than half of all students across all schools reported that students at their school treat each other well and with respect.

Results of items regarding educator-student relationships also revealed no significant effects, with one exception: 92 percent of teachers in ELT schools reported that teachers and students spend sufficient instructional time together compared to 64 percent for the estimated counterfactual. Otherwise, students across all schools generally agreed that teachers care about their students, take the time to explain what they are teaching and answer their questions in class. Three-quarters of all students also reported that if there is something they don't understand in a class, there is someone in the school who can explain it to them.

Exhibit 5.8: Student and Teacher Relationships

	Percent of Respondents who Agree		Estimated Difference	Statistical Significance (p-value)
	Actual ELT Mean	Estimated Non-ELT Mean		
Student-Teacher Relationships				
I get along well with my teachers	59%	65%	-5.9	0.283
Students treat teachers with respect[1]	49	44	5.8	0.472
My teachers care about their students	69	73	-3.7	0.519
I feel like I can talk to a teacher about my problems	39	41	-1.7	0.693
This year, this topic is a problem area: Relationship with students[1]	9	10	-0.4	0.862
Teacher-Student Relationships				
Teachers and students spend sufficient instructional time together[1]	92	68	24.1 ***	<.0001
My teachers take time to explain what they are teaching so I understand it	72	76	-4.2	0.297
I get my questions answered in this class	80	83	-2.5	0.318
Adult-Student Relationships				
There are other people besides my regular teachers in the school who have time to give extra help	48	51	-2.8	0.390
If I do not understand something in this class, there is someone in this school I can ask to explain it later	75	76	-0.9	0.718
Peer Relationships				
Students at my school treat each other well	43	41	2.4	0.593
Students treat each other with respect[1]	40	38	1.9	0.793

EXHIBIT READS: Fifty-nine percent of students in ELT schools indicated that they get along well with their teachers, compared to an estimated 65 percent in the absence of ELT. The difference between the two groups was not statistically significant.

Notes: [1] Denotes an item from the teacher survey. All other items are from the student survey.
* statistically significant at p < .05 level
** statistically significant at p < .01 level
*** statistically significant at p < .001 level

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Items 7z, 6k, 7a, 7aa; Matched Comparison Teacher Surveys, Items 7s, 6k, 7a, 7t. Abt Associates' Surveys of MA ELT and Matched Comparison School Students, Spring 2011, Items 11c, 11e, 11i, 11a, 9m, 11l, 9t, 8m.

Sample: 1609 teachers, 4840 students. Nonresponse rates across ELT and matched comparison teacher survey items ranged from 4.6 to 6.0 percent. Nonresponse rates across ELT and matched comparison student survey items ranged from 2.4 to 3.7 percent.

Student Satisfaction and Engagement

A key expectation for the implementation of ELT is increased student satisfaction and engagement with their school. Additional opportunities for enrichment, instruction, and interactions may translate into more positive perceptions of school, teachers, and instruction. Likewise, these opportunities could be integral to improved academic and behavioral engagement. The following section examines key measures of student

satisfaction and engagement, while also addressing several factors that could be barriers to achieving the most positive outcomes in these domains.

Possible Barriers to Student Satisfaction and Engagement

While ELT is hypothesized to be related to improved student satisfaction and engagement, it is important to acknowledge obstacles ELT students and teachers might face in achieving these goals. In particular, Exhibit 5.9 highlights two potential physical consequences of a longer school day: fatigue and hunger. Indeed, a higher proportion of students and teachers in ELT schools reported that fatigue was a problem area compared to the estimated counterfactual. Fifty-three percent of students in ELT schools reported that they were tired during class compared to 42 percent in the counterfactual. While fatigue was more likely to be reported as a problem amongst teachers and students in ELT schools, there was no statistical difference between the percentages of students who reported that they were hungry during class. However, nearly half of all students across schools reported that they were hungry during class.

Notably, findings about teacher and student fatigue closely parallel those from the previous year's report. Actual means, estimated non-ELT means, and estimated differences for teacher reports of teacher/staff fatigue and student fatigue are within 5 percentage points of last year's results. Likewise, the estimated difference in student reports of fatigue is similar in magnitude to last year's finding. The actual ELT and estimated non-ELT mean, however, is higher this year (53 and 42 percent, respectively) compared to last year (28 and 21 percent, respectively). Because the timing of student survey administration is left to teachers' discretion, it is possible that more surveys were administered at the end of the school day this year than last year.

Exhibit 5.9: Potential Physical Consequences of an Expanded Day

	Percent of Respondents			
	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Student Hunger				
I am hungry in this class	50%	45%	4.7	0.399
Teacher/Student Fatigue				
This year, this topic is a problem area: Teacher/staff fatigue[1]	72	54	17.7 **	0.006
This year, this topic is a problem area: Student fatigue[1]	62	48	14.5 **	0.009
I am tired during this class	53	42	11.2 *	0.016

EXHIBIT READS: Fifty percent of students in ELT schools indicated that they were hungry in class, compared to an estimated 45 percent in the absence of ELT. The difference between the two groups was not statistically significant.

Notes: [1] Denotes an item from the teacher survey. All other items are from the student survey.
* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Items 6g, 6f; Matched Comparison Teacher Surveys, Items 6g, 6f. Abt Associates' Surveys of MA ELT and Matched Comparison School Students, Spring 2011, Items 9g, 9f.

Sample: 1609 teachers, 4840 students. Nonresponse rates across ELT and matched comparison teachers survey items ranged from 8.3 to 8.8 percent. Nonresponse rates across ELT and matched comparison student survey items ranged from 1.9 to 2.0 percent.

The significant results highlighted in Exhibit 5.9 are explored further in Exhibit 5.10 by examining variation in significant outcomes by school. Each bar in the charts represents average responses for a particular ELT school, while the horizontal line represents the overall ELT average for the survey item. Note that school numbers presented in this chapter do not correspond with school numbers used in Chapter 6. Further, while schools 1 through 15 correspond to the same schools across teacher and student surveys, because of slight differences in the teacher and student survey samples[63], school 16 is not the same across survey types and school 17 is only represented in the student survey sample.

Examining average responses by school highlights school-by-school variation in these items. For example, while 72 percent of ELT teachers overall indicated that teacher and staff fatigue was a problem in their school, responses ranged widely, from 27 to 93 percent. The range for teacher reports of student fatigue is almost as large, spanning from 24 to 79 percent. Finally, although about half of students in ELT schools reported being tired in class, these responses ranged from 35 percent to 69 percent, depending on the school.

In addition, these descriptive results also suggest that there is some consistency across responses from students and teachers in the same school. For example, teacher and student responses to questions about fatigue are consistently lower than average in schools 9, 11, and, in particular, 15. Conversely, responses are consistently higher than average in schools 7 and 8.

[63] As noted in Chapter 2, because one ELT school does not serve 5th or 8th grade students, it was not surveyed and only 17 of the 18 ELT schools are represented in this chapter. Further, because two matched comparison school teacher survey response rates were below 70 percent, these schools and their ELT pairs were removed from the teacher survey analysis sample, resulting in a teacher survey sample of 16 of the 18 ELT schools.

Exhibit 5.10: Significant Items Representing Some Potential Physical Consequences of an Expanded Day, by School

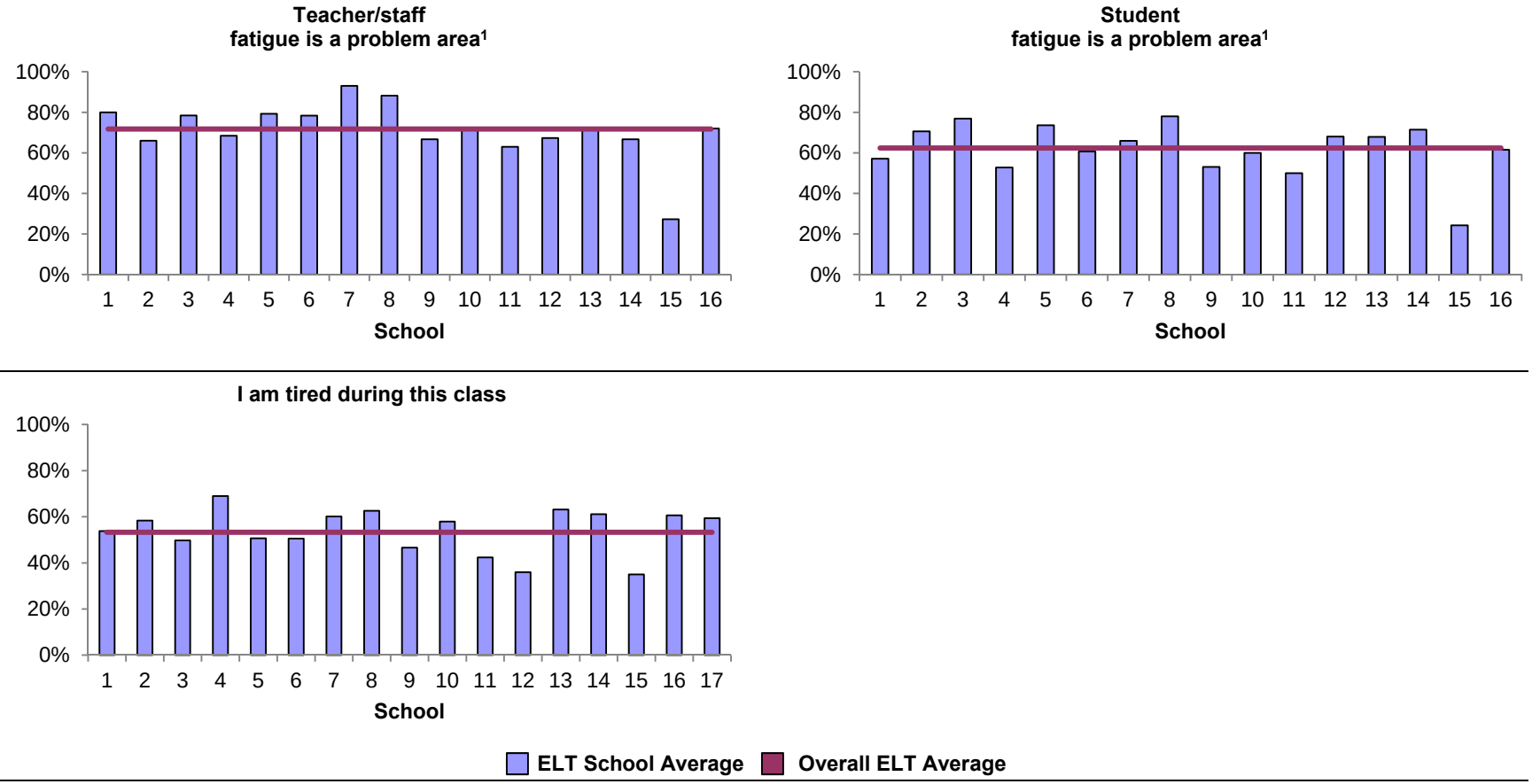


EXHIBIT READS: In spring 2011, 80 percent of teachers in School 1 reported that teacher/staff fatigue was a problem area in their school. Across all 16 ELT schools with teacher responses, an average of 72 percent of teachers reported that teacher/staff fatigue was a problem area in their school.

Note: Schools 1 through 15 correspond to the same schools across teacher and student surveys (e.g., school 1 is the same across all graphs). However, because of slight differences in the teacher and student survey samples, school 16 is not the same across survey types and school 17 is only represented in the student survey sample.

[1] Denotes an item from the teacher survey. All other items are from the student survey.

Source: Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Items 6g, 6f; Abt Associates' Surveys of MA ELT and Matched Comparison School Students, Spring 2011, Item 9f.

Sample: 918 teachers from ELT schools. 2,300 students from ELT schools. Nonresponse rates across ELT teacher survey items ranged from 6 to 6.5 percent. Nonresponse rate for the ELT student survey item was 1.6 percent.

Student Satisfaction

Students reported that they were generally satisfied with their teachers and the instruction at their schools. Specifically, over 80 percent reported that they learned a lot in this class; that their teacher helps explain difficult concepts; and that their teacher is knowledgeable about the subject matter of the class. As Exhibit 5.11 indicates, however, significantly fewer ELT students reported that they looked forward to going to school, liked being at their school, and that they liked the length of the school day (54 percent versus 66 percent).

To explore these results further, Exhibit 5.12 presents average student responses to the significant items by school. Similar to Exhibit 5.10, each bar represents average responses for an ELT school, while the horizontal line represents the overall ELT average for a particular item. As all items draw from the same survey, school numbers across charts are identical and can be compared to assess consistency in responses.

The charts highlight a large amount of variation in responses to items about student satisfaction with school and the length of the school day. For example, about half of all ELT students reported that they looked forward to going to school and liked being in their school. However, responses by school ranged by about 40 percentage points, from 31 to 76 percent for the item asking students if they looked forward to going to school and from 39 to 88 percent for the item asking students about how much they liked being in their school. The range in responses for the item asking students about how much they liked the length of their school day was also about 40 percentage points, with overall responses equaling 22 percent and individual school averages spanning from 7 to 46 percent. Finally, note that student responses in schools 5, 6, 12, 14 and 15 were consistently above average while responses in schools 7, 8, 13, and 17 were consistently below average on all of the presented items.

Exhibit 5.11: Student Satisfaction and Engagement

	Percent of Respondents			
	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
General Satisfaction With School				
I look forward to going to school	54%	66%	-12.3 ***	<.0001
I like being at my school	56	67	-11.1 **	0.037
I am bored in school	55	47	8.4	0.090
Satisfaction With Teachers/Instruction				
I learn a lot in this class	83	86	-2.4	0.418
The teacher of this class helps explain difficult concepts well	82	84	-2.1	0.545
My teacher knows a lot about the subject matter of this class	93	93	0.2	0.921
Satisfaction With Length of School Day				
I like the length of my school day this year	22	38	-16.5 **	0.006

EXHIBIT READS: Fifty-four percent of students in ELT schools indicated that they looked forward to going to school, compared to an estimated 66 percent in the absence of ELT. The difference between the two groups was statistically significant.

Notes:
* statistically significant at p < .05 level
** statistically significant at p < .01 level
*** statistically significant at p < .001 level

Source: Abt Associates' Surveys of MA ELT and Matched Comparison School Students, Spring 2011, Items 8d, 8b, 8c, 9q, 9n, 9p, 5.

Sample: 4840 students. Nonresponse rates across ELT and matched comparison student survey items ranged from 1.3 to 2.5 percent.

Exhibit 5.12: Significant Student Satisfaction and Engagement Items, by School

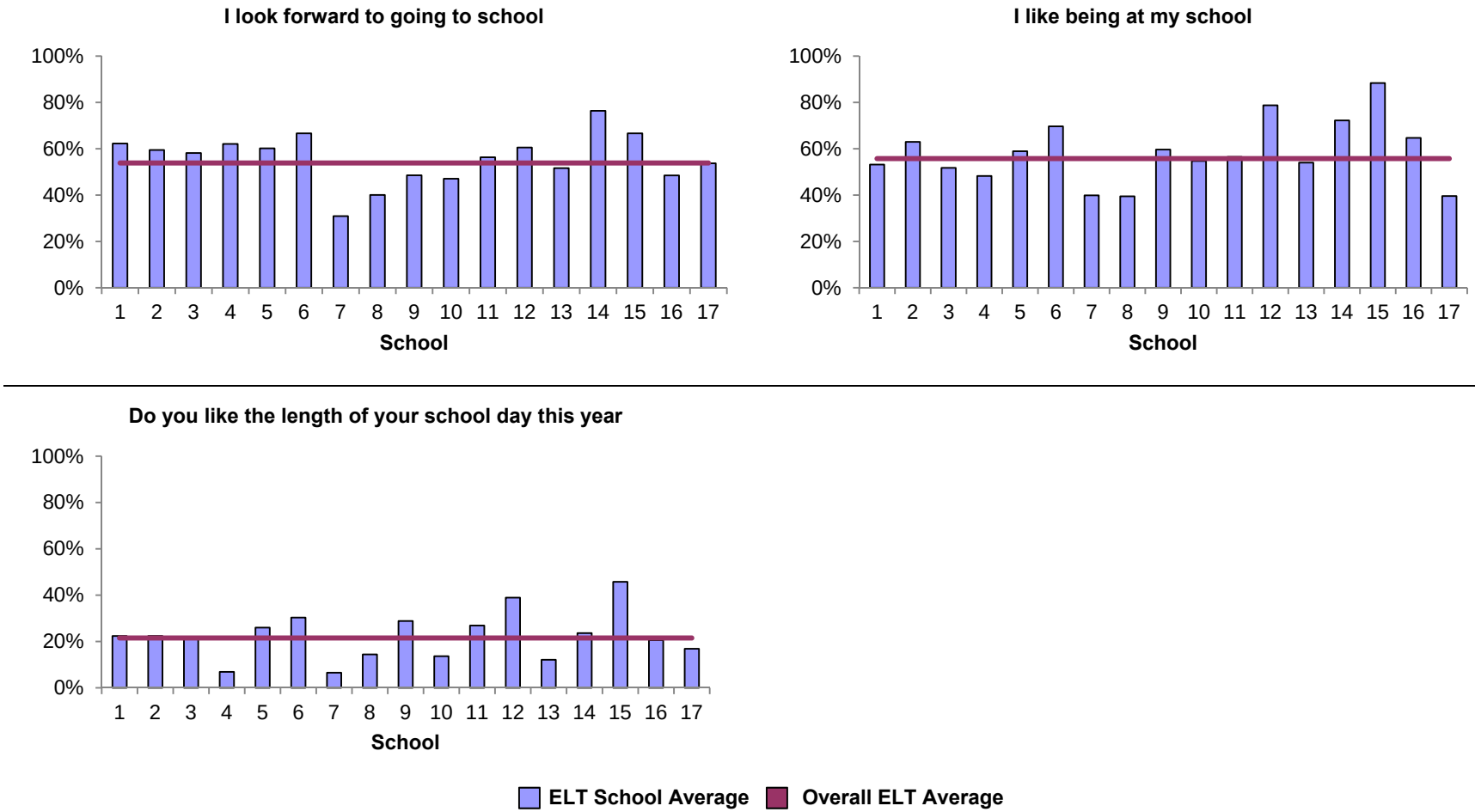


EXHIBIT READS: In spring 2011, 62 percent of students in School 1 reported that they looked forward to going to school. Across all 17 ELT schools with student responses, an average of 54 percent of students reported that they looked forward to going to school.

Note: School numbers are identical across charts.

Source: Abt Associates' Surveys of MA ELT and Matched Comparison School Students, Spring 2011, Items 8d, 8b, 5.

Sample: 2,300 students from ELT schools. Nonresponse rates across items ranged from .8 to 1.6 percent.

Academic Engagement

Exhibit 5.13 suggests that teacher perceptions of student engagement at ELT schools were significantly more positive than would be expected in the absence of ELT. Compared to the counterfactual, significantly fewer ELT teachers reported that student academic performance (68 percent versus 83 percent) and homework completion rates (70 percent versus 82 percent) were problems at their schools. However, significantly fewer students at ELT schools reported that all of their classes were important to them than would be expected without ELT. To further explore this unexpected finding, Exhibit 5.14 presents school level ELT averages of the item asking students if all classes are important to them in conjunction with the overall ELT average, represented by the horizontal line. Results present the range in overall school level responses to the item and indicate that although 65 percent of ELT students reported that all of their classes are important to them, this spanned from a low of 34 percent to a high of 90 percent, depending on the school.

Exhibit 5.13: Student Academic Engagement

	Percent of Respondents			
	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Academic Engagement				
This year, this topic is a problem area: Student academic performance[1]	68%	83%	-15.1 *	0.011
This year, this topic is a problem area: Homework completion rates[1]	70	82	-12.1 *	0.028
All of my classes are important to me	65	73	-7.9 *	0.032
This year, this topic is a problem area: Student engagement[1]	67	74	-7.1	0.210
I pay attention in this class	85	89	-4.1	0.185
I am interested in the work I get to do in this class	68	71	-3.0	0.351

EXHIBIT READS: Sixty-eight percent of teachers in ELT schools agreed that student academic performance was a problem area, compared to an estimated 83 percent in the absence of ELT. The difference between the two groups was statistically significant.

Notes: [1] Denotes an item from the teacher survey. All other items are from the student survey.
* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Items 6a, 6c, 6b; Matched Comparison Teacher Surveys, Items 6a, 6c, 6b. Abt Associates' Surveys of MA ELT and Matched Comparison School Students, Spring 2011, Items 8i, 9c, 9a.

Sample: 1609 teachers, 4840 students. Nonresponse rates across ELT and matched comparison teachers survey items ranged from 7.7 to 19.0 percent. Nonresponse rates across ELT and matched comparison student survey items ranged from 1.6 to 2.0 percent.

Exhibit 5.14: Percent of Students Reporting that "All of my classes are important to me," by School

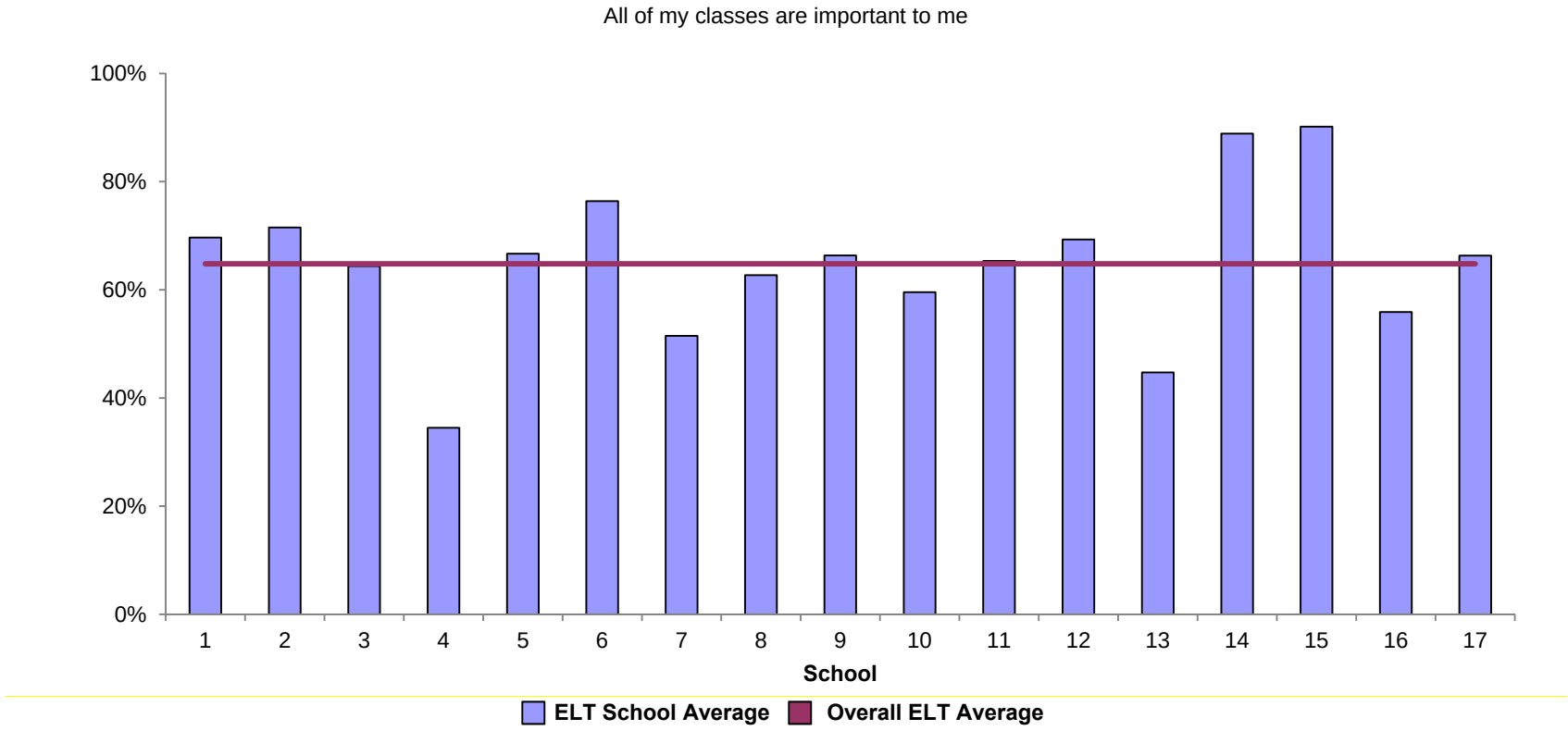


EXHIBIT READS: In spring 2011, 70 percent of students in School 1 agreed with the statement "All of my classes are important to me." Across all 17 ELT schools with student responses, an average of 65 percent of students agreed with the statement "All of my classes are important to me."

Note: School numbers are identical across charts.

Source: Abt Associates' Surveys of MA ELT and Matched Comparison School Students, Spring 2011, Item 8i.

Sample: 2,300 students from ELT schools. Nonresponse rate was 1.4 percent.

Behavioral Engagement

Results from the student and teacher surveys presented in Exhibit 5.15 suggest that the majority of students across all schools had high levels of particular types of behavioral engagement. Almost 90 percent of students reported that they followed class rules and only one-quarter reported getting in trouble in class. Teachers across all schools, however, indicated that they felt that student behavior was a problem area in their schools.

Exhibit 5.15: Behavioral Engagement from Survey Items

	Percent of Respondents		Estimated Difference	Statistical Significance (p-value)
	Actual ELT Mean	Estimated Non-ELT Mean		
Behavioral Engagement				
This year, this topic is a problem area: Student behavior[1]	76%	84%	-7.4	0.336
I follow the rules in this class	87	89	-2.0	0.452
I get in trouble in this class	26	25	0.9	0.706

EXHIBIT READS: Seventy-six percent of teachers in ELT schools agreed that student behavior was a problem area, compared to an estimated 84 percent in the absence of ELT. The difference between the two groups was not statistically significant.

Notes: [1] Denotes an item from the teacher survey. All other items are from the student survey.
* statistically significant at p < .05 level
** statistically significant at p < .01 level
*** statistically significant at p < .001 level

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 6d; Matched Comparison Teacher Surveys, Item 6d. Abt Associates' Surveys of MA ELT and Matched Comparison School Students, Spring 2011, Items 9k, 9b.

Sample: 1609 teachers, 4840 students. The nonresponse rate across ELT and matched comparison teacher survey item 6d equaled 5.5 percent. Nonresponse rates across ELT and matched comparison student survey items ranged from 1.8 to 2.3 percent.

Behavioral engagement was also examined using SIMS data collected by ESE on attendance rates, in-and out-of-school suspensions, and truancy rates. Recall that while survey results are based on 2010-11 cross-sectional data, SIMS data are longitudinal, allowing for analysis of behavioral outcomes after one, two, three, and four years of ELT implementation. Because SIMS data are collected from the same students across multiple school years, student fixed effects as well as school and year fixed effects are included in the behavioral outcome models. These models also include student-level covariates and appropriately account for the fact that students are clustered within schools.

The estimated effects of ELT on the SIMS behavioral indicators are presented in Exhibit 5.16. The estimated impacts suggest that there were no effects of ELT on attendance rates, as estimated impacts in three of the four years were not statistically significant. After one year of implementation, the average student attendance rate for students in ELT schools was 93.70 percent, compared to 94 percent in the absence of ELT. Although the estimated difference of 0.27 percentage points was statistically significant, its magnitude is unlikely to be practically meaningful as a difference of this magnitude represents about three hours of attendance per student over an entire school year.[64] Considering that students attending ELT schools spent an additional 90 minutes in school each day, on average, or an additional 266 hours

[64] This assumes a 180-day school year and a 6-hour school day, an approximate average in non-ELT schools.

(the rough equivalent of over 40 non-ELT school days) per year, this difference is not practically significant. The smaller estimated differences in attendance rates in the second through fourth years of implementation were not statistically significant.

Exhibit 5.16: Behavioral Engagement from SIMS Data

	Percent of Students			
	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Year 1				
Attendance rate	93.70%	93.97%	-0.27 ***	<0.001
In-school suspension rate	0.03	0.04	-0.01 ***	<0.001
Out-of-school suspension rate	0.10	0.08	0.02 ***	<0.001
Truancy rate	0.57	0.62	-0.05 *	0.020
Year 2				
Attendance rate	93.90	93.96	-0.06	0.326
In-school suspension rate	0.06	0.03	0.03 ***	<0.001
Out-of-school suspension rate	0.10	0.08	0.02 ***	<0.001
Truancy rate	0.61	0.65	-0.04	0.095
Year 3				
Attendance rate	93.99	94.02	-0.03	0.677
In-school suspension rate	0.08	0.01	0.07 ***	<0.001
Out-of-school suspension rate	0.13	0.07	0.06 ***	<0.001
Truancy rate	0.79	0.74	0.05	0.075
Year 4				
Attendance rate	94.14	94.13	0.01	0.925
In-school suspension rate	0.04	-0.01	0.05 ***	<0.001
Out-of-school suspension rate	0.10	0.05	0.05 ***	<0.001
Truancy rate	0.77	0.79	-0.02	0.485

EXHIBIT READS: At the end of the first year of ELT implementation, the average attendance rate at ELT schools was 93.70 percent, compared to an estimated 94 percent in the absence of ELT. The difference between the two groups was statistically significant.

Notes:
* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Individual student records obtained from MA ESE.

Sample: Student records from ELT and matched comparison schools, cohorts 1-3 (n=49) from 2001-02 to 2010-11 for attendance and 2003-04 to 2010-11 for other measures: 257,348 records for attendance and 205,990 for other measures. Fewer than 1 percent of students were eliminated from the analytic sample due to missing covariates.

The estimated percentages of students receiving in- and out-of-school suspensions during the first four years of implementation, while statistically significant, were extremely small and unlikely to have educational or practical significance. In the first year of ELT implementation, significantly fewer students in ELT schools received in-school suspensions than would have been expected in the absence of ELT. In the second, third, and fourth years of implementation, the difference reversed, such that students in ELT schools had significantly more in-school suspensions compared to the counterfactual. Students in ELT schools also had more out-of-school suspensions than would be expected in the absence of ELT, with

differences ranging from .02 percentage points in the first year of implementation to .06 percentage points in the third year of implementation.

Finally, results suggest that there were no effects of ELT on truancy rates, as estimated impacts in three of the four implementation years were not statistically significant. In the first year of implementation, ELT schools had a significantly lower truancy rate than the estimated rates in the absence of ELT.

Summary

The analyses presented in this chapter suggest that the ELT school day has some important implications for teacher and student outcomes. ELT schools spend significantly more time on most core academic subjects and enrichment activities than do matched comparison schools. Presumably, these increases in instructional time are related to higher ELT teacher satisfaction for instructional time, collaborative planning time, the ability to spend sufficient instructional time with students, and student academic engagement, compared to what would be expected in the absence of ELT.

However, the results also indicate that the increased school day may heighten fatigue, as significantly more teachers and students in ELT schools reported being tired than would be expected in the absence of ELT. Fatigue may be related to student reports in ELT schools of significantly lower levels of satisfaction in several areas, including liking the length of their school day or looking forward to going to school. Descriptive analyses, however, highlight the variation in ELT school-level responses to these items, and suggest that ELT teachers and students vary widely by school in their perceptions.

Finally, while students in ELT schools had statistically significantly higher suspension rates than would be expected in the absence of ELT, the differences were extremely small in magnitude, and therefore are unlikely to have educational or practical significance.

Chapter 6. Effect of ELT on School Characteristics and Student Achievement

This chapter examines the impact of ELT implementation on school characteristics and student achievement. It begins by assessing the relationship between ELT and the characteristics of study schools, and exploring differences between ELT and matched comparison schools in student mobility. The focus of the chapter then shifts to student achievement results, beginning with a presentation of descriptive MCAS data and then turning to more rigorous impact estimation that relies upon a strong quasi-experimental design. The chapter also presents results of exploratory analyses that examine variation in student achievement across the schools participating in the initiative as well as the relationship between levels of implementation and student achievement. The findings draw from state-provided school-level data to describe school characteristics, and from state-provided individual student-level data to describe student mobility and model the impact of ELT on student achievement patterns.

Recall that the impact models used in this chapter leverage pre-ELT data to control for observable and unobservable, stable characteristics of schools and data from matched comparison schools to control for year-to-year variation in outcomes (see Chapter 2 for more detail). These models, therefore, control for many of the alternative hypotheses that might explain observed differences and represent strong, quasi-experimental analyses. It is important to note that impact models estimate the effect of ELT on selected outcomes by essentially comparing the observed outcomes for ELT schools and students and the counterfactual outcomes, which are estimated using the comparison group to capture what would have occurred in the absence of ELT.

Key Findings

- In the first and second years of implementation, ELT schools served a statistically significantly greater proportion of minority students than estimated in the absence of ELT, although the estimated magnitude of the differences (3.7 and 4.0 percentage points, respectively) is unlikely to be practically meaningful, and there were no effects of ELT on schools' minority student population in the third or fourth year of implementation.
- In the third year of implementation, ELT schools had a statistically significantly smaller proportion of highly qualified core academic teachers compared to the estimated proportion in the absence of ELT (2.9 percentage points).
- In the fourth year of implementation, ELT schools had a statistically significantly lower number of FTE teachers (4.7 fewer), and statistically significantly higher student-teacher ratio (almost two more students per teacher) than estimated in the absence of ELT.
- Across all years of implementation, there were no significant differences in average student mobility rates between ELT and matched comparison schools.
- Descriptive analyses restricted to ELT schools indicated variation in student performance levels among schools both before implementation began and in the most recent school year (2010-11), and indicated no consistent patterns of results.

- On average, there were no statistically significant effects of ELT after one, two, three, or four years of implementation on MCAS student achievement test outcomes for 3rd, 4th, or 7th grade ELA, 4th, 6th, or 8th grade math, or 8th grade science.
- There was a statistically significant positive effect of ELT after four years of implementation on the MCAS 5th grade science test.
- Exploratory analyses using data from non-ELT schools in ELT districts, and non-ELT schools statewide, rather than the study's matched comparison schools, were generally consistent with the primary analysis, including the significant finding for 5th grade science noted above. In addition, there was a statistically significant negative effect of ELT on 3rd grade reading after two years of implementation, and there were statistically significant positive effects of ELT on 6th grade math and 8th grade science after four years of implementation in both the district-level and state-level analyses. The state-level analysis also found a statistically significant positive effect of ELT on 7th grade ELA after one year of implementation and on 6th grade math after three years of implementation.
- Exploratory descriptive analysis linking the level of implementation in ELT schools and student achievement outcomes indicated no clear patterns or meaningful relationships.
- Exploratory analysis investigating the difference of the effect of ELT in higher- versus lower-implementing schools indicates minimal heterogeneity in the effect by the level of ELT implementation. However, the effect of ELT on 8th grade math in higher-implementing schools is estimated to be statistically significantly greater than the effect of ELT in low- implementing schools after three and four years of implementation.

Effects of ELT on School Characteristics and Student Mobility

School Characteristics

A school's adoption of ELT could potentially result in parents and students revisiting their choices of where children attend school assuming that they have some choice. Similarly, teachers may reconsider where to teach, either by choosing to join an ELT school or to leave a school in the early stages of implementing ELT. Exhibit 6.1 explores these possibilities by summarizing school-level averages of student and teacher characteristics after one, two, three, and four years of implementation in ELT schools compared to what would have been expected in the absence of ELT.[65] The results present the actual observed mean for ELT schools, compared to the average outcomes for the non-ELT counterfactual, which is calculated by subtracting the estimated ELT effect from the ELT mean, thereby representing what is estimated in the absence of, or without, ELT.

[65] The number of schools included in analyses by implementation year includes only those schools that had implemented ELT for that number of (implementation) years. For example, if a school implemented ELT for two years, and then exited the initiative, that school would be included in the analyses of impacts after one and two years of implementation, and would be excluded from impact estimates after three and four years of implementation.

Exhibit 6.1: Effect of ELT on Student and Teacher Characteristics, across Cohorts, by Implementation Year

	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	p-value
Implementation Year 1				
Student Population				
Student enrollment	516	510	6.46	0.879
Percent low income	70%	71%	-0.98	0.573
Percent minority	61%	57%	3.68**	0.002
Percent male	52%	52%	-0.71	0.235
Percent special education	18%	19%	-0.64	0.388
Percent limited English proficient	14%	15%	-0.42	0.77
Percent first language not English	37%	36%	0.53	0.706
Teacher Population				
Number of FTE Teachers	40	38	1.74	0.43
Percent of teachers licensed in their teaching assignment	97%	98%	-0.59	0.609
Percent of core academic teachers highly qualified	96%	97%	-1.32	0.26
Student-teacher ratio	13	13	0.24	0.573
Implementation Year 2				
Student Population				
Student enrollment	533	522	10.14	0.815
Percent low income	74%	75%	-1.01	0.632
Percent minority	64%	60%	3.98*	0.015
Percent male	53%	52%	0.14	0.862
Percent special education	19%	19%	0.04	0.965
Percent limited English proficient	16%	17%	-0.46	0.81
Percent first language not English	39%	38%	0.78	0.693
Teacher Population				
Number of FTE Teachers	40	38	2.24	0.369
Percent of teachers licensed in their teaching assignment	98%	99%	-1.46	0.327
Percent of core academic teachers highly qualified	96%	98%	-2.44	0.088
Student-teacher ratio	13	13	0.4	0.439
Implementation Year 3				
Student Population				
Student enrollment	543	546	-3.04	0.941
Percent low income	78%	79%	-1.63	0.476
Percent minority	64%	61%	2.93	0.136
Percent male	53%	53%	0.17	0.854
Percent special education	18%	19%	-0.31	0.768
Percent limited English proficient	17%	17%	-0.11	0.963
Percent first language not English	38%	38%	0.14	0.955
Teacher Population				
Number of FTE Teachers	41	40	1.03	0.672
Percent of teachers licensed in their teaching assignment	98%	101%	-3.04	0.08
Percent of core academic teachers highly qualified	96%	99%	-2.94*	0.05
Student-teacher ratio	13	13	0.54	0.271

Exhibit 6.1: Effect of ELT on Student and Teacher Characteristics, across Cohorts, by Implementation Year

	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	p-value
Implementation Year 4				
Student Population				
Student enrollment	550	600	-49.76	0.219
Percent low income	76%	80%	-4.09	0.205
Percent minority	64%	63%	0.89	0.727
Percent male	52%	52%	-0.91	0.385
Percent special education	20%	20%	0.08	0.955
Percent limited English proficient	17%	16%	1.02	0.742
Percent first language not English	35%	35%	0.33	0.92
Teacher Population				
Number of FTE Teachers	40	44	-4.71*	0.017
Percent of teachers licensed in their teaching assignment	98%	100%	-2.67	0.281
Percent of core academic teachers highly qualified	96%	99%	-3.48	0.129
Student-teacher ratio	14	12	1.70**	0.004

EXHIBIT READS: After the first year of ELT implementation, ELT schools had an average enrollment of 516 students, compared to an estimated 510 students in the absence of ELT. The difference was not statistically significant.

Notes:
* statistically significant at p < .05 level
** statistically significant at p < .01 level
*** statistically significant at p < .001 level

Source: School-level data tables downloaded from the MA ESE website (http://profiles.doe.mass.edu/).

Sample: Full sample of 49 schools, including 24 ELT and 25 matched comparison schools. Student population outcomes are based on data from 2001-02 to 2010-11, including 496 records. Teacher population outcomes are based on data from 2003-04 to 2010-11, including 396 records.

In the first and second years of implementation, ELT schools served a significantly greater proportion of minority students than would be expected in the absence of ELT. However, the magnitude of these differences, 3.7 and 4 percentage points, respectively, are unlikely to be practically meaningful, and the differences are not significant in the third and fourth years of implementation. There were no effects of ELT within any implementation year on the remaining characteristics of schools' student populations examined, including student enrollment, proportion of students served from low income families, proportion male, proportion receiving special education services, proportion designated as limited English proficient, and proportion whose first language was not English.

In the first and second years of implementation, there was no effect of ELT on any of the teacher population characteristics examined: number of full-time equivalent (FTE) teachers, proportion of teachers licensed in their respective teaching assignments, proportion of teachers in core academic subjects designated as highly qualified,[66] or student-teacher ratio. However, in the third year of

[66] According to the No Child Left Behind Act (NCLB), highly qualified teachers must: 1) have a bachelor's degree, 2) have full state certification or licensure, and 3) prove that they know each subject they teach. (Definition downloaded December 28, 2011, from http://www2.ed.gov/teachers/nclbguide/nclb-teachers-toolkit.pdf).

implementation, ELT schools had a statistically significantly smaller proportion (2.9 percentage points) of highly qualified core academic teachers, compared to the estimated proportion in the absence of ELT. This difference likely represents less than one highly qualified FTE teacher, on average, in schools with an average of 40 FTE teachers, and while that difference may be educationally meaningful, it should be noted that the proportion of highly qualified teachers in ELT schools was over 95 percent. There were no other significant differences in teacher population characteristics in the third year of implementation. Finally, in the fourth year of implementation, ELT schools were estimated to have a statistically significantly lower number (4.7) of FTE teachers than would be expected in the absence of ELT. In what may be a related finding, the student-teacher ratio was also statistically significantly higher (almost two more students per teacher) in ELT schools than estimated in the absence of ELT.

Student Mobility

Another way to gauge whether parents and students are revisiting any choice available of where to attend school after ELT implementation is to examine student mobility. The adoption of ELT could increase the number of students who enter schools in non-entry grades (e.g., the percentage of students entering the 7th grade in a school that serves 6th-8th grade students) or the number of students who leave ELT schools in non-exit grades (e.g., leaving the school in the 7th grade when the school spans from the 6th to 8th grade). In order to better understand these patterns, the study used student-level annual enrollment data to calculate each school's average student mobility rates in non-entry and non-exit grades for each implementation year. As described in more detail in Chapter 2, student mobility averages for ELT and matched comparison schools are compared using two-tailed independent samples t-tests that assume equal variance between samples.

Exhibit 6.2 presents the results of examining the percentage of students in non-entry grades across cohorts in the first, second, third, and fourth year of ELT implementation who had attended the same school in the prior year.to learn whether new students were entering ELT schools at differential rates relative to the matched comparison schools.[67] The results suggest that, on average across cohorts and implementation years, over 75 percent of students in non-entry grades had attended the same school in the prior year in both ELT and matched comparison schools. Student stability levels were slightly higher in matched comparison schools, though these differences were not statistically significant. The study also examined mobility in non-exit grades at ELT schools compared to matched comparison schools in each year of implementation (Exhibit 6.3).[68] Although the proportion of students in non-exit grades who left ELT schools is slightly higher relative to matched comparison schools, the difference is not statistically significant.

[67] This analysis excludes students whose prior year's grade level was not in the same school, which is the case for all entry year grades (e.g., the lowest grade served in a school) and if a school's grade configuration changed (e.g., from a 4th-5th grade school to a 3rd–5th grade school).

[68] This analysis excludes students who could not have stayed in the same school the next year (e.g., the highest grade in each school, grades for which the higher grade is not present in the following year due to changes in school grade configuration).

Exhibit 6.2: Percent of Students who Attended the Same School in the Prior Year, by Implementation Year

	Actual ELT Mean	Actual MC Mean	Statistical Significance (p-value)
Implementation Year 1	77%	79%	0.585
Implementation Year 2	75	77	0.588
Implementation Year 3	78	79	0.792
Implementation Year 4	79	81	0.566

EXHIBIT READS: After one year of ELT implementation, 77 percent of ELT students in non-entry grades attended the same school in the previous year, compared to 79 percent of students in matched comparison schools. The difference between the two groups was not statistically significant.

Notes: Students whose grade level in the previous year was not available at their current school are excluded. P-values are from two-tailed independent samples t-tests that compare school-level mobility percentages by ELT status.

* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Individual student records obtained from MA ESE.

Sample: Number of students by implementation year: 1st year: 21,635 students (10,438 ELT, 11,197 matched comparison); 2nd year: 19,286 students (9,401 ELT, 9,885 matched comparison); 3rd year: 18,572 students (9,000 ELT, 9,572 matched comparison); 4th year: 11,255 students (5,802 ELT, 5,453 matched comparison).

Exhibit 6.3: Percent of Students who Left Schools in Non-Exit Grades, by Implementation Year

	Actual ELT Mean	Actual MC Mean	Statistical Significance (p-value)
Implementation Year 1	21%	17%	0.070
Implementation Year 2	21	19	0.405
Implementation Year 3	21	20	0.510
Implementation Year 4	20	21	0.823

EXHIBIT READS: After one year of ELT implementation, 21 percent of ELT students in non-exit grades attended a different school in the following year, compared to 17 percent of students in matched comparison schools. The difference between the two groups was not statistically significant.

Notes: Students who could not have stayed in the same school the next year are excluded. P-values are from two-tailed independent samples t-tests that compare school-level mobility percentages by ELT status.

* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Individual student records obtained from MA ESE.

Sample: Number of students in non-exit grades by implementation year: 1st year: 21,276 students (10,303 ELT, 10,973 matched comparison); 2nd year: 19,160 students (9,439 ELT, 9,721 matched comparison); 3rd year: 12,513 students (6,398 ELT, 6,115 matched comparison); 4th year: 6,511 students (3,555 ELT, 2,956 matched comparison).

In sum, the results of models examining the relationship between the implementation of ELT and school characteristics and student mobility suggest that the characteristics of students and teachers after ELT implementation have remained quite stable and that student mobility is equivalent to that in matched

comparison schools. As such, these analyses provide some evidence that any observed differences found among the study's outcomes, including the MCAS results presented in the following section, are not simply due to observed changes in schools' student and teacher populations.

Student Performance Levels in ELT Schools

The remainder of this chapter explores the relationship between ELT and one of the key expected outcomes of the ELT initiative: student achievement outcomes. It begins by presenting descriptive data on students' academic achievement to illustrate patterns in performance at two points in time and between ELT and matched comparison schools using various MCAS score metrics: proficiency rates and student growth percentiles (SGP). These descriptive analyses document important patterns among ELT and matched comparison schools. While the descriptive results can provide valuable information about the contexts within which ELT and comparison schools operate, any observed differences between ELT and matched comparison schools cannot be attributed to the ELT initiative within the study's causal framework (e.g., the interrupted time series design). These descriptive analyses are then followed by results from short interrupted time series models that estimate the causal impact of ELT on MCAS scores across cohorts after one, two, three and four years of implementation, using a variety of rigorous quasi-experimental controls. Finally, the chapter concludes with an exploratory analysis linking levels of ELT implementation to MCAS scores.

Describing ELT School-level Student Achievement

Descriptive analyses first examine variation in ELT schools' student achievement. Exhibit 6.4 displays the pre-ELT average student performance level for a given grade and subject assessed on the MCAS (represented by light blue), and the 2010-11 average performance level for that grade/subject (dark purple). Note, however, that the 2010-11 averages correspond to different implementation years, ranging from three through five.

The charts in Exhibit 6.4 present raw percentages of students scoring at the proficient and advanced levels on the MCAS tests, and therefore do not reflect the rigorous statistical controls incorporated into the short interrupted time series with a comparison group models used in other analyses. Nonetheless, the charts provide a snapshot of test scores immediately prior to implementation and in the most recent school year, and can help set the stage for the rigorous impact models discussed below.

Exhibit 6.4 illustrates two important features:

- There is variation across schools in the percentage of students scoring at the proficient and advanced levels both in the pre-implementation and 2010-11 school years.
- There is variation across schools in the change between the percent of proficient and advanced students between the pre-implementation year and the 2010-11 school year.

Exhibit 6.4: Panel 1: ELT Schools' Student Performance Levels, for Last Pre-ELT Year and 2010-11, Elementary Grades

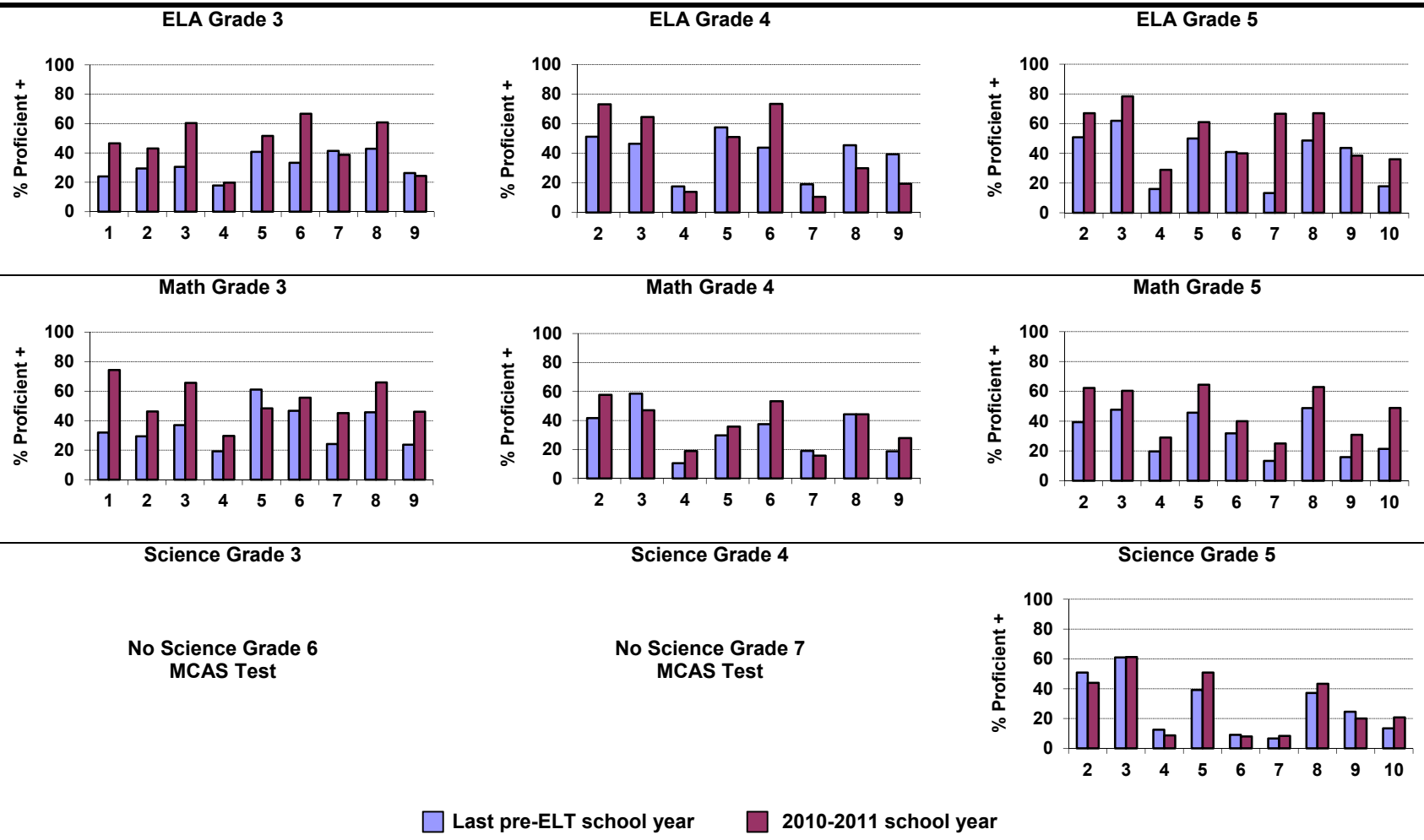


EXHIBIT READS: In the last year prior to ELT implementation, 24 percent of 3rd grade students in School 1 scored proficient or advanced on the ELA portion of the MCAS test. In spring 2011, 47 percent of 3rd grade students in School 1 scored proficient or advanced on their ELA test.

Notes: The first bar in each pair indicates the percentage of students proficient or advanced on the MCAS test for the given outcome in the last year prior to ELT implementation for schools; the second bar indicates the percent proficient or advanced in the 2010-11 school year. Schools missing data in 2011 or in the year prior to implementation are excluded from the charts. School numbers identify the same school across charts.

Source: Individual student records obtained from MA ESE.

Exhibit 6.4: Panel 2: ELT Schools' Student Performance Levels, for Last Pre-ELT Year and 2010-11, Middle School Grades

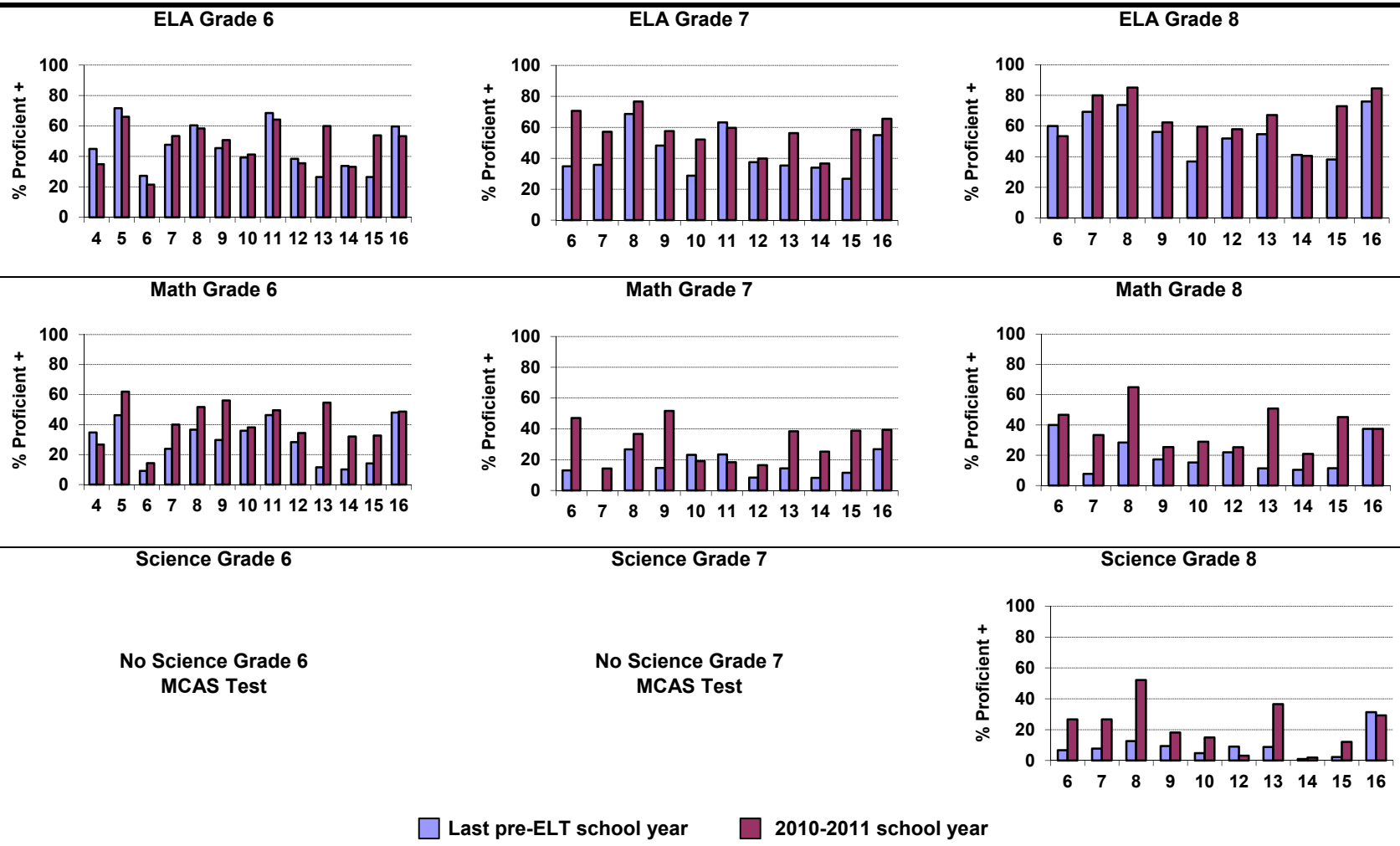


EXHIBIT READS: In the last year prior to ELT implementation, 45 percent of 6th grade students in School 4 scored proficient or advanced on the ELA portion of the MCAS test. In spring 2011, 35 percent of 6th grade students in School 4 scored proficient or advanced on their ELA test.

Note: The first bar in each pair indicates the percentage of students proficient or advanced on the MCAS test for the given outcome in the last year prior to ELT implementation for schools; the second bar indicates the percent proficient or advanced in the 2010-11 school year. Schools missing data in 2011 or in the year prior to implementation are excluded from the charts. School numbers identify the same school across charts.

Source: Individual student records obtained from MA ESE.

The percentage of proficient and advanced students varies considerably across schools, illustrating no clear pattern in performance levels at either time point represented. Furthermore, there is variation across schools in the *change* between the two time points; some schools have substantially increased the percentage of their students reaching the proficient or advanced performance levels, some schools have seen little change in the percentage of their students reaching the proficient or advanced performance levels, and in some schools the percentage of students reaching the proficient or advanced performance levels has decreased when comparing the pre-implementation year and 2010-11 school year.

To present a different perspective on these results, Exhibit 6.5 displays the proficiency data by school, rather than by MCAS test. Panel 1 includes information on the elementary schools, Panel 2 on K-8 schools, and Panel 3 on middle schools. These charts suggest that there was an increase in the percentage of proficient or advanced students between time points on the majority of MCAS tests.

Exhibit 6.5: Panel 1: Individual ELT Schools, Percent of Students Scoring Proficient or Advanced on MCAS Tests by Subject and Grade, Last Year Prior to ELT Implementation and 2010-11, Elementary Schools

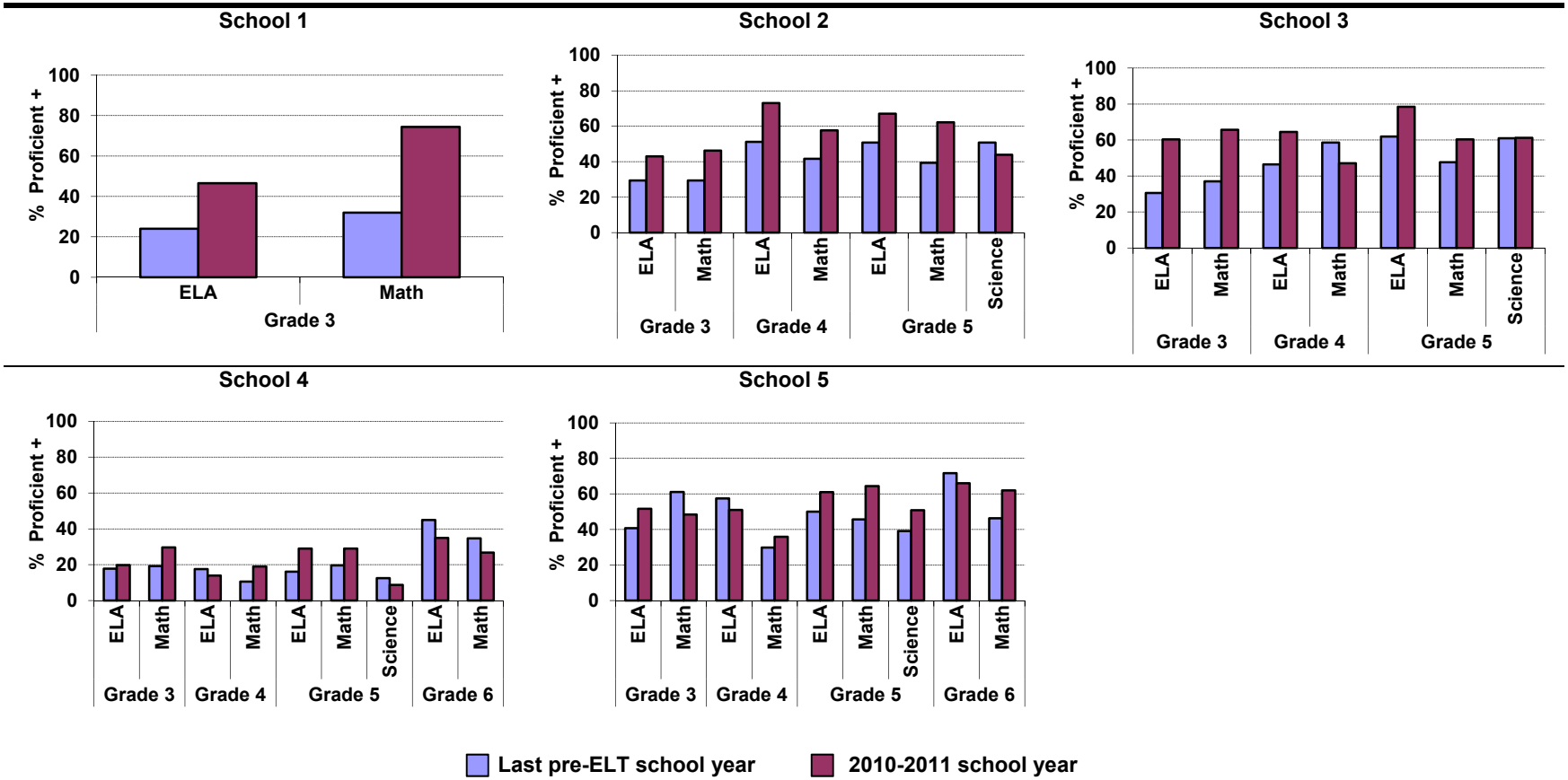


EXHIBIT READS: In the last year prior to ELT implementation, 24 percent of 3rd grade students in School 1 scored proficient or advanced on the ELA portion of the MCAS test. In spring 2011, 47 percent of 3rd grade students in School 1 scored proficient or advanced on their ELA test.

Note: The first column in each set represents the last year prior to ELT implementation, and the second column the 2010-11 (most recently completed) school year.

Source: Individual student records obtained from MA ESE.

Exhibit 6.5: Panel 2: Individual ELT Schools, Percent of Students Scoring Proficient or Advanced on MCAS Tests by Subject and Grade, Last Year Prior to ELT Implementation and 2010-11, K-8 Schools

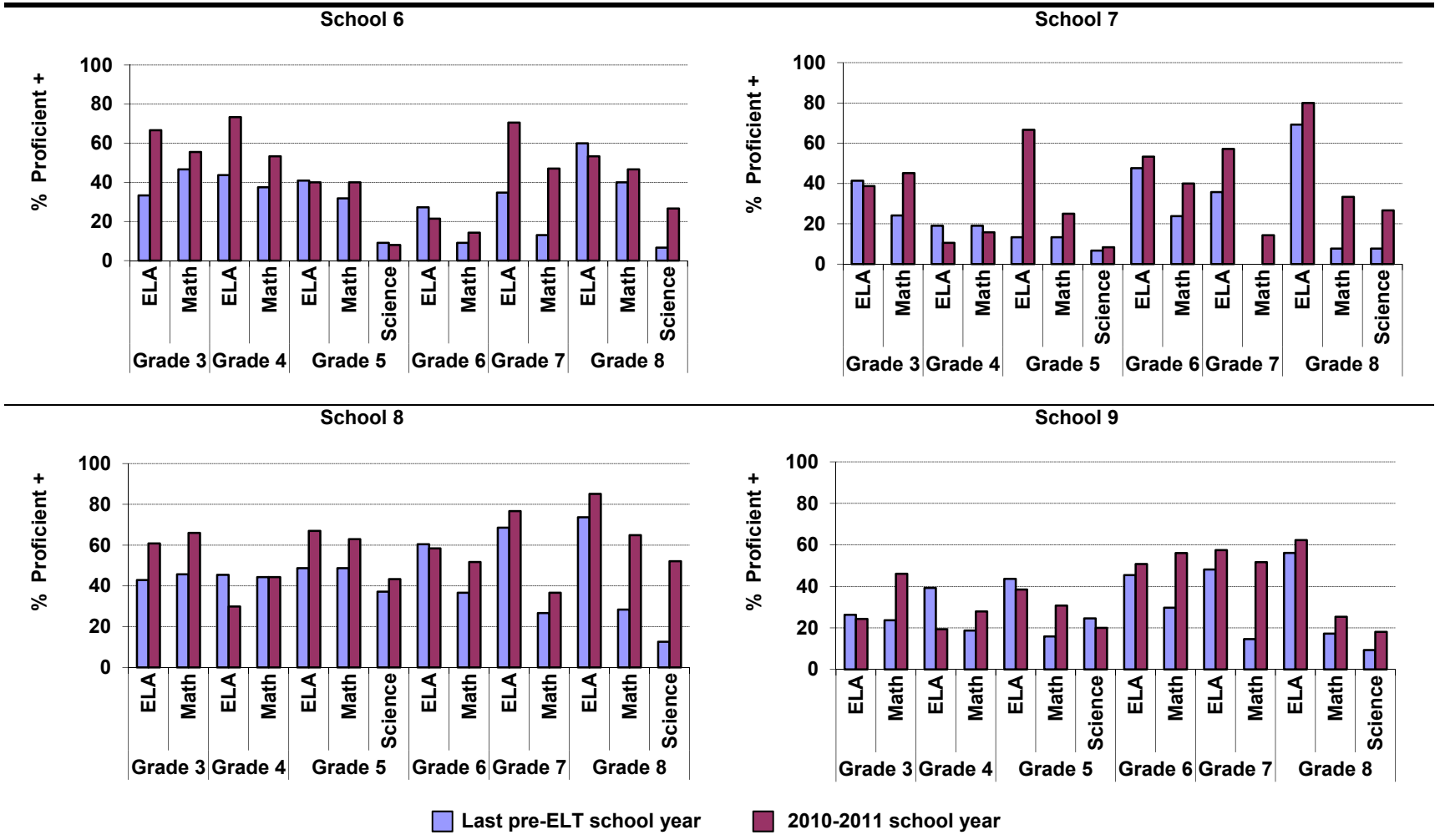


EXHIBIT READS: In the last year prior to ELT implementation, 33 percent of 3rd grade students in School 6 scored proficient or advanced on the ELA portion of the MCAS test. In spring 2011, 67 percent of 3rd grade students in School 6 scored proficient or advanced on their ELA test.

Note: The first column in each set represents the last year prior to ELT implementation, and the second column the 2010-11 (most recently completed) school year.

Source: Individual student records obtained from MA ESE

Exhibit 6.5: Panel 3: Individual ELT Schools, Percent of Students Scoring Proficient or Advanced on MCAS tests by Subject and Grade, Last Year Prior to ELT Implementation and 2010-11, Middle Schools

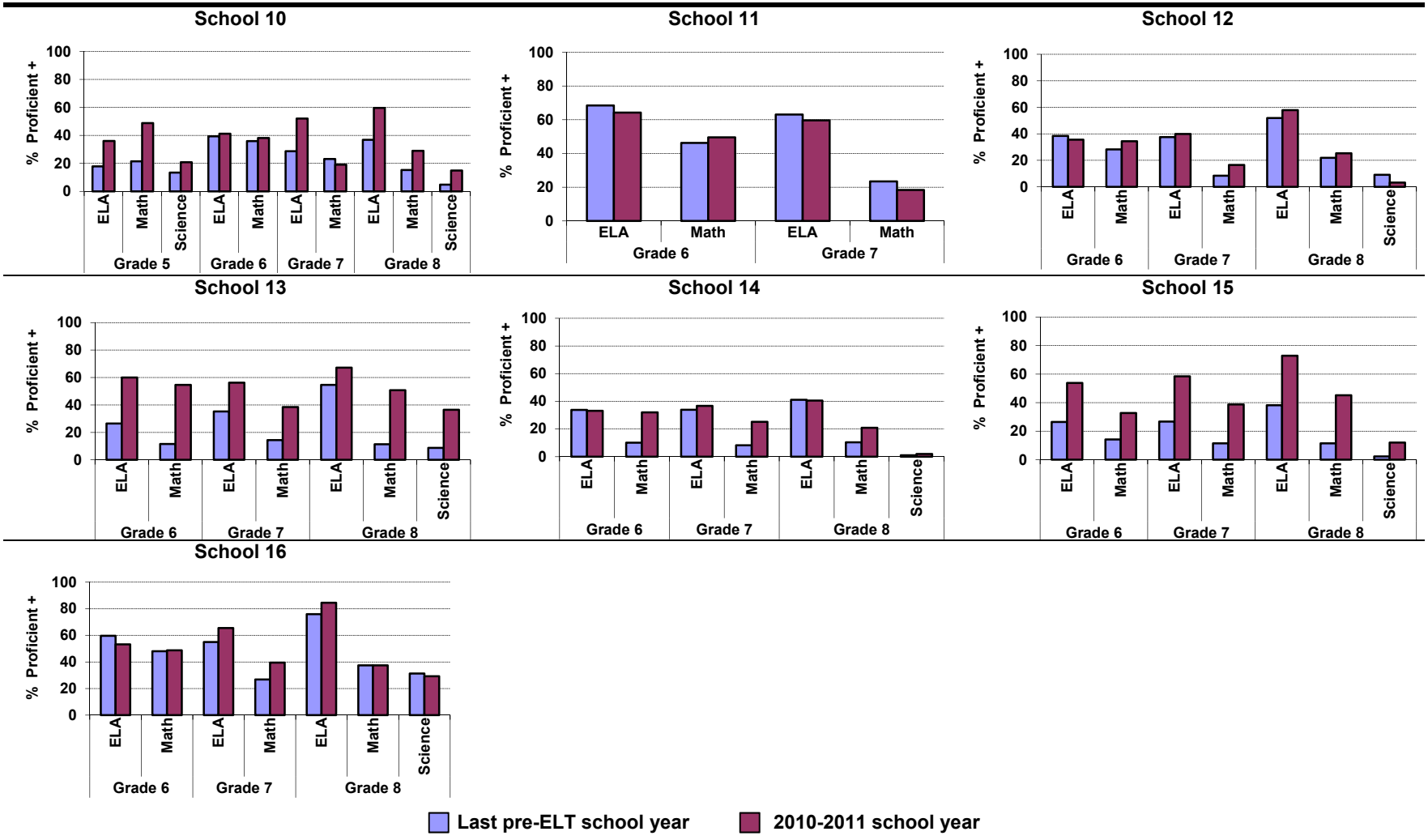


EXHIBIT READS: In the last year prior to ELT implementation, 18 percent of 5th grade students in School 10 scored proficient or advanced on the ELA portion of the MCAS test. In spring 2011, 36 percent of 5th grade students in School 10 scored proficient or advanced on their ELA test.

Note: The first column in each set represents the last year prior to ELT implementation, and the second column the 2010-11 (most recently completed) school year.

Source: Individual student records obtained from MA ESE.

Alternative MCAS Metrics: Student Growth Percentiles for ELT and Matched Comparison Schools

Starting in 2008, Massachusetts began assessing student achievement outcomes using student growth percentiles (SGPs). This alternative achievement metric represents school-level median growth in students' performance from one year to the next on those MCAS tests administered in consecutive school years. Given this metric's potential for providing additional important context for the study, this section presents median student growth percentiles comparing achievement in ELT and matched comparison schools.

Unlike performance levels, which indicate how a student scored relative to state grade-level standards in the year of the test, student growth percentiles quantify how much each student improved over her/his past performance, relative to other students with a similar test score history (known as the student's "academic peers"). In this way, regardless of any individual student's performance level on the MCAS in a given year, all students have the opportunity to display growth anywhere from the 1st to 99th percentile in a subsequent year. For example, an individual student with an SGP of 55 represents improved performance that is more than 55 and less than 45 percent of that student's academic peers, regardless of that student's actual performance level.

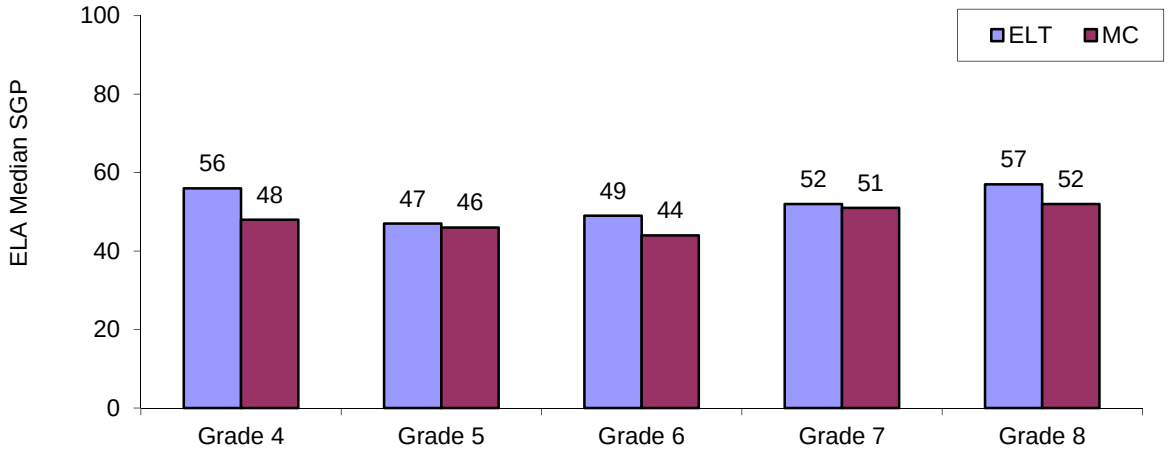
When considering comparisons between groups, such as ELT and matched comparison schools, or between individual schools, the basis for comparison for each group is the median SGP, that is, the level of SGP at which half of the individual students in the given group have a higher, and half have a lower SGP. A median SGP for any particular group is always interpreted the same way: if the group has a median SGP above 50, then that group of students, on average, improved in performance more than their academic peers. A key point in such comparisons is that the reference group is always students' academic peers. "Typical" growth, for individual students and groups, is between the 40th and 60th percentiles, with values outside that range are considered higher or lower than typical growth. Differences (between individual students or median SGPs for groups) of fewer than 10 SGP points are considered unlikely to be educationally meaningful.

Student growth percentiles are a useful tool for understanding student academic progress, yet one must be cautious about attributing apparent differences in SGPs between ELT and matched comparison schools to ELT. First, SGPs are only available in the post-ELT period (i.e., 2008 to 2011) and, therefore, may not reflect inherent differences between the ELT and matched comparison schools. Second, while SGPs represent changes from the previous year, they may not reflect change from the pre-ELT to post-ELT periods or during the post-ELT period. Finally, the reference groups used to create the percentiles are not explicitly known to the evaluation team, and are likely not similar to the study comparison group for which a rigorous matching process determined adequate comparisons for ELT schools.

Exhibit 6.6 presents median SGPs for ELT and matched comparison schools for ELA (Panel 1) and Math (Panel 2) for grades 4 through 8. On average, ELT schools had higher median SGPs than their matched comparison schools on all 2011 MCAS tests in each grade tested.

Exhibit 6.6: ELT and Matched Comparison Median Student Growth by Grade, 2010-11

Panel 1: ELA



Panel 2: Math

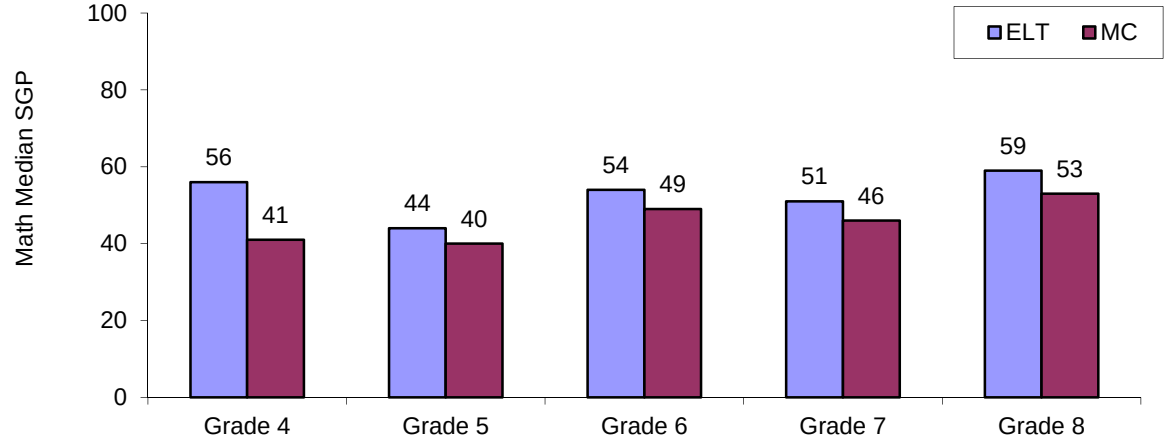


EXHIBIT READS: In spring 2011, the median student growth percentile on the 4th grade ELA portion of the MCAS test was 56 across all ELT schools, and 48 across all matched comparison schools.

Source: Individual student records obtained from MA ESE.

Sample: Current ELT schools as of the 2010-11 school year and their matched comparison schools.

Some differences between median SGPs for ELT and matched comparison schools appeared large, and therefore the study conducted exploratory analyses to investigate whether these differences were statistically significant. These cross-sectional analyses used data from the 2010-11 school year, control for the matched comparison design of the study, and account for clustering of students within schools. Exhibit 6.7 presents the mean differences between ELT and matched comparison schools in terms of 2011 student growth percentiles (SGP); two of the ten outcomes tested are statistically different: grade 8 ELA and grade 4 math.

The results from these exploratory analyses should be interpreted with caution, as they are based on cross-sectional date (2011 MCAS scores only), and cannot therefore benefit from the strength of models that leverage pre-ELT data to control for observable and unobservable, stable characteristics of schools, and data from matched comparison schools to control for year to year variation in outcomes. It is possible that over time, one could use SGPs in more robust models, though for this study, there are no SGP data available for pre-ELT years. The results are suggestive of potentially meaningful differences in terms of student growth between ELT and matched comparison schools in 2011.

Exhibit 6.7: Difference between ELT and Matched Comparison Schools in Student Growth by Subject and Grade, 2010-11

	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
ELA				
Grade 4	55	51	4.310	0.088
Grade 5	48	48	0.082	0.972
Grade 6	49	46	2.980	0.190
Grade 7	52	51	1.124	0.669
Grade 8	55	49	5.588	0.026*
Math				
Grade 4	54	45	8.712	0.002**
Grade 5	46	43	2.901	0.245
Grade 6	53	49	4.420	0.139
Grade 7	50	50	-0.285	0.903
Grade 8	56	52	3.735	0.127

EXHIBIT READS: The estimated difference between the average student growth percentile of grade 4 students in ELT schools and matched comparison schools is 4.31 percentile points. The difference is not statistically significant.

Notes: Statistical tests comparing means include dummy variables indicating which matched pair groupings and account for the fact that students are clustered within schools.

* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Individual student records obtained from MA ESE.

Sample: Current ELT schools as of the 2010-11 school year and their matched comparison schools.

Alternative MCAS Metrics: Student Growth Percentiles for Study Schools Relative to All Schools in the State

Exhibits 6.8 and 6.9 display ELT and matched comparison school SGPs relative to other schools in the state. Unlike Exhibit 6.6, which presents median SGPs for ELT and matched comparison schools, Exhibits 6.7 and 6.8 show the full distribution of the percentiles and compare the study schools' distributions to those *statewide*. Exhibit 6.8 presents the SGP distributions broken into five groups of growth (very low, low, moderate, high, and very high). MA ESE developed these growth categories such that statewide, each group contains 20 percent of all students. The "very low" category indicates students below the 20th percentile for student growth, "low" indicates students between the 20th to 40th percentile, "moderate" indicates students between the 40th to 60th percentile, "high" indicates students between the 60th to 80th percentile, and "very high" indicates students at or above the 80th percentile in student growth.

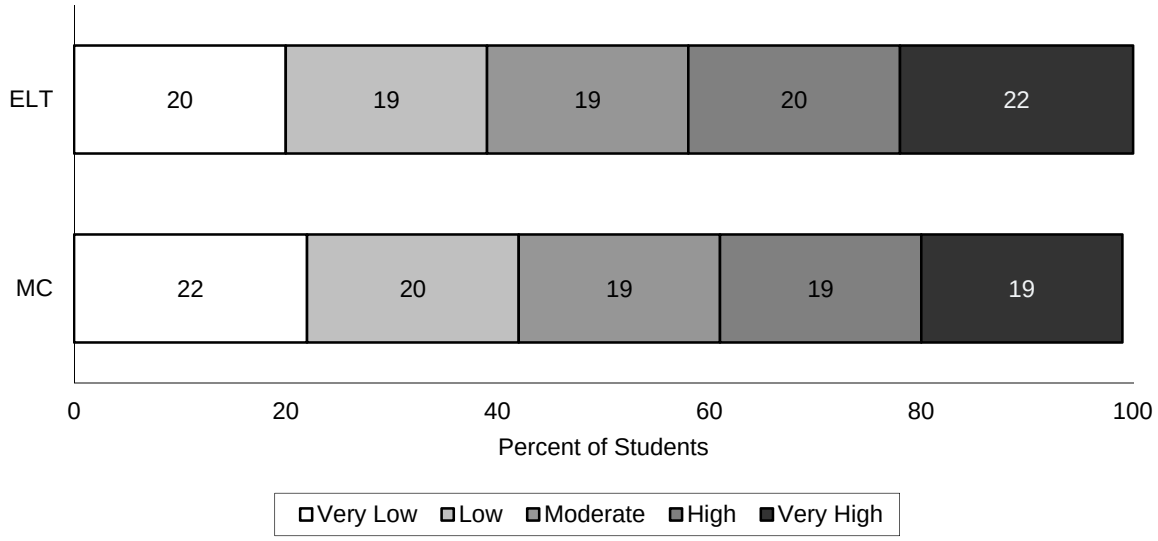
Exhibit 6.8 displays the percentage of students in ELT and matched comparison schools that fall into each of the growth categories for the 2010-11 school year (and comparing growth against data from 2009-10 and 2010-11).[69] The graphs illustrate that the SGP distributions for the study sample—both ELT and matched comparison schools—were similar to the statewide distributions in both ELA (Panel 1) and math (Panel 2). For example, on the 2011 ELA portion of the MCAS, 22 percent of students in ELT schools had a SGP that was greater than the 80th percentile (meaning these students scored higher than 80 percent of their peers), while 19 percent of students in matched comparison schools achieved SGPs that were above the 80th percentile. To compare these to the statewide results, recall that, by design, 20 percent of students statewide had a SGP that was greater than the 80th percentile. Comparing ELT and matched comparison schools, the exhibit suggests that the main difference between groups appears for math (Panel 2), where 38 percent of students in ELT schools fall into the very low and low categories while 44 percent of students in matched comparison schools have student growth percentiles in the very low and low categories. Together, examining the full distribution of the SGPs reveals that differences between ELT and matched comparison schools may be smaller than suggested when looking solely at a small portion of the distribution, such as the median scores presented in Exhibit 6.6.

Exhibit 6.9 collapses the five categories presented above (very low, low, moderate, high, and very high) into three, corresponding to high (SGP greater than 60th percentile), middle (SGP between the 40th and 60th percentiles), and low (SGP below the 40th percentile) median student growth percentiles, and presents data for four consecutive school years. These descriptive results illustrate that the study schools—both ELT and matched comparison schools—are clustered in the middle category, again consistent with the findings presented above. However, due to the limitations of the metric noted previously in this section, including limited data availability and the method of calculating the scores, these analyses cannot take into account the statistical controls reflected in the more robust impact analyses presented in the next section.

[69] See http://www.doe.mass.edu/mcas/growth/InterpretiveGuide.pdf for additional information.

Exhibit 6.8: Student Growth Percentile Distributions in ELT and Matched Comparison Schools, 2010-11

Panel 1: ELA



Panel 2: Math

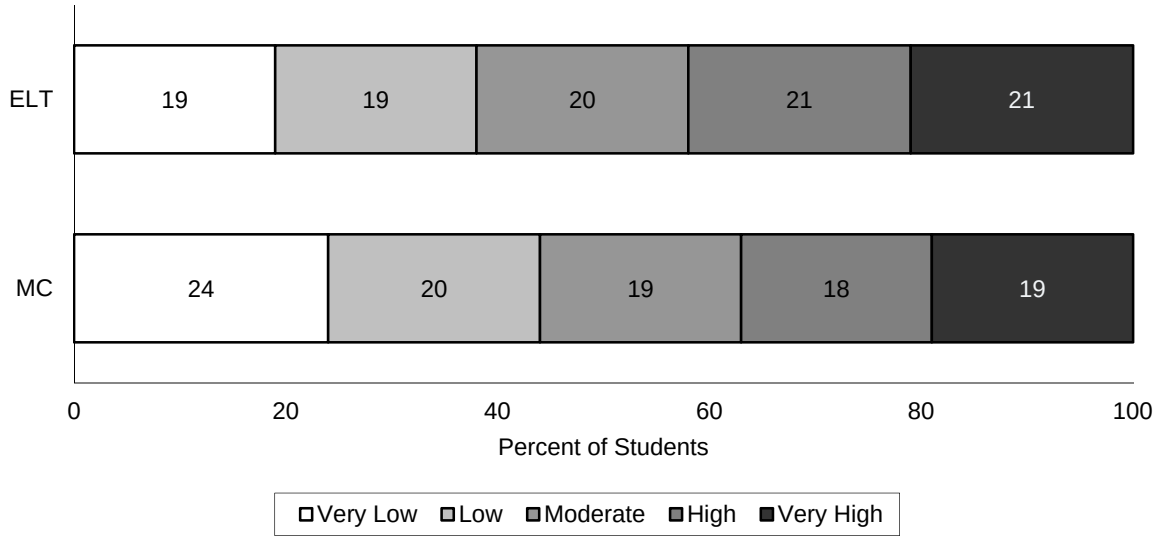


EXHIBIT READS: In spring 2011, 20 percent of ELT students and 22 percent of matched comparison students had ELA student growth percentiles that were below the 20th percentile on the ELA portion of the MCAS.

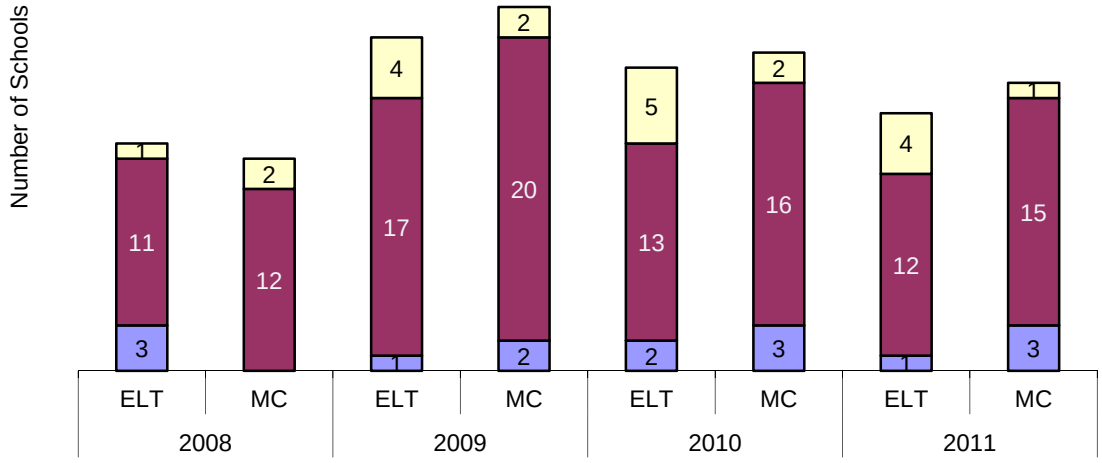
Note: The "very low" category indicates students below the 20th percentile for student growth, "low" indicates students between the 20th to 40th percentile, "moderate" indicates students between the 40th to 60th percentile, "high" indicates students between the 60th to 80th percentile, and "very high" indicates students at or above the 80th percentile in student growth.

Source: Individual student records obtained from MA ESE

Sample: Current ELT schools as of the 2010-11 school year and their matched comparison schools.

Exhibit 6.9: Number of ELT and Matched Comparison Schools with High, Middle, and Low Median Student Growth Percentiles, 2008-11

Panel 1: ELA



Panel 2: Math

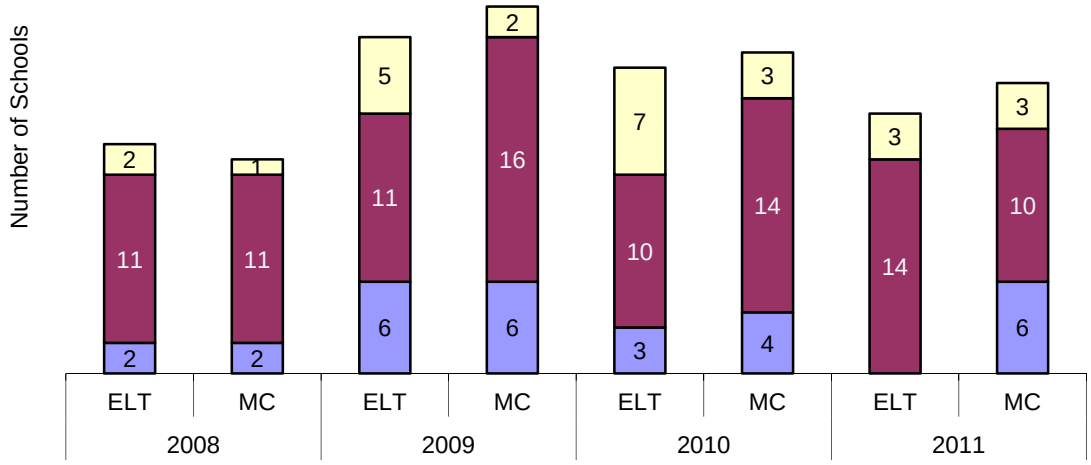


EXHIBIT READS: In 2008 for ELA, 3 ELT schools had a low median student growth percentile (SGP), 11 had a mid-range median SGP, and 1 had a high median SGP. There were no matched comparison schools with a low median SGP, 12 with a mid-range median SGP, and 2 with a high median SGP.

Note: By design, the overall state median student growth percentile is 50, in all years and subjects.

Source: School-level data tables downloaded from the MA ESE website (http://profiles.doe.mass.edu/)

Sample: Current ELT schools as of the 2010-11 school year, and their matched comparison schools. Data for 2008 only includes cohorts 1 and 2 of ELT and matched comparison schools.

Effect of ELT on MCAS Scores

Descriptive analyses presented above indicate substantial variation in the pre- and post-ELT MCAS scores for ELT schools. In addition, there was considerable variation in the *change* between pre- and post-ELT MCAS scores among both groups of schools. However, these analyses omitted statistical controls important for identifying any impact of ELT on achievement outcomes. As such, the following section presents estimated effects of ELT on MCAS scores across cohorts after one, two, three and four years of implementation (Exhibit 6.10). Recall that these models compare data from ELT and matched comparison schools prior to and after the implementation of ELT, and the models use student-level covariates and school and year fixed effects to control for a number of plausible alternative explanations for the estimated effects. The effect of ELT is modeled using five variables: (1) whether the outcome is from an ELT school in its first year of implementation (and is coded zero otherwise); (2) whether the outcome is from an ELT school in its second year of implementation; (3) whether the outcome is from an ELT school in the third year of implementation; (4) whether the outcome is from an ELT school in its fourth year of implementation; and (5) whether the outcome is from an ELT school in the fifth year of implementation. These variables provide separate estimates of the effects of ELT across cohorts during their first, second, third, fourth, and fifth year of implementation over and above any changes in the outcomes. Further, the models appropriately account for clustering of students in schools using the cluster-robust variance estimator (also known as the "sandwich" standard errors; White, 1984 and Liang and Zeger, 1986).

For ease of interpretation and analysis, the impact estimates are presented as z-scores, which can be interpreted as the student's score relative to the statewide average. That is, the z-score is calculated by subtracting the average MCAS raw score for all the students in that grade and year in the state from the student's raw MCAS score, and dividing by the standard deviation in that grade and year. Therefore, a student who scored at the average in the state for that year would have a z-score of zero. A positive score would indicate that the student scored above the state average, and a negative score that the student scored below the statewide average. Using z-scores as the metric allows for the estimated effect of ELT to be interpreted as an effect size, or a proportion of a standard deviation.

Exhibit 6.10 displays the estimated effect of ELT on MCAS scores after one, two, three, and four years of ELT implementation. The y-axes indicate the size of the effect of ELT expressed in effect sizes, or standard deviation units. Therefore, bars that appear above the line labeled "0" indicate positive effects of ELT, indicating that ELT students scored higher than estimates of how they would have performed in the absence of ELT on those tests. Bars that appear below the line indicate negative effects of ELT, such that the scores for ELT students are lower than estimates of how these students would have performed in the absence of ELT. Results are presented by grade, as seen across the x-axes. The light blue bars correspond to ELA scores, the purple bars correspond to math scores, and the yellow bars indicate science scores.

The charts indicate that there was only one case in which ELT had a significant impact on MCAS scores. After four years of implementation (in Panel 4 of Exhibit 6.10), students in ELT schools perform significantly higher in grade 5 science than would be estimated in the absence of ELT. Specifically, the effect size indicates that students in ELT schools are estimated to score .28 standard deviations (or approximately 2.7 points) higher on the 5th grade science MCAS test than they would have in the absence of ELT.[70] Yet, because the analysis tests hypotheses about eight outcomes over four separate years of ELT implementation, it is likely that at least one effect would appear statistically significant solely due to

[70] The 2010-11 statewide science grade 5 mean was 36.21 and the statewide standard deviation was 9.66.

chance.[71] There were no statistically significant impacts of ELT on ELA and math or in grade 8 science scores across any of the first four years of ELT implementation (see Appendix F for more detail on findings after five years of implementation).

Some of the effect sizes presented in Exhibit 6.10 seem to become more positive over time. To explore whether cumulative changes over time were systematically related to ELT status, the study team estimated an alternative specification that models the ELT effect as an immediate jump (or fall) following the program's implementation in a school and a linear annual change thereafter in the difference between the test scores of the ELT school and its matched comparison school. Note that this alternative specification can be regarded as more restrictive than the primary analytic model specification, as it assumes the annual change in the ELT effect is constant. The resulting estimates indicate there is no statistically significant trend in the impacts of ELT over time for any of the eight outcomes tested.

Finally, it should be noted that in addition to the academic outcome models described above, Appendix F includes a number of specification and sensitivity models that test whether the results of the student achievement analysis would have differed had different analytic decisions been made. The specific scenarios tested include the following:

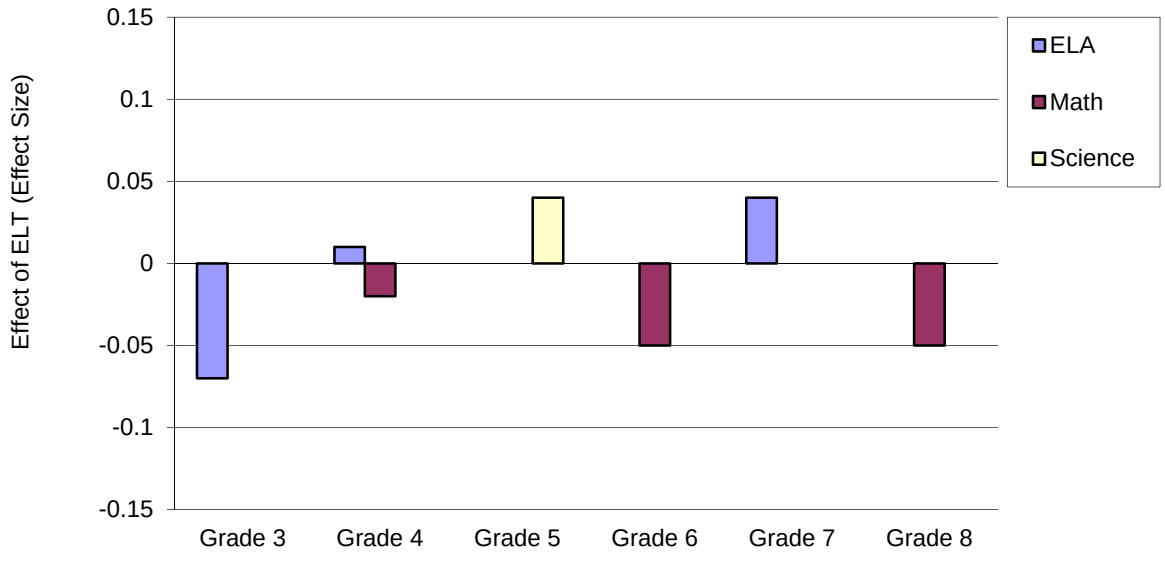
- Tests using an alternative specification of the model, which included pre-ELT implementation group trends (ELT versus matched comparison) in student performance;
- A test that included all ELT schools in all implementation years, rather than excluding schools from the analyses after they exited the sample; and
- Tests reducing the sample to only five and only three years of pre-ELT implementation data for each cohort, using both the primary model and the alternative specification with pre-ELT group trends.

Results, of these alternative specification models, however, do not change the conclusions drawn from the primary analytic model that finds no significant effect of ELT on the majority of the MCAS outcomes tested.

[71] Statistically, one in twenty (representing 5 percent) of the effects is likely to appear statistically significant due to chance when conducting hypothesis testing with the 5 percent critical significance value. In the case of the effect of ELT on MCAS scores, the study tested 32 ELT effects (8 outcomes x 4 years of ELT implementation = 32 potential ELT effects) and, thus, would expect to find between one and two incorrectly identified significant effects.

Exhibit 6.10: Effect of ELT on MCAS Subject/Grade Tests across Cohorts, by Implementation Year

Panel 1: Effect of ELT on MCAS Scores after One Year of Implementation



Panel 2: Effect of ELT on MCAS Scores after Two Years of Implementation

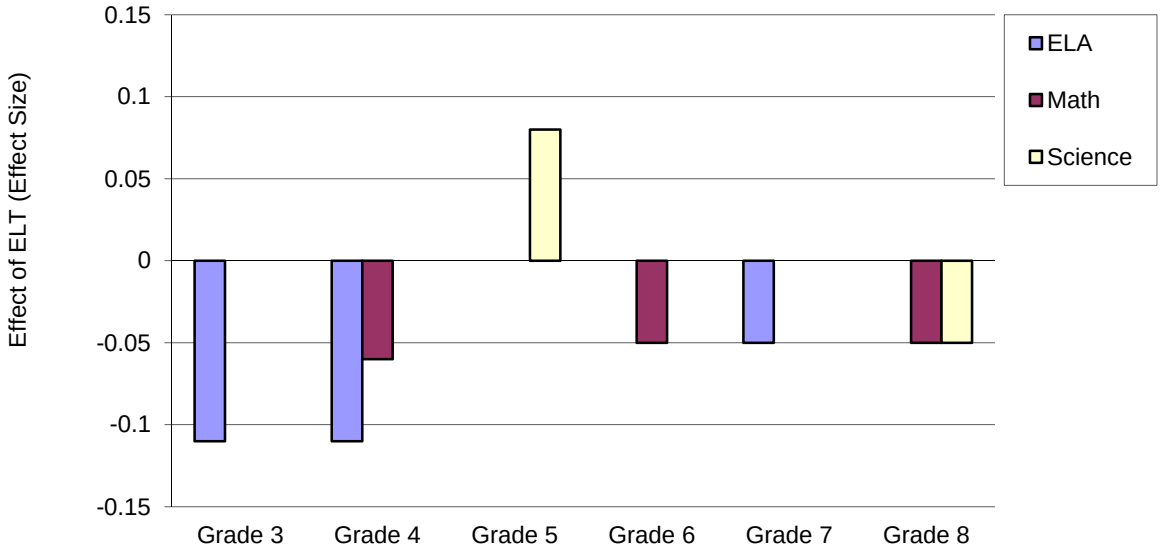
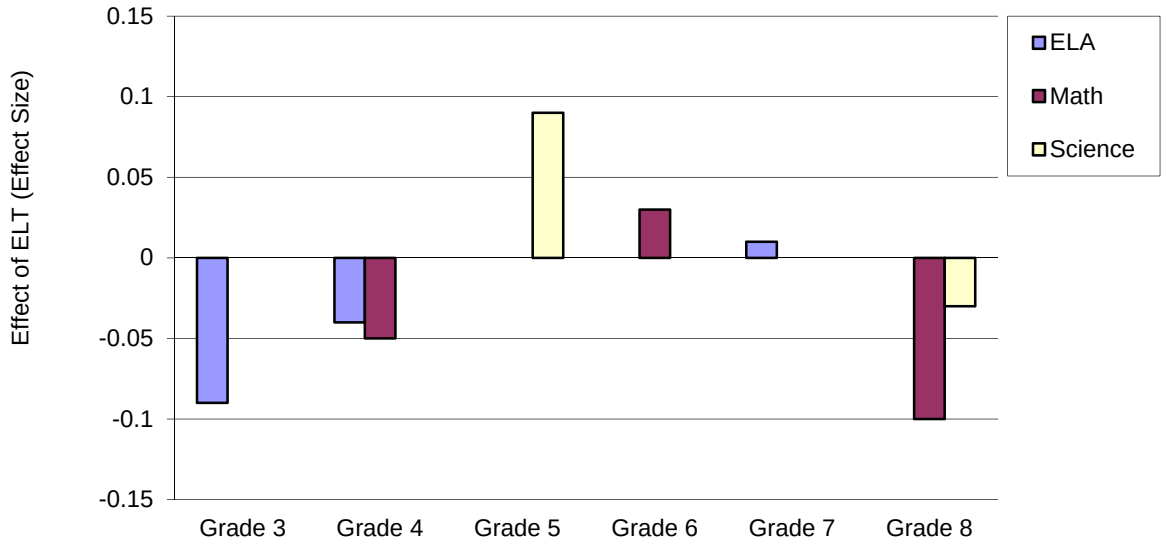


Exhibit 6.10: Effect of ELT on MCAS Subject/Grade Tests across Cohorts, by Implementation Year

Panel 3: Effect of ELT on MCAS Scores after Three Years of Implementation



Panel 4: Effect of ELT on MCAS Scores after Four Years of Implementation

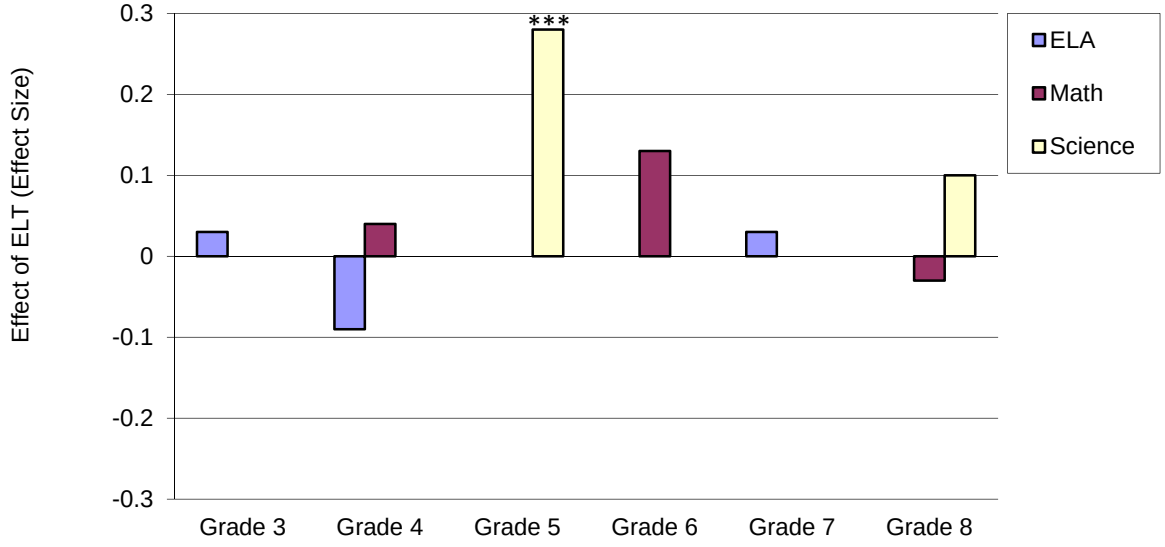


EXHIBIT READS: After the first year of ELT implementation, students in ELT schools, on average, score 0.07 standard deviations below what they were predicted to score in the absence of ELT on the 3rd grade ELA portion of the MCAS test. This difference was not statistically significant.

Note: Full tables of these findings are presented appendix table F.3. Results are not shown for 8th grade science after one year because the estimated difference was 0.00.

* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Individual student records obtained from MA ESE.

Sample: Student MCAS records from ELT and matched comparison schools from 2001-2002 to 2010-2011. The sample sizes vary by cohort, implementation year, subject, and grade. The minimum number of schools is 29 and the maximum number of schools is 38. The minimum number of test records is 17,293 and the maximum number of test records is 39,242.

ELT Schools in Context: Comparisons to Other Schools in the District and State

The analyses presented above indicate that there is a significant effect of ELT on 5th grade science scores, but that other effects are not significant. A logical follow-on question is how the *study sample* fares relative to other types of schools—those in the host districts and those across the state as a whole. It should be noted, however, that although these alternative comparison groups are intuitively attractive, any comparisons must be approached with caution, as they are less able to control fully for factors that could bias the ELT impact estimates. That is, if another program systematically affected student achievement in the ELT schools differently than it affected other schools in the district or state, these models would misattribute this effect (positive or negative) to the ELT program. As a result, although comparisons to schools in ELT host districts and the state may identify significant differences between the study schools and other groups of schools, such comparisons are less rigorously able to attribute those differences solely to ELT implementation.

The results of comparing ELT schools to other schools in the host districts and to other schools in the state are presented in Exhibit 6.11. The underlying models are identical to those reflected in Exhibit 6.10 that use matched comparison schools, and that leverage pre-ELT data to control for observable and unobservable, stable characteristics of schools. These results indicate a few statistically significant differences that are consistent across these two new comparison groups. Comparing the ELT schools to all schools in the host districts as well as to all schools in the state, after two years of implementation, 3rd grade students in ELT schools scored significantly lower on the ELA MCAS test. However after four years of implementation, 6th grade students in ELT schools scored significantly higher on the math MCAS test, and 5th and 8th grade students scored significantly higher on the science MCAS tests. Additionally, after one year of implementation, 7th grade students scored significantly higher on the ELA test than students in non-ELT schools across the state, and after three years of implementation, 6th grade students in ELT schools scored significantly higher on the math test than students in non-ELT schools across the state. No other differences were statistically significant; thus any insignificant positive (or negative) coefficients were indistinguishable from zero.

Exhibit 6.11: Effect of ELT on MCAS Subject/Grade Tests across Cohorts, by Implementation Year, Using Alternative Samples of Comparison Schools

	MC Sample		Host District Sample		State Sample	
	Estimated Difference	Statistical Significance (p-value)	Estimated Difference	Statistical Significance (p-value)	Estimated Difference	Statistical Significance (p-value)
Implementation Year 1						
Reading/ELA						
Grade 3	-0.07	0.542	-0.09	0.173	-0.08	0.209
Grade 4	0.01	0.918	0.03	0.543	0.05	0.319
Grade 7	0.04	0.559	0.09	0.092	0.09*	0.048
Math						
Grade 4	-0.02	0.808	-0.01	0.863	0.02	0.743
Grade 6	-0.05	0.396	0.05	0.471	0.09	0.152
Grade 8	-0.05	0.350	-0.05	0.420	-0.04	0.559
Science						
Grade 5	0.04	0.503	0.00	0.996	-0.01	0.815
Grade 8	-0.00	0.986	0.03	0.562	0.01	0.721
Implementation Year 2						
Reading/ELA						
Grade 3	-0.11	0.321	-0.18**	0.006	-0.15*	0.011
Grade 4	-0.11	0.211	-0.11	0.116	-0.08	0.243
Grade 7	-0.05	0.565	-0.01	0.927	0.03	0.656
Math						
Grade 4	-0.06	0.405	-0.04	0.363	0.00	0.974
Grade 6	-0.05	0.355	0.01	0.811	0.07	0.069
Grade 8	-0.05	0.548	-0.04	0.695	0.02	0.787
Science						
Grade 5	0.08	0.263	0.00	0.995	0.00	0.953
Grade 8	-0.05	0.441	-0.03	0.682	-0.07	0.293
Implementation Year 3						
Reading/ELA						
Grade 3	-0.09	0.317	-0.15	0.020	-0.10	0.107
Grade 4	-0.04	0.703	-0.08	0.442	-0.02	0.858
Grade 7	0.01	0.940	0.05	0.541	0.10	0.108
Math						
Grade 4	-0.05	0.526	-0.03	0.553	0.01	0.781
Grade 6	0.03	0.741	0.07	0.319	0.14*	0.034
Grade 8	-0.10	0.499	0.00	0.986	0.07	0.607
Science						
Grade 5	0.09	0.224	-0.05	0.324	-0.02	0.629
Grade 8	-0.03	0.751	0.06	0.514	0.05	0.598

Exhibit 6.11: Effect of ELT on MCAS Subject/Grade Tests across Cohorts, by Implementation Year, Using Alternative Samples of Comparison Schools

	MC Sample		Host District Sample		State Sample	
	Estimated Difference	Statistical Significance (p-value)	Estimated Difference	Statistical Significance (p-value)	Estimated Difference	Statistical Significance (p-value)
Implementation Year 4						
Reading/ELA						
Grade 3	0.03	0.811	-0.06	0.425	0.00	0.975
Grade 4	-0.09	0.614	-0.09	0.597	0.00	0.991
Grade 7	0.03	0.803	0.12	0.252	0.18	0.051
Math						
Grade 4	0.04	0.708	0.05	0.555	0.12	0.111
Grade 6	0.13	0.105	0.17**	0.008	0.29***	0.000
Grade 8	-0.03	0.867	0.10	0.544	0.23	0.132
Science						
Grade 5	0.28***	<0.001	0.14**	0.004	0.18***	0.000
Grade 8	0.10	0.324	0.19*	0.025	0.18*	0.011

EXHIBIT READS: In the first year of ELT implementation, the estimated effect of ELT on 3rd grade ELA scores when using the matched comparison schools chosen for the study as the comparison group was -0.07 standard deviations, which was not statistically significant. Using instead all other schools in ELT host districts or all non-ELT schools statewide as comparison groups, the estimated effects were -0.08 and -0.09 standard deviations respectively, neither of which were statistically significant.

Note:

* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Individual student records obtained from MA ESE.

Sample: Student MCAS records from all schools in state from 2001-2002 to 2010-2011. The sample sizes vary by the group of comparison schools.

Exploring the Relationship between Implementation and Achievement

The level of ELT implementation is another component of the initiative important to consider in relation to academic achievement outcomes. Specifically, one might hypothesize that those ELT schools that have more fully implemented ELT components (e.g., time for enrichment, opportunities for teacher collaborative planning) may have MCAS test scores that reflect such implementation. To address this possibility, the study conducted exploratory analyses of the relationship between student achievement and levels of implementation to begin to address the question about whether variation in implementation might help explain variation in student achievement. The first set of analyses explores the link between implementation fidelity and student achievement descriptively by plotting scores on the implementation index against proficiency scores for each grade and subject combination (see Exhibit 6.12). The second set of analyses investigates the relationship between implementation fidelity and ELT impacts using the short interrupted time series with comparison group design used in the previous section (see Exhibit 6.13).

It is important to note that these results are exploratory, as although the implementation index (discussed in greater detail in Chapter 3) developed for this study addresses the types of activities ELT schools

engaged in and the amount of time ELT schools spent on various activities, it does not measure the quality of ELT activities. Further, it is important to note that schools may well choose to implement ELT (and/or other initiatives) in ways that are also related to student achievement. If, for example, higher implementing schools also had high levels of parental involvement at the onset of the study period and higher levels of parental involvement translates into improved student achievement, one could erroneously attribute any relationship between implementation fidelity and student achievement to ELT, when improved student achievement actually reflects increased parent involvement. This is particularly important to keep in mind when examining results of descriptive analyses that include no statistical controls. This issue is also relevant to the second set of analyses that employ the study's short interrupted time series with a comparison group design, such that the impact differences between higher and lower implementing schools cannot be causally attributed to differences in implementation fidelity.

Relationship between the Percent of a School's Students Reaching the Proficient or Advanced MCAS Levels and ELT Implementation

Exhibit 6.12 presents results of exploratory analyses linking scores on the implementation index with student achievement results. Each of the fourteen charts each present scores on the index relative to the percent of students, within a school, who have scored at proficient or advanced on a specific MCAS test in a particular grade. Panel 1 presents data for the elementary grades and Panel 2 presents data for the middle school grades. These results suggest no clear pattern or meaningful relationship between scores on the index and student achievement. To further investigate any potential relationship between implementation index scores and student achievement, analyses linking index scores to median SGPs were also conducted. The results of the SGP analyses (found in Appendix F) are similar to those displayed in Exhibit 6.12, and similarly illustrate no consistent pattern between implementation index scores and SGPs.

Exhibit 6.12: Percent of Students Scoring Proficient or Advanced, 2011 MCAS Scores and ELT Implementation Index Scores, ELT Schools

Panel 1: Elementary Grades

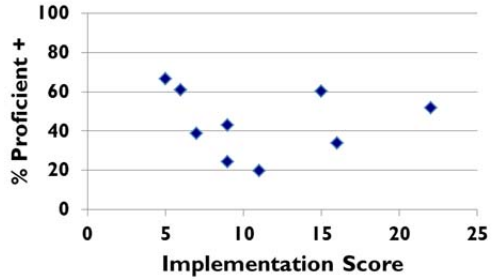
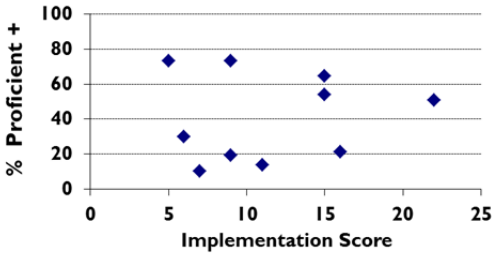
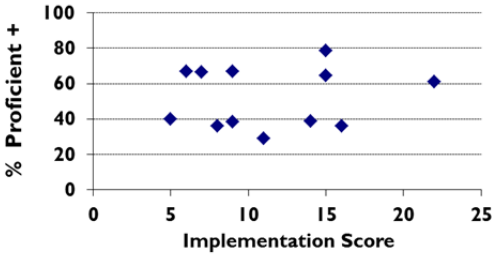
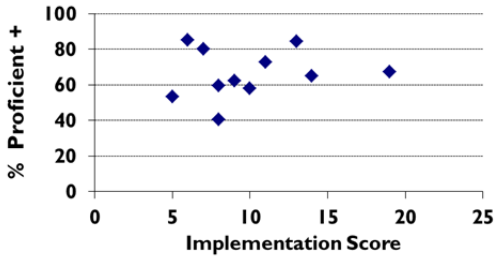
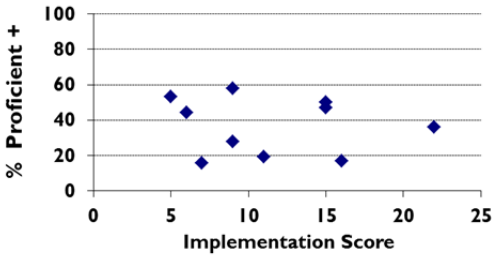
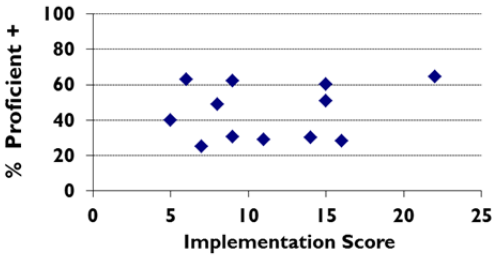
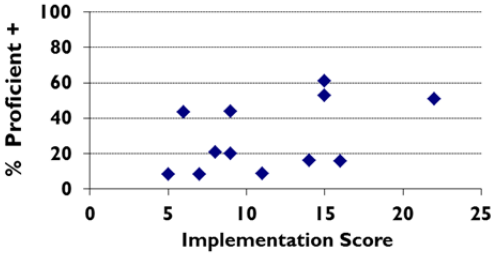
	Grade 3	Grade 4	Grade 5
ELA			
Math			
Science	**No Grade 3 MCAS Science Test**	**No Grade 4 MCAS Science Test**	

EXHIBIT READS: The grade 3 ELA graph indicates, for each ELT school, the percentage of students scoring proficient or advanced on the 3rd grade ELA portion of the MCAS test in 2010-11 (y-axis) and the school's total score on the implementation index developed for the study (x-axis).

Note: Each point on each graph represents a single ELT school.

Source: Individual student records obtained from MA ESE; Abt Associates' Interviews of MA ELT School Principals, Spring 2011; Abt Associates' Surveys of MA ELT School Teachers, Spring 2011.

Sample: Current ELT schools as of the 2010-11 school year.

Exhibit 6.12: Percent of Students Scoring Proficient or Advanced, 2011 MCAS Scores and ELT Implementation Index Scores, ELT Schools

Panel 2: Middle School Grades

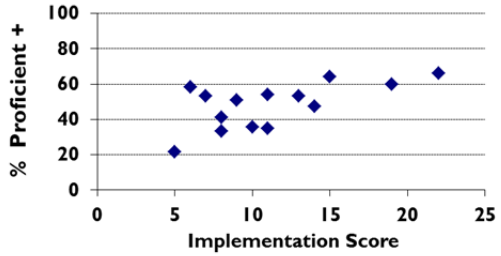
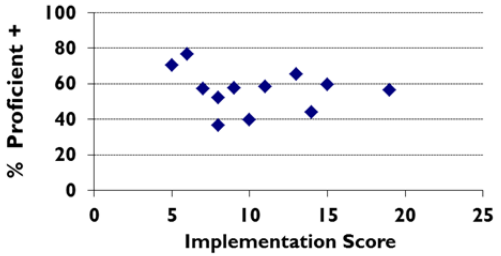
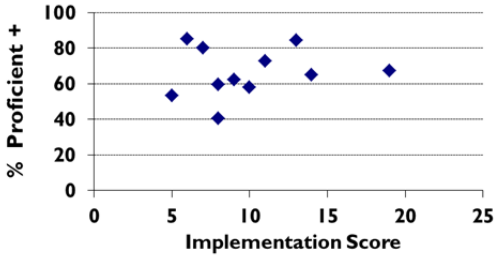
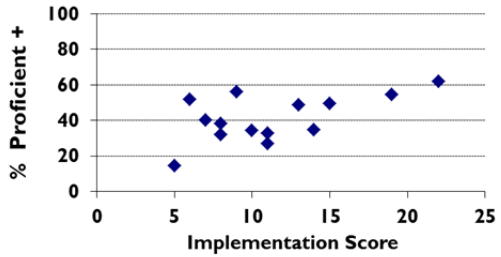
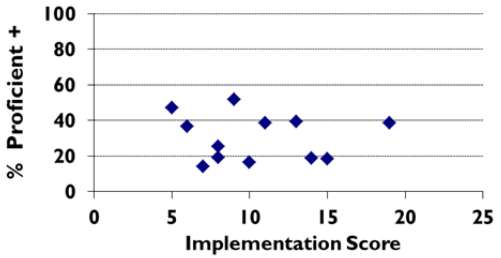
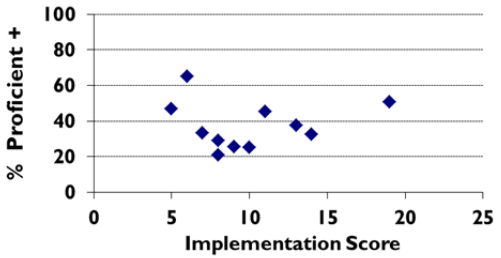
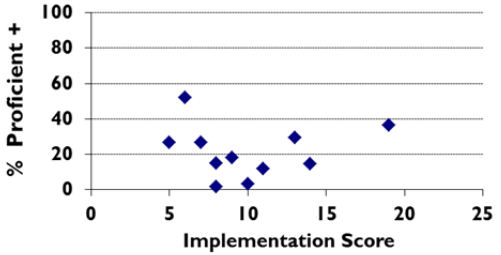
	Grade 6	Grade 7	Grade 8
ELA			
Math			
Science	**No Grade 6 Science MCAS Test**	**No Grade 7 Science MCAS Test**	

EXHIBIT READS: The grade 6 ELA graph indicates, for each ELT school, the percentage of students scoring proficient or advanced on the 6th grade ELA portion of the MCAS test in 2010-11 (y-axis) and the school's total score on the implementation index developed for the study (x-axis).

Note: Each point on each graph represents a single ELT school.

Source: Individual student records obtained from MA ESE; Abt Associates' Interviews of MA ELT School Principals, Spring 2011; Abt Associates' Surveys of MA ELT School Teachers, Spring 2011.

Sample: Current ELT schools as of the 2010-11 school year.

Heterogeneity of ELT Effect by Level of ELT Implementation in Schools

It is possible that the effect of ELT differs for schools with higher or lower scores on the implementation index. To investigate the potential of such a heterogeneous ELT effect, ELT schools were divided into two implementation groups: higher implementing and lower implementing schools. The median implementation index score served as the cut-score, with schools scoring at or above the median (which equaled 11) designated as higher implementing schools and those schools scoring below the median implementation index score labeled the low implementing schools.[72] The models used in the previous student achievement sections were estimated separately for higher and lower implementing schools and their matched counterparts. The statistical significance of the resulting ELT effects are assessed and the estimated effects for the two groups were compared to determine if there were significant differences in the effect of ELT by implementation level.[73]

Exhibit 6.13 presents the average difference of the ELT effect between higher and lower implementing schools. The y-axes indicate the effect size of the estimated difference. Therefore, bars that appear above the line labeled "0" indicate that the effect of ELT in higher implementing schools is greater than the effect of ELT in lower implementing schools. Bars that appear below the line indicate that the effect of ELT in higher implementing schools is less than the effect of ELT in lower implementing schools. Results are presented by grade, as seen across the x-axes. The light blue bars correspond to ELA scores, the purple bars correspond to math scores, and the yellow bars indicate science scores.

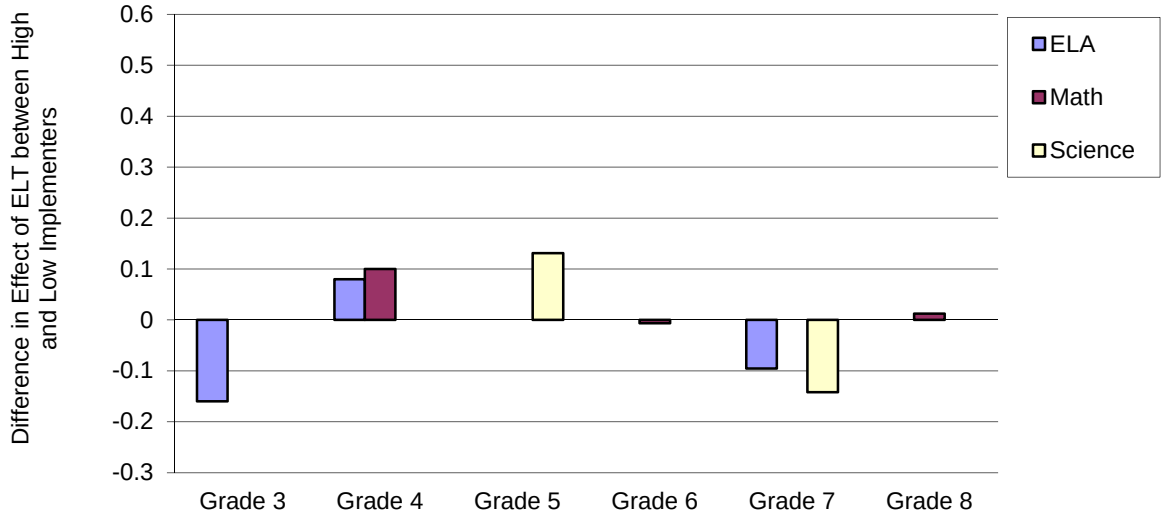
The only statistically significant differences in the effect of ELT between higher and lower implementing schools are for grade 8 math after three and four years of implementation (in Panels 3 and 4 of Exhibit 6.13). Students in higher implementing ELT schools perform higher on the 8th grade math MCAS test than do students in lower implementing ELT schools. These results suggest that there is some heterogeneity in the effect of ELT by the level of ELT implementation in a school, but that the heterogeneity may be most relevant for math and 8th grade students. The effect size indicates that students in higher implementing schools are estimated to score between 0.40 and 0.50 standard deviations greater on the 8th grade math MCAS test than students in lower implementing schools after three and four years of ELT implementation. Findings after five years of implementation and the results of the individual models that estimated the effect of ELT in higher and lower implementing schools can be found in Appendix F.

[72] This cut-point resulted in 8 ELT higher implementing schools and 7 ELT lower implementing schools.

[73] Assignment of matched comparison schools to the higher or lower implementing grouping was determined by their ELT pair. For example, if a matched comparison school's ELT school was designated a higher implementing school, that matched comparison school was included in the model estimating the effect of ELT on higher implementing schools.

Exhibit 6.13: Differences in the Effect of ELT between Higher and Lower Implementing Schools

Panel 1: After One Year of Implementation



Panel 2: After Two Years of Implementation

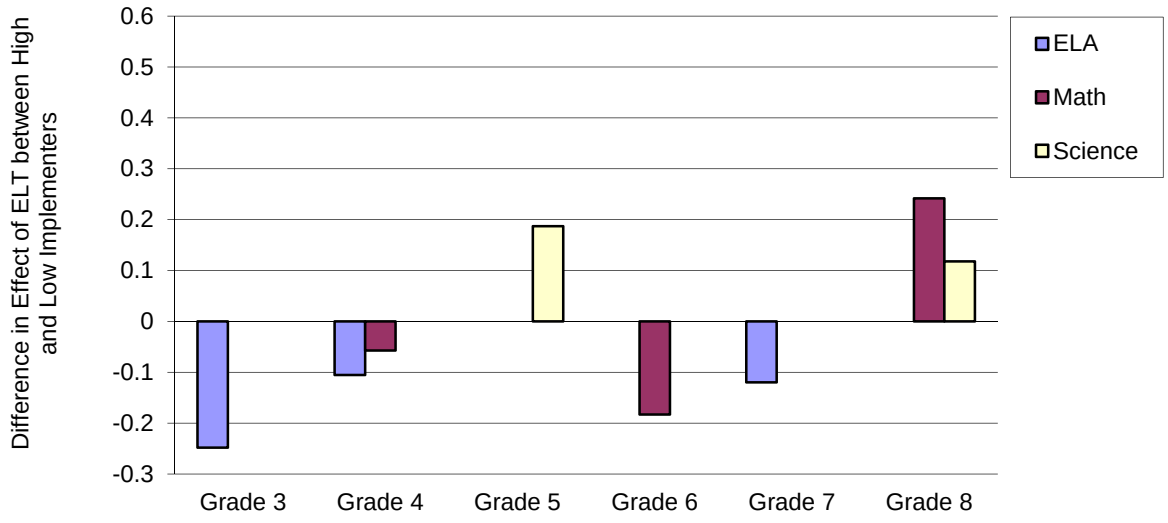
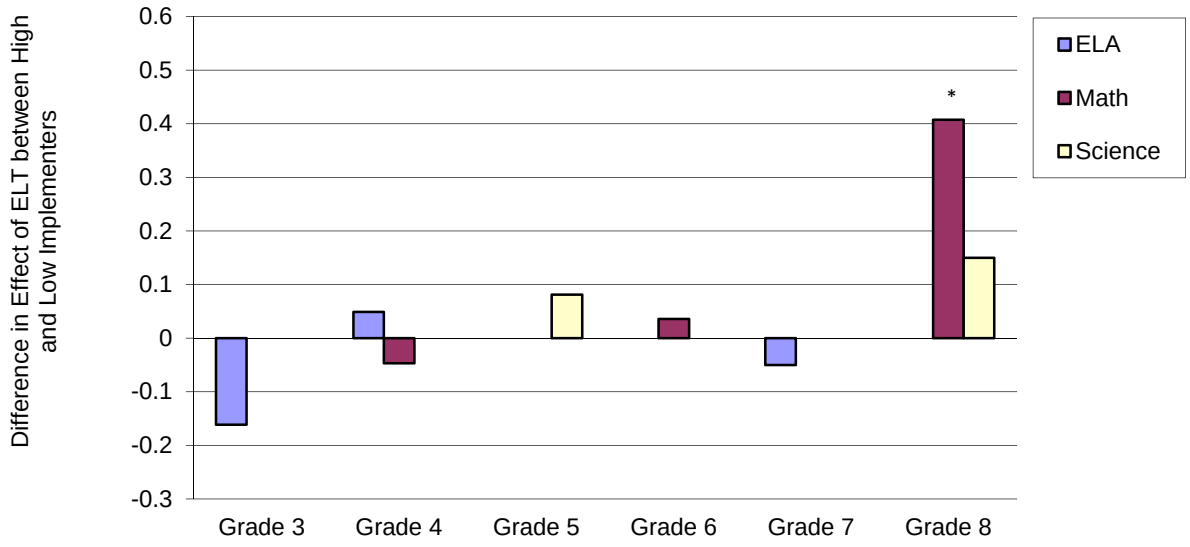


Exhibit 6.13: Differences in the Effect of ELT between Higher and Lower Implementing Schools

Panel 3: After Three Years of Implementation



Panel 4: After Four Years of Implementation

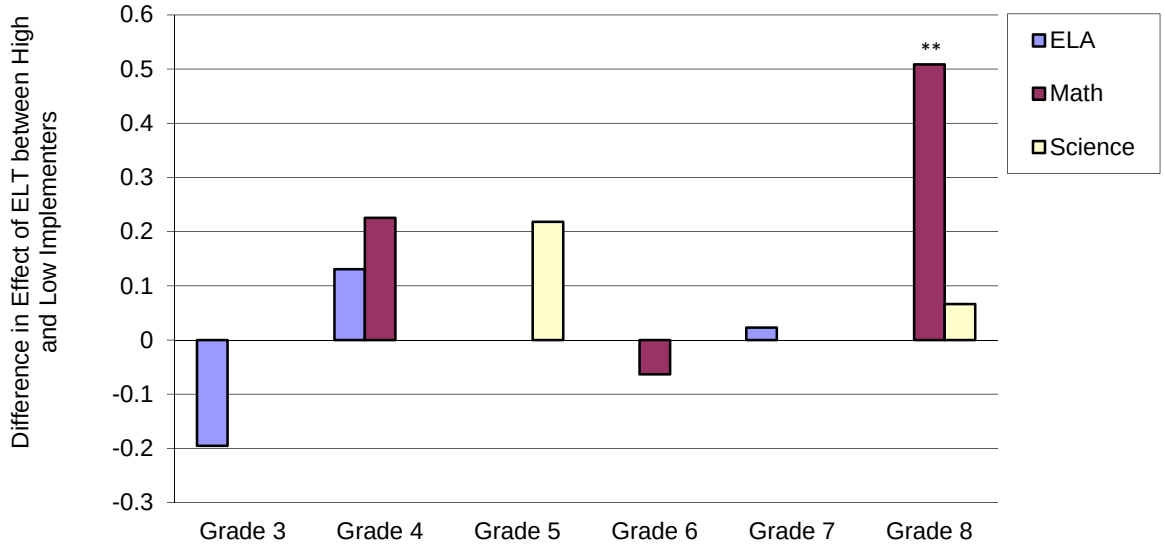


EXHIBIT READS: After the first year of ELT implementation, the effect of ELT on grade 3 ELA MCAS scores in higher implementing schools, on average, was .16 standard deviations lower than the effect of ELT in lower implementing schools. This difference was not statistically significant.

Notes:
* statistically significant at p < .05 level
** statistically significant at p < .01 level
*** statistically significant at p < .001 level

Source: Individual student records obtained from MA ESE; Abt Associates' Interviews of MA ELT and Matched Comparison School Principals, Spring 2011; Abt Associates' Surveys of MA ELT and Matched Comparison School Teachers, Spring 2011

Sample: Student MCAS records from ELT and matched comparison schools from 2001-2002 to 2010-2011. Only ELT schools and their matched comparison schools with full data on the implementation index are included in these analyses. The sample sizes vary by cohort, implementation year, subject, and grade. The minimum number of schools is 15 and the maximum number of schools is 24. The minimum number of test records is 10,048 and the maximum number of test records is 27,828.

Summary

Taken together, the descriptive and impact analyses described in this chapter yield remarkably consistent results. The study schools' stability in terms of school characteristics and student mobility suggests that any observed differences could indeed be attributed to the ELT initiative. The descriptive data about levels of student performance suggest considerable variation across schools, yet few systematic patterns in performance levels at two time points. Additional descriptive analyses using student growth percentiles for ELT and matched comparison schools illustrate higher student growth in ELT schools. However, without accounting for pre-ELT data, school and year effects and the full set of post-ELT data, these differences cannot be attributed to ELT.

The more rigorous analyses indicate a significant impact of ELT on student performance for one grade—5th—and one subject within that grade, science, taking pre-ELT data, school and year effects, and post-ELT data into account. Statistical comparisons of ELT schools to other (non-ELT) schools in their host districts and the state as a whole also indicate few meaningful differences. Finally, exploratory analyses linking ELT implementation to student outcomes do not provide clear evidence of patterns or associations. There is, however, some evidence of a heterogeneous ELT effect, such that the effect of ELT on grade 8 math is more positive in higher implementing schools than in lower implementing schools after three and four years of implementation. Otherwise, the level of ELT implementation in schools does not appear to differentially affect student achievement.

As measured by this study, ELT implementation alone does not appear to explain why ELT has minimal effects on student achievement. It is important to note that that the implementation index does not measure the quality of ELT implementation; it may well be that it is the quality of ELT (and other instructional activities) that matters most for improving student outcomes. The fact that some matched comparison study schools implemented ELT-like components also serves to blur the potential treatment contrast between the two groups of schools. To address this last issue, the evaluation team estimated a set of models that control for the differences in ELT implementation between each ELT-matched comparison school pair, and the results were consistent with the results from the primary impact model described above.

Another potential explanation for minimal evidence of impact could be limited statistical power to detect effects. The minimal detectable effect size (MDES) in the majority of impact models is .25, which is sufficient to detect meaningful changes in student achievement. The models with the greatest number of schools (e.g., the number of schools included after one and two years of ELT implementation—before some schools exited the initiative) have greater statistical power. The MDES does grow when estimating the effects after three and four years of implementation, and is largest for ELA in grade 3 and 4 and for Math in grade 8. Nevertheless, it is important to note that the estimated ELT effects for these outcomes are generally small (0.10 standard deviations or less), which suggests that it is not statistical power that is behind the lack of significant findings (e.g., even had an alternative model specification been employed that pooled grades within each subject, the estimated effect would still be unlikely to reach statistical significance).

Chapter 7. Conclusions and Recommendations

ELT schools continued efforts to implement the core ELT components, although ongoing examination of the implementation of the initiative revealed considerable variation both in the extent and manner of schools' implementation of ELT. Over the five years of the initiative, the number of participating schools, as well as school, district, and state contexts for ELT have changed. So too have the expectations of the participating schools. Among the contextual factors that have likely affected ELT implementation in the 2010-2011 year include: ESE's use of performance agreements and monitoring activities; the design and use of technical assistance to schools; and the prevalence of ELT-like components as a school reform strategy throughout the Commonwealth. Each is discussed below.

Performance Agreements and Monitoring. In the 2009-10 school year, ESE launched multi-year performance agreements outlining specific benchmarks for ELT schools. The performance agreement template can be found in Appendix A. These agreements included more explicit and detailed expectations about ELT implementation, and schools were informed that they could be discontinued from the ELT initiative pending their adherence to the performance agreements.

Technical Assistance. Mass 2020 and Focus on Results continued their efforts to provide customized technical assistance approaches and each reported ongoing efforts to support schools more comprehensively on some core components.

Prevalence of Increased Time. Large-scale federal initiatives such as Race to the Top and School Improvement Grant (SIG) funding each include use of increased learning time as one mechanism schools and districts can use to improve outcomes for students in the lowest-performing schools. In the Commonwealth, for example, ESE identified 34 of the state's lowest-performing schools as Level 4 schools; these schools could adopt increased time as one part of a school turnaround strategy, and many of the Level 4 schools have elected to expand their schedules. However, it should be noted that just one Level 4 school is participating in the ELT initiative that is the focus of this research. Massachusetts' Race to the Top efforts also includes the use of increased learning time as a school turnaround strategy for both districts and schools to consider.

Recent media attention[74] has also highlighted attention on ELT in Massachusetts in particular. So too did the October 2011 ELT Summit convened by the National Center on Time and Learning, which provided information about ELT implementation to district and school officials from across the country as well as to those within Massachusetts.

Summary of Implementation of ELT

The study collected more systematic data about the availability and allocation of time in 2010-11. ELT implementation begins with a basic commodity: increased time for learning. The ELT schools were all charged with increasing the amount of time in the school year by 300 hours (or more) each year, and all of the ELT schools reported having more time in their schedules. The ELT school day was just under eight hours, on average, in 2010-11, and the largest block of time (almost five hours, on average) was

[74] See Boston Globe editorial: http://bostonglobe.com/opinion/editorials/2011/12/15/leadership-and-flexibility-not-buses-improve-schools/YeYr6QzBkDRQFawYv40U4J/story.html

allocated to core academics. More specifically, the average amount of time (daily) was allocated as follows in ELT schools:

- Of the almost five hours allocated to core academics:
  - The amount of time scheduled for English Language Arts (ELA) was 1 hour and 45 minutes, on average.
  - Nearly 90 minutes were allocated to math instruction, on average.
  - An average of nearly 1 hour was scheduled for science and 45 minutes to social studies per day.

Not surprisingly, time allocations for core subjects varied somewhat by grade. Specifically, an average of about 45 minutes more each day was allocated to ELA in 5th than in 8th grade. Slightly more time (12 minutes, on average) was allocated to math in 5th than in 8th grade. About 20 fewer minutes were allocated to science and 15 minutes fewer to social studies in 5th than 8th grade, on average.

As in past years, individual schools varied considerably in how they allocated time to various instructional activities. Consistent with the time allocations, schools' academic focus areas were related to ELA more often than other subject areas. Additionally, administrator and staff perceptions were remarkably congruent about their school's respective academic focus. Most teachers and principals also agreed that instructional practice at the school was informed by the academic focus, and that data were used to adjust instructional practices as needed.

One key tenet of ELT is that students have the opportunity to participate in activities designed to enhance and enrich their learning. How schools operationalized enrichment activities, however, varied considerably across ELT schools; enrichment was variously defined as "electives," "specials," both academic and non-academic, and as integrated or appended to the school day. Regardless of definitions, most teachers in ELT schools reported that all students participated in at least some enrichment activities, and most teachers also indicated that enrichment activities occurred frequently enough to be valuable and were well-integrated into the school schedule. At most schools, enrichment activities were taught by a combination of classroom teachers, other school staff, and community partner staff. Those ELT schools serving middle grade students appeared to allocate more time than those serving predominantly elementary grades for both academic and non-academic enrichment.

Successful implementation of ELT is also hypothesized to require more deliberate coordination and planning on the part of school and instructional staff, often through the use of designated blocks of time for teachers to engage in collaborative planning about instruction. In 2010-11, more than half of ELT teachers (65 percent) participated in collaborative planning time weekly or more often. Only a small proportion of teachers (16 percent) reported never having participated in collaborative planning.

Teachers reported participating in multiple activities during collaborative planning time, including analyzing student data, strategizing about instructional practices, and/or reviewing student work. The majority of teachers who reported participating in an activity also reported that the activity was useful.

Overall, half of teachers reported having completed more than 26 hours of professional development over the course of the school year, 12 percent reported completing between 51 and 75 hours of professional development, and 11 percent completed more than 75 hours of professional development. More than

three-quarters of ELT teachers (77 percent) agreed that in-school professional development contributed to the development of a professional learning community of teachers.

Describing Variation in Schools' Implementation of ELT

Over the past five years, as successive cohorts of ELT schools have launched and continued their implementation efforts, data from study-administered individual and group interviews, and surveys, coupled with information from ESE and Mass 2020, have highlighted the variability of schools' level of implementation. In the 2010-11 school year, the study examined variation in implementation using an updated implementation metric first developed for use with 2009-10 data. The index incorporates information from principal interviews about time allocation across multiple academic, enrichment, and support instruction/activities, as well as information from teacher and student survey respondents about resources, supports, leadership, and perceptions of school climate. The index categorizes schools' implementation levels on various dimensions corresponding to hypothesized dimensions of effective ELT implementation; it allows the study team to array each school's collective interview and survey responses into multi-dimensional metrics. The index also allows researchers to examine both school-specific and initiative-wide patterns of implementation. Finally, because many of the principles of effective ELT implementation could apply equally well to more generic or other specific school improvement initiatives, the index was designed to apply to both ELT and matched comparison schools.

The results from applying the index indicate, not surprisingly, considerable variation. As a group, the ELT schools appeared to be implementing and sustaining activities across multiple core components of ELT. As a set of individual schools, there was substantial variation in summative scores on the implementation index as well as scores on individual criteria. The ELT schools had consistently higher scores than did comparison schools on six of eight criteria, and had higher total scores, on average. Many comparison schools also appeared to be implementing at least some components considered core expectations of the ELT initiative, in particular, components focusing on general leadership and school-wide academic foci. As was the case with 2009-10 patterns of results, ELT schools' implementation index scores were consistently higher on the criteria related to enrichment.

Describing Effects of ELT

This report examined the differences between ELT and matched comparison schools, on average, as well as across cohorts and school configurations. The findings based on comparisons between the two types of schools are presented below. Findings related to non-academic outcomes are presented first, then academic outcomes, followed by a brief discussion of factors that may have influenced the results.

Effects of ELT on Non-Academic Outcomes

The overall outcome findings include few statistically significant and practically meaningful differences in outcomes for schools, students, and teachers between ELT and matched comparison schools. These patterns are across a range of findings related to school-wide characteristics, time use, students' achievement outcomes, student behaviors, and student and teacher attitudes.

The school day was longer, on average in ELT than matched comparison schools, and ELT schools allocated significantly more time to core academic subjects than matched comparison schools. Not surprisingly, ELT schools also were able to allocate more time to the various instructional activities that occurred during the day. Specifically, ELT schools across both 5th and 8th grade allocated significantly more time to ELA than matched comparison schools, more time for 5th grade math classes, more time for

8th grade science classes, more time for 5th grade specials, and more time for academic support periods, enrichment, and other activities than likely would have occurred in the absence of ELT.

There were few meaningful differences on teacher outcomes as measured by study-developed surveys. While ELT teachers reported being more satisfied with the amounts of time available for instruction in ELA, math, science, and social studies, they were also more likely to report that teacher and staff fatigue, as well as student fatigue, were problem areas; these results are similar to results from earlier years.

There were also not many statistically significant and meaningful impacts of ELT on 5th and 8th grade students' perspectives, as assessed by study surveys, although student responses from only two grade levels should ***not*** be assumed to represent the perceptions of all students in study schools. A higher proportion of ELT student indicated that they were tired in school.

After at least four years of implementation, there were some impacts of ELT on students' behavioral outcomes, assessed using state-provided SIMS data, although the magnitudes of observed differences are likely too small to have any educational or practical significance.

Effects of ELT on Academic Outcomes

There were no statistically significant effects of ELT after one, two, three, or four years of implementation on MCAS student achievement test outcomes for 3rd, 4th, or 7th grade ELA, 4th, 6th, or 8th grade math, or 8th grade science. There was a statistically significant positive effect of ELT after four years of implementation on the MCAS 5th grade science test.

Descriptive Analyses

As described above, there are few overall impacts of ELT on student achievement, as measured by MCAS scores. The impact analyses provide data on the impact of ELT on schools on average, and therefore may mask variation across individual schools' academic achievement levels. This report includes descriptive analyses of data on students' academic achievement at the individual ELT school level, to illustrate variation across the participating schools and that the average achievement levels vary considerably. Taken as a group, the schools' mean achievement levels—across multiple grade levels and subject areas—do not appear to have changed much between the pre-implementation and 2010-11 school year.

Descriptive analyses also compared ELT schools to schools in their respective districts and the state. Similar to the matched comparison school models, the results indicate few statistically significant differences. These analyses also highlight the fact that the ELT initiative as a whole includes schools serving underperforming students.

Descriptive analyses linking ELT implementation to MCAS outcomes examined variation in scores by school using a number of metrics. Descriptive analyses restricted to ELT schools indicated variation in student performance levels among schools both before implementation began and in the most recent school year (2010-11), and indicated no consistent patterns of results. Additional descriptive analyses linking both ELT and matched comparison school to student growth percentiles suggested that ELT schools outperformed their matched comparison schools in 2011 on all MCAS tests in each of the grades. However, because these analyses do not include the robust statistical controls included in the impact models, differences cannot be attributed to ELT.

Discussion

Across findings from interviews, surveys, and achievement data, the following themes seem clear:

- There continues to be substantial variation across ELT schools' level and approach to implementation (as measured by interviews, surveys and the study's implementation index).
- Measuring different aspects of time use is challenging: collecting information on a prototypical student in a given grade level may or may not reveal *how* students are supported by the ELT initiative and definitions of various activities/time uses are not consistent across schools.
- There are some, but not many, differences—even descriptively—between ELT and comparison schools on survey and achievement outcomes.
- The school reform landscape is dynamic and each successive year, more schools (outside of this ELT initiative) appear to be expanding the amount of time in their school year, and implementing reforms consistent with the core ELT components.

Furthermore, the student achievement measures used to examine outcomes in this evaluation are broad proxies of academic knowledge. There may be other outcomes, both academic and non-academic, that could be assessed to describe both current and potential longer-term effects of ELT on both student learning and other important aspects of their lives (e.g., on-track high school performance for students who were in ELT schools for the duration of middle school relative to students in non-ELT schools, additional information on future educational and/or career aspirations).

It is clear that after five years, the ELT initiative is a maturing initiative, although some participating schools were in their third year of implementation during 2010-11. Given the considerable variability in ELT implementation across schools, the considerable variation in schools' initial motivation to become ELT schools, and ongoing changes in the education reform landscape during the same period, it may not be surprising that the study has yet to find significant student achievement gains attributable to this initiative. Expansion of time for learning is increasingly perceived as an important vehicle for improving educational outcomes for disadvantaged students in Massachusetts and elsewhere—if the additional time is used well. This study was able to assess the quantity and allocation of time, but did not measure the quality of instruction, enrichment, and other activities made possible by the additional time, and clearly, the quality of such activities is also important.

Future Research

There are a number of possible directions for future research focused on ELT, including but certainly not limited to exploring in even more depth how to measure and understand how time is used, assessing the relative effectiveness of various approaches to expanding the day, further understanding ELT's cost-effectiveness, and examining outcomes other than student achievement. In addition, more understanding is needed about what higher performing ELT schools are doing differently from other schools in terms of program implementation, as well as the relationship between teacher quality and/or instructional quality and how time is used. It would also be interesting to further examine why teachers are generally positive about the opportunities afforded with additional time yet students are more negative about their experiences. Given the limited rigorous research evidence about both the effects of ELT on academic and other student outcomes, and on the specific mechanisms/factors that would help to understand whether, how, and for whom ELT is effective, the need for additional credible evidence is clear.

References

Antonucci, R.V. and P. Reville. *Unlocking the Power of Time.* Boston: Massachusetts Commission on Time and Learning Final Report, 1995.

Aronson, J., J. Zimmerman, and L. Carlos. *Improving Student Achievement by Extending School: Is it Just a Matter of Time.* San Fransisco: WestEd, 1999.

Berliner, D. "What's all the fuss about instructional time?" In *The Nature of Time in Schools Theoretical Concepts, Practitioner Perceptions*. New York: Teachers College Press, 1990.

Bodilly, S. and M. K. Beckett. *Making Out-of-School-Time Matter: Evidence for an Action Agenda.* Washington, DC: RAND Corporation, 2005.

Checkoway, A., B. Boulay, and B. Gamse. *Evaluation of the Expanded Learning Time Initiative, Year Four Integrated Report.* Cambridge: Abt Associates, 2011.

Cook, T. D., W. J. Shadish, and V. C. Wong. "Three conditions under which observational studies produce the same results as experiments." *Journal of Policy Analysis and Management* 274 (2008): 724–50.

"Causal Effects in Non-Experimental Studies: Re-Evaluating the Evaluation of Training Programs," *Journal of the American Statistical Association* 94.448 (1999): 1053-1062.

Duffett, A. and J. Johnson. *All Work and No Play? Listening to What Kids and Parents Really Want from Out-of-School Time.* Wallace Foundation, 2004.

ECONorthwest. "A Review of Research on Extended Learning Time in K-12 Schools." 2008.

Farbman, D. *Learning Time in America: Trends to Reform the American School Calendar.* Boston: National Center on Time and Learning, 2011.

Fryer, R. G., & Dobbie, W. (2011). *Getting Beneath the Veil of Effective Schools: Evidence from New York City* . Cambridge, MA: http://www.economics.harvard.edu/faculty/fryer.

Harris, E., S. Deschenes, and A. Wallace. *Helping Older Youth Succeed Through Expanded Learning Opportunities.* Cambridge: Harvard Family Research Project, 2011.

Hemphill, F.C., A. Vanneman, and T. Rahman. *Achievement Gaps: How Hispanic and White Students in Public Schools Perform in Mathematics and Reading on the National Assessment of Educational Progress.* Washington, DC: National Center for Education Statistics, 2011.

Ho, D., K. Imai, G. King, and E.A. Stuart. "Matching as nonparametric preprocessing for reducing model dependence in parametric causal inference." *Policy Analysis* 15.3 (2007): 199-236.

Hotz, V. J., G. Imbens and J. Klerman. "Evaluating the Differential Effects of Alternative Welfare-to-Work Training Components: A Re-Analysis of the California GAIN Program," *Journal of Labor Economics* 24.3 (2006): 521-566.

Hoxby, C. M., Murarka, S., & Kang, J. (2009). *How New York City's CharterSchools Affect Student Achievement* . Stanford, CA: The New York City Charter Schools Evaluation Project,.

Kaplan, C., & Chan, R. (2011). *Time Well Spent: Eight Powerful Practices of Successful, Expanded-Time Schools.* Boston, MA: National Center on Time and Learning .

Kolbe, T., M. Partridge, and F. O'Reilly. *Time and Learning in Schools: A National Profile.* Boston: National Center on Time and Learning and The Center for Eduacation Policy Analysis, University of Connecticut, 2011.

Liang, K. and S.L. Zeger. “Longitudinal data analysis using generalized linear models.” *Biometrika* 73.1 (1986): 13-22.

Little, P.M., C. Wimer, and H.B. Weiss. *After School Programs in the 21st Century: their potential and what it takes to achieve it.* Cambridge, MA: Harvard Family Research Project, 2008.

McREL. *McREL News Room: Education Hot Topics.* 2010. http://www.mcrel.org/newsroom/hottopicExtendedTime.asp (accessed September 27, 2011).

Morgan, S.L. and D.J. Harding. "Matching Estimators of Causal Effects: Prospects and Pitfalls in Theory and Practice." *Sociological Methods and Research* 35.1 (2006): 3-60.

Morgan, S.L. and C. Winship. *Counterfactuals and Causal Inference: Methods and Principles for Social Research.* Cambridge: Cambridge University Press, 2007.

O'Reilley, F., & Kolbe, T. (2011). *Where Does the Money Go? Expenditures for the Massachusetts Expanded Learning Time (MA ELT) Initiative.* Boston, MA: Massachussetts Department of Elementary and Secondary Education .

Obama, B. *McClatchy DC.* March 10, 2009. http://www.mcclatchydc.com/2009/03/10/63663/obama-urges-longer-school-hours.html (accessed September 23, 2011).

OECD. *Quality Time for Students: Learning in and Out of School.* OECD, 2011.

Patall, E., H. Cooper, and A. Allen. "Extending the School Day or School Year: A Systematic Review of Research (1985-2009)." *Review of Educational Research* (2010): 401-436.

Shadish, W.R., T.D. Cook, and D.T. Campbell. *Experimental and Quasi-Experimental Designs for Generalized Causal Inference.* Boston: Houghton-Mifflin, 2002.

Silva, E. *On the Clock: Rethinking the Way Schools Use Time.* Washington, DC: Education Sector, 2007.

Stuart, E. A. “Matching methods for causal inference: A review and a look forward.” *Statistical Science*, 25.1 (2010): 1-21.

Therriault, S. B., Gandhi, A. G., Casasanto, J., & Carney, S. (2010). *Out of the Debate and Into the Schools: Comparing Practices and Strategies in Traditional, Pilot and Charter Schools in the City of Boston.* Boston, MA: The Boston Foundation.

Usher, A. *Update with 2009-10 Data and Five-Year Trends, How Many Schools Have Not Made Adequate Yearly Progress?* Washington, DC: Center on Education Policy, 2011.

Vanneman, A., L. Hamilton, and J.B. Anderson. *Achievement Gaps: How Black and White Students in Public Schools Perform in Mathematics and Reading on the National Assessment of Educational Progress.* Washington, DC: National Center for Education Statistics, 2009.

White, H. *Asymptotic Theory for Econometricians*. Orlando: Academic Press, 1984.

Appendix A. Exhibits for Chapter 1

Exhibit A.1: ESE ELT Performance Agreement Template

Massachusetts Expanded Learning Time to Support Student Success
Performance Agreement Template
(Produced in collaboration with Massachusetts 2020)

Name of ELT School: _____

I. USING EXPANDED TIME TO IMPROVE ACADEMIC OUTCOMES
Goal: Our school will use additional time to accelerate student learning in core academic subjects by making meaningful improvements to the quality of instruction in support of school-wide achievement goals (Expectation II)
Objective 1: All students will make strong continual progress toward proficiency and excellence in reading and writing
Measure 1 (MCAS):
Measure 2 (Internal):
Measure 3:
Objective 2: All students will make strong continual progress toward proficiency and excellence in mathematics.
Measure 1 (MCAS):
Measure 2 (Internal):
Measure 3:
Objective 3: (determined by school; can be subject/skill specific, achievement gap, etc.)
Measure 1:
Measure 2:
Measure 3:

2. USING EXPANDED TIME TO IMPROVE TEACHER LEADERSHIP & COLLABORATION

Goal: Our school will effectively use additional time to build a professional culture of teacher leadership and collaboration (e.g. designated collaborative planning time, on-site targeted professional development) focused on strengthening instructional practice and meeting school-wide achievement goals (Expectation IV)
Objective 1: Teacher teams meet regularly to discuss and analyze student work and data for the purpose of setting high standards, assessing student learning, and strengthening the use of school-wide instructional practices.
Measure 1:
Measure 2:
Objective 2: Leadership team supports a community where faculty, staff, and administrators regularly engage in professional development, and data-driven analysis and planning to improve student learning.
Measure 1:
Measure 2:
Objective 3: (determined by school; can pick from the ELT Indicators* or generate one that is school-specific)
Measure 1:
Measure 2:

*The ELT Indicators listed below would make strong objectives for this Goal:

- *Time is used to engage staff in results-oriented discussion directly connected to curriculum, instruction, and assessment issues related to supporting all students in meeting state standards*
- *At least once annually, leadership team engages staff in review of the use of collaborative planning and professional development time to determine any necessary improvements*
- *Leadership team enables inter-classroom visitations so teachers can observe peers and use information to improve instructional practice*
- *The school has created opportunities for teachers to meet on a regular basis for structured collaboration to analyze student data and strategize effective instructional practices and individual student needs*
- *Leaders coordinate whole-school professional learning activities, including suggesting professional readings, providing opportunities for teacher-led professional development in key areas, and structuring opportunities for cross-team collaboration (Expectation V)*
- *Enrichment staff collaborate with core academic teachers to share lesson plans, content, individual student information (Expectation III)*

3. USING EXPANDED TIME TO PROVIDE INTEGRATED ENRICHMENT OPPORTUNITIES

Goal: Our school will effectively use additional time (in core and/or specialty classes) to offer enrichment opportunities that connect to state standards, build student skills and interests, and deepen student engagement in school/learning in support of school-wide achievement goals (Expectation III)
Objective 1: Enrichment opportunities help to develop students' skills and talents, explore special interests, and perform/demonstrate/exhibit the products of their work.
Measure 1:
Measure 2:
Objective 2: Management is in place to support the integration of enrichment providers (both teachers and partners) and ensure alignment with school's area of academic focus, culture, and operations.
Measure 1:
Measure 2:
Objective 3: (determined by school; can pick from the ELT Indicators* or generate one that is school-specific)
Measure 1:
Measure 2:

**The ELT Indicators listed below would make strong objectives for this Goal:*

- *Leadership team has developed an internal assessment system that monitors the impact of enrichment activities on student learning (Expectation III)*
- *Enrichment staff collaborate with core academic teachers to share lesson plans, content, individual student information (Expectation III)*
- *The allocation of resources maximizes individual attention for all students in academic focus area and in non-academic student support such as counseling, advisory groups, and student engagement in school (Expectation VI)*
- *Systems and safety nets are in place to help all students to overcome barriers to leaning and increase their engagement in learning (e.g. small group learning, advisory, counseling, health and mental health support, etc.) (Expectation I)*
- *Students move beyond basic skills to master 21st century skills (oral and written presentation, problem-solving, teamwork, and use of technology) and employ across subject areas (Expectation II)*

MASSACHUSETTS EXPANDED LEARNING TIME PERFORMANCE AGREEMENT APPROVALS

For the Massachusetts Expanded Learning Time School:

ELT School Name:	
Principal Signature:	
Principal Printed Name:	
Date:	

For the Massachusetts Expanded Learning Time District:

ELT District Name:	
Superintendent Signature:	
Superintendent Printed Name:	
Date:	

For the Massachusetts Dept. of Elementary and Secondary Education:

Commissioner/Designee Signature:	
Commissioner/Designee Printed Name:	
Date:	

Exhibit A.2: ELT Expectations for Implementation

Mass 2020

Massachusetts Department of ELEMENTARY & SECONDARY EDUCATION

Expanded Learning Time
Expectations for Implementation

I. ELT Redesign Supports A Clear, School-wide Academic Focus

The school's plan for implementation of ELT is aligned with the school's overall academic focus. This academic focus drives instructional improvement and continuous measurable growth in student learning throughout the redesigned day and year. The design and implementation of ELT is based on a data-driven assessment of student needs and works to support a clear set of school-wide achievement goals.

II. Additional Time For Core Academics

The school uses additional time in order to accelerate learning in **core academic** subjects by making meaningful improvements to the quality of instruction in support of school-wide *achievement* goals.

III. Additional Time for Enrichment

The school uses additional time (either in core and/or specialty classes) to offer **enrichment** opportunities that connect to state standards, build student skills and interests, and deepen student engagement in school/learning in support of school-wide *achievement* goals.

IV. Additional Time for Teacher Leadership and Collaboration

The school uses additional time to build a professional culture of **teacher leadership and collaboration** (e.g. designated collaborative planning time, on-site targeted professional development) focused on strengthening instructional practice and meeting school-wide achievement goals.

V. Focused and Collaborative Leadership

The principal as instructional leader and leadership team are fully committed to expanding learning time to improve instructional practice and to bringing many others – teachers, students, families, partners, and the community - into the process of redesign and implementation in support of school-wide achievement goals.

VI. Resources are Aligned and Focused

The school demonstrates clear evidence that it is making decisions around resource allocation (Time, People, Talent, Energy and Money) that are aligned with the successful implementation of the ELT redesign and focused on meeting school-wide *achievement* goals.

VII. District Leadership Supports ELT

The district actively supports all ELT schools around the ELT Expectations for Implementation by providing leadership, support, supervision, long-term district planning and creative problem solving to remove barriers and ensure schools can meet rigorous achievement goals.

Focus on Results
♦ 5901 Warner Ave., #441, Huntington Beach, CA 92649
♦ 198 Tremont Street, #408, Boston, MA 02116
♦ Phone: 888-743-1076 ♦ Fax: 508-869-0562

Finding results-oriented solutions to the challenges of educating all students at high levels.

www.focusonresults.net

Page 3

Mass 2020

Indicators of Implementation of the ELT Expectations

Massachusetts Department of Elementary & Secondary Education

Expectation I. ELT Redesign Supports A Clear, School-wide Academic Focus

The school's plan for implementation of ELT is aligned with the school's overall academic focus. This academic focus drives instructional improvement and continuous measurable growth in student learning throughout the redesigned day and year. The design and implementation of ELT is based on a data-driven assessment of student needs and works to support a clear set of school-wide achievement goals.

PHASE I	PHASE II
Evidence would include: • Principal and leadership team lead the staff in a critical examination of current student performance based on data • The entire staff has participated in determining a school-wide instructional focus for their improvement efforts • School collects baseline data on student performance at the beginning of each school year and continuously monitors the progress of all students toward goals • The adoption and regular use of at least two assessment measures -- interim assessments that the school or district administers periodically during the year and the annual state-administered standardized assessment (MCAS) • Student performance data are posted to show improvement during the year and between years • The school systematically implements a program of interim assessments (4-6 times per year) in English language arts and mathematics that are aligned to school curriculum and state frameworks • Teachers use the data from the interim assessments to monitor and adjust instruction	**Evidence would include:** • Resources, especially TIME, used strategically to support the instructional focus • Most teachers engage in the collection and analysis of student performance data both for individual student's progress and the progress of particular cohorts/groups of students • Specific goals for improvement are set and data is publicly posted and showcased for the entire school community • Systems and safety nets are in place to help all students to overcome barriers to learning and increase their engagement in learning (e.g. small group learning, advisory, counseling, health and mental health support, etc.)

Mass 2020

Indicators of Implementation of the ELT Expectations

Massachusetts Department of ELEMENTARY & SECONDARY EDUCATION

Expectation II. Additional Time For Core Academics

The school uses additional time in order to accelerate learning in core academic subjects by making meaningful improvements to the quality of instruction in support of school-wide achievement goals.

PHASE I	PHASE II
Evidence would include: • School leadership has begun to have meaningful discussions of what all students are capable of doing and expected to do in relation to core academic standards • The school implements state-aligned, standards-based curriculum to support student attainment of explicit, academically rigorous, performance standards • The school schedule for student learning provides adequate time for the delivery of instruction and provision of individualized support as needed in the core academic areas (English language arts, math, science, and social studies) • Changes in instructional practice to improve performance in core academic subjects have begun to be identified as a result of conversations about student work and data • School provides opportunities for students to receive supplemental instruction as necessary for skill development and acceleration by qualified staff • Students move beyond basic skills to master 21st century skills (oral and written presentation, problem-solving, teamwork, and use of technology) and employ across subject areas	**Evidence would include:** • 3-5 school selected effective instructional practices implemented consistently in every classroom in support of the school focus • Principal and coaches provide supportive feedback through frequent classroom visitation, coaching, and modeling on the selected instructional practices • School-based professional development in selected instructional practices includes modeling and demonstrations by content coaches and visiting other classrooms in the school • The school has subject-area coaches, one each for English language arts/reading and one for mathematics, who are responsible to provide faculty with consistent classroom observation and feedback on the quality and effectiveness of curriculum delivery, instructional practice, and data use

Focus on Results
♦ 5901 Warner Ave #441, Huntington Beach, CA 92649
♦ 198 Tremont Street, #408, Boston, MA 02116
♦ Phone: 888-743-1076 ♦ Fax: 508-869-0562

Finding results-oriented solutions to the challenges of educating all students at high levels.

www.focusonresults.net

Mass 2020

Indicators of Implementation of the ELT Expectations

Massachusetts Department of ELEMENTARY & SECONDARY EDUCATION

Expectation III. Additional Time for Enrichment

The school uses additional time (either in core and/or specialty classes) to offer enrichment opportunities that connect to state standards, build student skills and interests, and deepen student engagement in school/learning in support of school-wide achievement goals.

PHASE I	PHASE II
Evidence would include: • School integrates enrichment opportunities into school day and year (including both content and use of personnel and other resources) • Enrichment opportunities help to develop students' talents, explore special interests, and perform/demonstrate/exhibit the products of their work on group and individual projects • School engages providers that provide enrichment activities (e.g. music, arts, drama, apprenticeships, etc.) that are connected to standards and engage students in active learning • Management in place to support the integration of enrichment providers (both teachers and partners) and ensure their alignment with school's area of academic focus, culture, and operations • Leadership team creates expanded list of possible enrichment partners to enhance curriculum and student exposure to content • Classroom management practices consistent in all enrichment classes (and consistent with core academic classes)	**Evidence would include:** • Enrichment opportunities prepare students to engage in productive discourse, assume civic responsibility, participate in cooperative endeavors, and assume leadership roles • Goals/objectives for enrichment classes aligned to curriculum in core academic classes • Enrichment activities are shared with families and exhibited in ways that increase family and community engagement in the school • Leadership team has developed an internal assessment system that monitors the impact of enrichment activities on student learning • Enrichment staff collaborate with core academic teachers to share lesson plans, content, individual student information • Partners, when appropriate, enhance the type and quality of safety nets provided for all students, (e.g. the areas of health, mental health, social services, counseling, advisory, etc)

Mass 2020

Indicators of Implementation of the ELT Expectations

Massachusetts Department of ELEMENTARY & SECONDARY EDUCATION

Expectation IV. Additional Time for Teacher Leadership and Collaboration

The school uses additional time to build a professional culture of teacher leadership and collaboration (e.g. designated collaborative planning time, on-site targeted professional development) focused on strengthening instructional practice and meeting school-wide achievement goals.

PHASE I	PHASE II
Evidence would include: • The school has created opportunities for teachers to meet on a regular basis for structured collaboration to analyze student data and strategize effective instructional practices and individual student needs • The leadership team, working with the principal, provides school-wide leadership around implementation of ELT • The leadership team has been trained in effective meeting strategies and distributed leadership • Inter-classroom visitation in search of potential effective instructional practices has been adopted school-wide in core academic subjects • Time is used to engage staff in results-oriented discussion directly connected to curriculum, instruction, and assessment issues related to supporting all students in meeting state standards • Agendas and minutes of meetings are maintained and are regularly shared with school leadership and the school community • Administrators, coaches, specialists, and interventionists actively participate in and support collaborative planning meetings • A variety of protocols are available for teachers to use during collaborative planning time in order to guide looking at student work, engaging in lesson study, building common assessments, and refining practice.	**Evidence would include:** • There is a collection of team meeting reports and schedules; these reports are used in school-wide decision-making • Teacher teams meet regularly to discuss and compare student work for the purpose of setting high standards, assessing their own and their students' performance • Leadership team enables inter-classroom visitations so teachers can observe peers and use information to improve instructional practice • Professional development opportunities are linked directly to student and teacher needs. • Leadership team supports a community where faculty, staff, and administrators regularly engage in professional discourse, study and data-driven evaluation and planning to improve student learning, • Team meeting norms/protocols are continually revisited to ensure all team members operate as equals and demonstrate mutual respect. • Professional development activities are delivered primarily by teachers and leaders from within the school — along with outside experts, when necessary. • At least once annually, leadership team engages staff in review of the use of collaborative planning and professional development time to determine any necessary improvements

Mass 2020

Indicators of Implementation of the ELT Expectations

Massachusetts Department of ELEMENTARY & SECONDARY EDUCATION

Expectation V. Focused and Collaborative Leadership

The principal as instructional leader and leadership team are fully committed to expanding learning time to improve instructional practice and to bringing many others – teachers, students, families, school partners, and the community - into the process of redesign and implementation in support of school-wide achievement goals.

PHASE I	PHASE II
Evidence would include: • Principal supports the instructional focus through classroom visits, coaching, and modeling • Principal is an instructional leader, knowledgeable about current instructional practice in every classroom • The expanded school schedule allows the principal to meet with teacher teams to review student performance data and discuss adjustments to instruction based on the data • Principal and leadership team create opportunities to communicate and engage with students, families, school partners and the community in the process of redesign and implementation. • Principal visits all classrooms at least once per week and collects, analyzes, and uses the data to inform decision making about instructional leadership • Principal and leadership team clearly communicate how instructional practices connect to area of academic focus • Leaders coordinate whole-school professional learning activities, including suggesting professional readings, providing opportunities for teacher-led professional development in key areas, and structuring opportunities for cross-team collaboration • Families introduced to the redesigned, expanded school day and the school-wide academic focus • Principal and school leadership team hold themselves, school faculty and staff to high standards of professional practice and personal conduct	**Evidence would include:** • Principal and leadership team sets specific instructional leadership goals that focus on monitoring and improving student learning throughout the year • Principal is a collaborative, supportive instructional leader committed to excellent teaching in every classroom • Principal uses data from classroom visits with leadership team to lead school in PD and allocating resources - especially time • Successes are celebrated regularly and frequently, and teams, individual teachers, and students are proudly upheld as exemplars • Teachers visit the classrooms of their colleagues on a regular basis and are use agreed-upon protocols • All family engagement activities (events, newsletters, conferences, etc.) support improving academic learning and broader student growth • A formal system of two-way communication and collaboration is in place with students, families, school partners and the community regarding design and implementation of the expanded learning time redesign.

Mass 2020

Indicators of Implementation of the ELT Expectations

Massachusetts Department of ELEMENTARY & SECONDARY EDUCATION

Expectation VI. Resources are Aligned and Focused

The school demonstrates clear evidence that it is making decisions around resource allocation (Time, People, Talent, Energy and Money) that are aligned with the successful implementation of the ELT redesign and focused on meeting school-wide achievement goals.

PHASE I	PHASE II
Evidence would include: • Principal and leadership team evaluate resources from all sources (time, talent, dollars, and staff) to consider ways of more effectively supporting the instructional focus • The leadership team makes decisions regarding school day and school year schedules, the allocation of student learning time, position allocations, and discretionary spending • Principal and leadership team catalogue all programs and grants in the school and assess them in relation to instructional focus • Time has been allocated for regular meetings of the leadership team and teacher teams and for professional development during the school day • Teaching staff participates in investigating alternative uses of existing resources to better achieve school-wide academic goals • Principal and leadership team implement process to regularly share information regarding resource allocation with teachers and staff	**Evidence would include:** • The resources at the school level (support staff, technology, time, and dollars) work together to support the school's instructional focus and the implementation of the ELT redesign • Review of current plan shows reallocation of resources in support of the school's instructional focus when compared to previous plan • A resource decision-making process that includes input from leadership team and a range of constituents aligns the organization, use of resources, and staffing to support student achievement in the instructional focus and the ELT redesign • The allocation of resources maximizes individual attention for all students in the academic focus area and in non-academic student support such as counseling, advisory groups, and student engagement in school • At the end of each school year, student data and resource allocation are reviewed and implementation plan is revised for new school year

Mass 2020

Indicators of Implementation of the ELT Expectations

Massachusetts Department of ELEMENTARY & SECONDARY EDUCATION

Expectation VII. District Leadership Supports ELT

The district actively supports all ELT schools around the ELT Expectations for Implementation by providing leadership, support, supervision, long-term district planning and creative problem solving to remove barriers and ensure schools can meet rigorous achievement goals.

PHASE I	PHASE II
Evidence would include: • District provides leadership in communicating the goals of the school's ELT work within the broader school community • District has identified a person in the central office who will work directly with ELT schools to provide guidance, leadership and decision-making support on challenges related to implementing ELT • District supports ELT schools in making instructional and curricular changes related to the ELT redesign • District helps institute additional time for teacher collaboration as part of the ELT redesign • District supports school's efforts to provide professional development and teacher collaboration that are aligned with ELT redesign • District provides support and leadership around specific logistical issues (staffing, school schedule, sharing of staff, negotiated agreements, transportation, food service, etc.) that may need group problem solving to address • The district aligns resources for ELT (support staff, technology, time, and dollars) to support the school's instructional focus and the implementation of the ELT redesign	**Evidence would include:** • Superintendent is seen as an active supporter of the ELT work being a catalyst for school and district-wide improvement • Expansion of the ELT work has been considered as an element in the development of the long-term strategic plan of the district • Lessons learned by schools implementing an ELT redesign are intentionally shared with all schools and replicated when possible. • District communicates to the wider community how the implementation of ELT is linked to growth in student learning and progress on district and school-wide achievement goals

Appendix B. Exhibits and Model Specifications for Chapter 2

Exhibit B.1: Characteristics of Sample Schools, by Cohort and ELT Status

	Number of Schools					
	Cohort 1		Cohort 2		Cohort 3	
	ELT	MC	ELT	MC	ELT	MC
Grade Span						
Elementary school	1	1	3	3	2	2
K-8 school	3	4	1	1	0	1
Middle school	4	3	1	1	3	3
School Location						
City	7	7	1	2	1	2
Suburb	1	1	1	2	4	4
Town	0	0	2	1	0	0
Rural	0	0	1	0	0	0
School Size						
600 students or more	3	1	2	3	2	3
400-599 students	3	5	2	1	3	3
200-399 students	2	2	0	1	0	0
Fewer than 200 students	0	0	1	0	0	0
Low Income Student Population						
75 percent or more	4	4	1	2	4	2
50-74 percent	4	2	4	3	1	4
Less than 50 percent	0	2	0	0	0	0
Minority Student Population						
75 percent or more	6	3	0	0	1	1
50-74 percent	1	4	2	3	2	2
25-49 percent	1	1	1	1	2	3
Less than 25 percent	0	0	2	1	0	0
SPED Student Population						
20 percent or more	4	3	2	2	1	6
10-19 percent	4	5	3	3	3	0
Less than 10 percent	0	0	0	0	1	0
LEP Student Population						
20 percent or more	5	3	1	1	1	0
10-19 percent	0	2	1	2	2	2
Less than 10 percent	3	3	3	2	2	4
Met Aggregate Adequate Yearly Progress (AYP) in 2011						
English language arts	2	0	3	1	2	3
Math	1	1	1	2	0	3
ELA Accountability Status in 2011						
No status (AYP met for previous two years)	1	2	1	1	0	1
Identified for improvement, corrective action, or restructuring	7	6	4	4	5	5
Math Accountability Status in 2011						
No status (AYP met for previous two years)	0	1	1	2	0	1
Identified for improvement, corrective action, or restructuring	8	7	4	3	5	5

EXHIBIT READS: There is one ELT elementary school and one matched comparison elementary school in the study sample in Cohort 1.

Source: MA ESE website (http://profiles.doe.mass.edu/).

Sample: Full sample of 37 schools, including 18 ELT and 19 matched comparison schools.

B.2: Technical Appendix with Detailed Model Specifications

Additional Details on the Data Used for Choosing Matched Comparison Schools

Data for matching were downloaded from publicly available datasets on the ESE website. To identify potential matched comparison schools, data from the year immediately prior to ELT implementation were used. For Cohort 1 schools, 2005–06 data were referenced, for Cohort 2 schools, 2006–07 data were referenced, and for Cohort 3 schools, 2007-08 data were referenced.

As described in Chapter 2, ELT schools were matched to non-ELT schools within district and grade span based on prioritization of selected matching variables including but not limited to the Composite Performance Index (CPI) and Adequate Yearly Progress (AYP). The CPI is a "100-point index combining the scores of students who take standard MCAS tests (the Proficiency Index) with the scores of those who take the MCAS-Alternate Assessment (MCAS-Alt) (the MCAS-Alt Index) and is a measure of the extent to which students are progressing toward proficiency in ELA and mathematics, respectively." (http://www.doe.mass.edu/sda/ayp/2008/glossary.doc)

"The federal No Child Left Behind Act (NCLB) requires all schools and districts to meet or exceed specific student performance standards in English language arts (ELA) and mathematics by the year 2014. AYP determinations are issued yearly based on the performance of all students (the "aggregate") and for individual student groups ("subgroups") to gauge the interim progress toward the attainment of those goals. To make AYP, districts and schools must meet a student participation requirement, an additional attendance or graduation requirement, and either the State's annual performance target for that subject or the district, school or group's own annual improvement target." (http://www.doe.mass.edu/sda/ayp/2008/glossary.doc)

Districts, schools, and student subgroups are expected to make AYP in ELA and mathematics. Districts, schools, or subgroups that make AYP in consecutive years have no NCLB Accountability Status. Those that do not make AYP for two consecutive years or more may be identified for Improvement, Corrective Action, or Restructuring for students in the aggregate or for one or more student subgroups. Improvement, Corrective Action, and Restructuring statuses trigger specific consequences (http://www.doe.mass.edu/sda/ayp/2008/glossary.doc).

Model Specifications

The following statistical models were fit to produce findings addressing the research questions posed in this report.[75]

Models used to Estimate the Effect of ELT on Non-Academic Outcomes

Model estimating differences in time use between ELT and matched comparison schools

Data: Interview data from ELT and matched comparison principals conducted in Spring, 2011.

$$Y_{jk} = \gamma_0 + \gamma_1 ELT_{jk} + \rho_k + \varepsilon_{jk}$$

[75] Because year five coefficients rely solely on data from the first cohort of study schools, the main text describes results only through year four and results of models that include terms to estimate year five preliminary results are presented in Appendices D and E.

Where:

Y_{jk} = outcome measure for school *j* in matched pair *k* in spring 2011

ELT_{jk} = one if the school is in an ELT school, and 0 otherwise

ρ_k = matched-pair dummy variables, modeled by a series of indicator variables for each pair of matched schools, *k*

ε_{jk} = a school specific error term

The difference in time is directly estimated as γ_1, the parameter estimate on the ELT term.

Combined Model estimating the effect of ELT on teacher survey responses

Data: teacher-level responses from ELT and matched comparison schools to survey items in the 2010-11 school year.

$$Y_{ijk} = \gamma_0 + \gamma_1 ELT_{jk} + \sum_{m=1}^{M} \gamma_{1+m} Teach\_dem_{ijk}^{m} + \sum_{n=1}^{N} \gamma_{1+M+n} Sch\_char_{jk}^{n} + \rho_k + \mu_{jk} + \varepsilon_{ijk}$$

Where:

Y_{ijk} = outcome measure for teacher *i* in school *j* in matched pair *k* in spring 2011

ELT_{jk} = one if the teacher is in an ELT school, and 0 otherwise

$Teach\_dem_{ijk}^{m}$ = mth teacher-level demographic characteristic

$Sch\_char_{jk}^{n}$ = nth school-level demographic characteristic

ρ_k = matched-pair dummy variables, modeled by a series of indicator variables for each pair of matched schools, k

μ_{jk} = a school-level error term that accounts for the fact that teachers are clustered within schools and pairs

ε_{ijk} = a teacher-level error term

The effect of ELT is directly estimated as γ_1, the parameter estimate on the ELT term.

Combined Model estimating the effect of ELT on student survey responses

Data: student-level responses from ELT and matched comparison schools to survey items in the 2010-11 school year.

$$Y_{itjk} = \gamma_0 + \gamma_1 ELT_{jk} + \sum_{m=1}^{M} \gamma_{1+m} Stud\_dem_{itjk}^{m} + \sum_{n=1}^{N} \gamma_{1+M+n} Sch\_char_{jk}^{n} + \rho_k + \mu_{jk} + \nu_{tjk} + \varepsilon_{itjk}$$

Where:

Y_{itjk} = outcome measure for student *i* in classroom of teacher *t* in school *j* in matched pair *k* in spring 2011

ELT_{jk} = one if the student is in an ELT school, and 0 otherwise

$Stud\_dem^{m}_{itjk}$ = m[th] student-level demographic characteristic

$Sch\_char^{n}_{jk}$ = n[th] school-level demographic characteristic

ρ_k = matched-pair school fixed effects, modeled by a series of indicator variables for each pair of matched schools, k

μ_{jk} = a school-level error term that accounts for the fact that students are clustered within schools

ν_{tjk} = a teacher-level error term that accounts for the fact that students are clustered within classrooms of a particular teacher

ε_{itjk} = a student-level error term

The effect of ELT is directly estimated as γ_1, the parameter estimate on the ELT term.

Model estimating the effect of ELT on student behavioral indicators

Data: Longitudinal, student-level behavioral measures across grades in years prior to and after ELT.

The model includes year fixed effects and student fixed effects, and indicator variables that designate whether the school was an ELT school in a post year, as specified below.

$$Y_{iy} = \gamma_1(ELT\_PY1_{iy}) + \gamma_2(ELT\_PY2_{iy}) + \gamma_3(ELT\_PY3_{iy}) + \gamma_4(ELT\_PY4_{iy}) + \gamma_5(ELT\_PY5_{iy}) + S_i + T_y + \varepsilon_{iy}$$

Where:

Y_{iy} = outcome measure for student *i* in year *y*

ELT_PY1_{iy} = one if the student measure is from an ELT school in its first post year after the implementation of ELT, and 0 otherwise

ELT_PY2_{iy} = one if the student measure is from an ELT school in its second post year after the implementation of ELT, and 0 otherwise

ELT_PY3_{iy} = one if the student measure is from an ELT school in its third post year after the implementation of ELT, and 0 otherwise

ELT_PY4_{iy} = one if the student measure is from an ELT school in its fourth post year after the implementation of ELT, and 0 otherwise

ELT_PY5_{iy} = one if the student measure is from an ELT school in its fifth post year after the implementation of ELT, and 0 otherwise

S_i = student fixed effect, modeled by a series of indicator variables for each student

T_y = year fixed effect, modeled by a series of indicator variables for each year

ε_{iy} = a student-level error term

The effect of ELT after one year of implementation is directly estimated as γ_1, the parameter estimate on the *ELT_PY*1 term; the effect after two years of implementation is estimated as γ_2, the parameter estimate on the *ELT_PY*2 term; the effect after three years of implementation is estimated as γ_3, the parameter estimate on the *ELT_PY*3 term; the effect after four years of implementation is estimated as γ_4, the

parameter estimate on the *ELT_PY*4 term; and the effect after five years of implementation is estimated as γ_5, the parameter estimate on the *ELT_PY*5 term. Standard errors are corrected for the correlations between student outcomes within schools (within and across years) beyond what is captured by the year fixed effects using the cluster-robust variance estimator (also known as the "sandwich" standard errors; White, 1984 and Liang and Zeger, 1986).

Models used to Estimate the Effect of ELT on School Characteristics and Academic Outcomes

Model estimating the effect of ELT on characteristics of students and teachers in schools

Data: Longitudinal, school-level data on the number or proportion of students and teachers with various characteristics in years prior to and after ELT.

The model includes school fixed effects, year fixed effects, and indicator variables that designate whether a school was an ELT school in a post year, as specified below.

$$Y_{jy} = \gamma_1(ELT\_PY1_{jy}) + \gamma_2(ELT\_PY2_{jy}) + \gamma_3(ELT\_PY3_{jy}) + \gamma_4(ELT\_PY4_{jy}) + \gamma_5(ELT\_PY5_{jy}) + V_j + T_y + \varepsilon_{jy}$$

Where:

Y_{jy}	= outcome measure for school *j* in year *y*
ELT_PY1_{jy}	= one if the school *j* is an ELT school in its first post year after the implementation of ELT, and 0 otherwise
ELT_PY2_{jy}	= one if the school is an ELT school in its second post year after the implementation of ELT, and 0 otherwise
ELT_PY3_{jy}	= one if the school is an ELT school in its third post year after the implementation of ELT, and 0 otherwise
ELT_PY4_{jy}	= one if the school is an ELT school in its fourth post year after the implementation of ELT, and 0 otherwise
ELT_PY5_{jy}	= one if the school is an ELT school in its fifth post year after the implementation of ELT, and 0 otherwise
V_j	= school fixed effects, modeled by a series of indicator variables for each school
T_y	= year fixed effect, modeled by a series of indicator variables for each year
ε_{jy}	= the usual school-year specific error term

The effect of ELT after one year of implementation is directly estimated as γ_1, the parameter estimate on the *ELT_PY*1 term; the effect after two years of implementation is estimated as γ_2, the parameter estimate on the *ELT_PY*2 term; the effect after three years of implementation is estimated as γ_3, the parameter estimate on the *ELT_PY*3 term; the effect after four years of implementation is estimated as γ_4, the parameter estimate on the *ELT_PY*4 term; and the effect after five years of implementation is estimated as γ_5, the parameter estimate on the *ELT_PY*5 term. Standard errors are corrected for the correlations between student outcomes within schools (within and across years) beyond what is captured by the school and year fixed effects using the cluster-robust variance estimator (also known as the "sandwich" standard errors; White, 1984 and Liang and Zeger, 1986).

Estimating differences between ELT and matched comparison schools' student mobility

Data: Longitudinal, student-level data across grades in years prior to and after ELT.

$$t = \frac{\bar{x}_1 - \bar{x}_2}{s_{\bar{x}_1 - \bar{x}_2}}$$

Where:

$\bar{x}_1 - \bar{x}_2$ = difference in means between ELT and matched comparison schools

$s_{\bar{x}_1 - \bar{x}_2}$ = the standard error

Given that student mobility is presented in the main text as an alternative metric for assessing the relationship between ELT and school outcomes, student mobility analyses are exploratory and test for the difference in means by implementation year is using the probability (*p*-value) associated with the t-statistic.

Model estimating the effect of ELT on student MCAS scores

Data: Longitudinal, student-level test scores by grade in years prior to and after ELT.

The model includes school fixed effects, year fixed effects, student level demographic characteristics, and indicator variables that designate whether a school was an ELT school in a post year, as specified below. The error term also adjusts for the correlation of student scores within a school in a school year.

$$Y_{ijy} = \gamma_1(ELT\_PY1_{ijy}) + \gamma_2(ELT\_PY2_{ijy}) + \gamma_3(ELT\_PY3_{ijy}) + \gamma_4(ELT\_PY4_{ijy}) +$$
$$\gamma_5(ELT\_PY5_{ijy}) + \sum_{k=1}^{K} \gamma_{6+k}(Stud\_dem_{ijy}^{k}) + V_j + T_y + \varepsilon_{ijy}$$

Where:

Y_{ijy} = outcome measure for student *i* in school *j* in year *y*

ELT_PY1_{ijy} = one if the student measure is from an ELT school in its first post year after the implementation of ELT, and 0 otherwise

ELT_PY2_{ijy} = one if the student measure is from an ELT school in its second post year after the implementation of ELT, and 0 otherwise

ELT_PY3_{ijy} = one if the student measure is from an ELT school in its third post year after the implementation of ELT, and 0 otherwise

ELT_PY4_{ijy} = one if the student measure is from an ELT school in its fourth post year after the implementation of ELT, and 0 otherwise

ELT_PY5_{ijy} = one if the student measure is from an ELT school in its fifth post year after the implementation of ELT, and 0 otherwise

$Stud\_dem_{ijy}^{k}$ = kth student-level demographic characteristic

V_j = school fixed effects, modeled by a series of indicator variables for each school

T_y = year fixed effect, modeled by a series of indicator variables for each year

ε_{ijy} = the usual student-level error term

The effect of ELT after one year of implementation is directly estimated as γ_1, the parameter estimate on the *ELT_PY*1 term; the effect after two years of implementation is estimated as γ_2, the parameter estimate on the *ELT_PY*2 term; the effect after three years of implementation is estimated as γ_3, the parameter estimate on the *ELT_PY*3 term; the effect after four years of implementation is estimated as γ_4, the parameter estimate on the *ELT_PY*4 term; and the effect after five years of implementation is estimated as γ_5, the parameter estimate on the *ELT_PY*5 term. Standard errors are corrected for the correlations between student outcomes within schools (within and across years) beyond what is captured by the school and year fixed effects using the cluster-robust variance estimator (also known as the "sandwich" standard errors; White, 1984 and Liang and Zeger, 1986).

Appendix C. Exhibits for Chapter 3

Exhibit C.1: Implementation Index Summary Matrix

Year 5 School Number	ELT	Raw Implementation Index	1. School-wide Academic Focus	2. Core Academics	2. Core Academics\In addition to time	3. Enrichment Activities	3. Enrichment Activities\In addition to time	4. Teacher leadership and collaboration	4. Teacher leadership and collaboration\In addition to time	5. School Leadership	6. ELT Support	# of 0's	# of 1's	# of 2's	# of 3's
J	1	22	3	3	3	3	2	2	3	3	1	0	0	2	6
O	1	19	3	3	2	3	3	2	2	1	2	0	1	3	4
I	1	15	0	3	1	3	2	3	1	2	1	1	2	2	3
A	1	15	3	3	3	1	2	1	1	1	3	0	4	1	3
B	1	14	0	2	2	2	2	2	2	2	2	1	0	7	0
H	1	13	2	1	1	3	2	3	1	0	0	1	3	2	2
C	1	12	0	2	0	1	3	2	2	2	2	2	1	4	1
E	1	11	0	1	1	3	3	0	1	2	3	2	3	1	2
D	1	11	0	1	2	3	1	0	2	2	3	2	2	3	1
K	1	10	0	1	1	3	2	1	1	1	3	1	5	1	1
Q	1	9	0	2	0	1	2	1	1	2	2	2	3	3	0
R	1	9	0	0	2	1	2	0	1	3	3	3	2	2	1
M	1	8	0	0	1	3	0	1	1	2	1	3	3	1	1
L	1	8	0	1	1	3	1	1	0	1	3	2	5	0	1
G	1	7	0	2	0	0	1	0	1	3	3	4	2	1	1
F	1	6	0	2	0	0	1	0	1	2	3	4	2	2	0
N	1	5	0	1	0	0	2	0	1	1	2	4	3	1	0
P	1	.	3	.	0	.	1	0	2	1	1	2	2	1	1
S	0	12	3	0	1	2	3	1	1	1	.	1	4	1	2
T	0	10	2	1	0	3	2	0	1	1	.	2	3	2	1
U	0	10	3	1	0	1	0	1	1	3	.	2	4	0	2
V	0	10	3	0	1	0	1	1	1	3	.	2	4	0	2
W	0	9	3	2	0	0	0	0	2	2	.	4	0	3	1
X	0	8	0	0	2	0	3	0	0	3	.	5	0	1	2
Y	0	8	0	3	0	0	1	0	1	3	.	4	2	0	2
Z	0	7	0	3	0	0	0	2	1	1	.	4	2	1	1
AA	0	7	0	0	2	0	0	2	0	3	.	5	0	2	1
BB	0	6	0	1	0	0	1	2	1	1	.	3	4	1	0
CC	0	6	0	1	0	0	1	0	1	3	.	4	3	0	1
DD	0	5	0	2	0	0	1	0	1	1	.	4	3	1	0
EE	0	4	0	1	0	0	0	0	1	2	.	5	2	1	0
FF	0	3	0	0	2	0	0	0	0	1	.	6	1	1	0
GG	0	3	0	1	0	0	0	0	1	1	.	5	3	0	0
HH	0	2	0	0	0	0	0	0	1	1	.	6	2	0	0
II	0	.	.	0	.	0	.	.	.	.	.	2	0	0	0
JJ	0	.	.	3	.	2	.	.	.	.	.	0	0	1	1
KK	0	.	0	.	0	.	0	0	1	3	.	4	1	0	1

OVERALL SUM:	28	47	28	41	45	28	39	64	38
ELT Criterion Average	0.78	1.65	1.11	1.94	1.78	1.06	1.33	1.72	2.11
MC Criterion Average	0.88	1.06	0.47	0.44	0.76	0.53	0.88	1.94	N/A

Overall Average Raw Score	8.67	Average ELT Raw Score	11.41	Average MC Raw Score	6.88

		Criterion 1	Criterion 2 Time	Criterion 2 AT	Criterion 3 Time	Criterion 3 AT	Criterion 4 Time	Criterion 4 AT	Criterion 5	Criterion 6
Overall	# of 0's	25	9	18	17	10	18	4	1	1
	# of 1's	0	12	8	5	10	8	24	14	4
	# of 2's	2	7	7	3	10	7	6	10	5
	# of 3's	8	7	2	10	5	2	1	10	8
ELT	# of 0's	13	2	6	3	1	7	1	1	1
	# of 1's	0	6	7	4	5	6	12	7	3
	# of 2's	2	5	3	2	9	2	4	8	4
	# of 3's	4	1	1	7	3	1	0	3	8
MC	# of 0's	12	7	12	14	9	11	3	0	0
	# of 1's	0	6	1	1	5	2	12	7	0
	# of 2's	0	2	3	1	0	3	1	2	0
	# of 3's	2	3	0	0	1	0	0	6	0

Appendix D. Exhibits for Chapter 4

Information regarding differences between ELT cohorts is presented below. It should be noted, as shown in Exhibit D.1, that there it is difficult to interpret any cohort differences given the small (and different) number of schools in each cohort as well as the distribution of grades across cohorts.

Exhibit D.1: Number of ELT Schools by Cohort, 2010-11

ELT Cohort	Total Number of Schools (N=18)	Total Number of Elementary Schools (N=10)	Total Number of Middle Schools (N=8)
1	8	4	4
2	5	4	1
3	5	2	3
ELT Cohort	**Total Number of 5th & 8th Grades (N=23)**	**Total Number of 5th Grades (N=12)**	**Total Number of 8th Grades (N=11)**
1	11	4	7
2	5	4	1
3	7	4	3

Time Use in ELT Schools

Overall Length of the ELT School Day and Time Allocated to Different Instructional Activities

The school day was approximately 15 minutes longer, on average, for schools in Cohorts 1 and 3 than Cohort 2 schools (not shown). On average, Cohort 2 schools allocated about 20 minutes more to core academics each day (5 hours) than Cohort 1 schools (4 hours and 39 minutes), and about 12 minutes more than Cohort 3 schools (4 hours and 48 minutes) (not shown). Among the schools that offered enrichment classes, there was no difference between cohorts in amount of time allocated to enrichment. Among the schools that offered academic support classes, Cohort 1 allocated 11 more minutes to academic support each day (41 minutes) than Cohort 2 (30 minutes) and 8 more minutes than Cohort 3 (33 minutes). These daily differences in average amount of time spent in academic support extrapolate into 40-55 min more academic support each week.

As shown in Exhibit D.2, teacher satisfaction with the amount of instructional time available in each of the core subject areas was general high (70 percent or more teachers reporting satisfaction) and there were no differences among cohorts. With regards to the amount of time available for physical activity during the day, however, teacher satisfaction was low, with less than half (41 percent) of teachers reporting satisfaction; among the three cohorts, Cohort 3 teachers were least satisfied with the amount of time during the day for physical activity (35 percent Cohort 3, 41 percent Cohort 2, and 47 percent Cohort 1 reporting satisfaction).

Exhibit D.2: Teacher Satisfaction with Instructional Time Available for Core Academics and Physical Activity, by Cohort, 2010-11

	Percent of Teachers			
	Overall	Cohort 1	Cohort 2	Cohort 3
Time available for instruction in ELA.	90%	92%	91%	85%
Time available for instruction in math.	93	93	95	89
Time available for instruction in science.	81	86	72	81
Time available for instruction in social studies.	71	78	65	66
Time available for physical activity.	42	47	41	35

School-Wide Academic Focus

According to principals, 16 of 18 ELT schools had established a school-wide academic focus.[76] Student reports of the school-wide academic focus are summarized in Exhibit D.3. In contrast to teacher and principal reports, the most common focus reported by students was math (31 percent), as was the case in 2009-10.[77] Twenty-one percent of students reported that there was no "special topic that every student is supposed to learn." According to 11 percent of students, the focus was test taking skills. Compared to principals and teachers, far fewer students reported that the focus was reading or writing (6 and 5 percent, respectively). At the school level, student reports were inconsistent with teacher and principal reports at all but one school. Within most schools (14), there was not consistency among students.

Exhibit D.3: Student Reports of Academic Focus, By School Configuration, 2010-11

	Percent of Students Reporting		
	Overall	Elementary	Middle
Math	31%	29%	32%
Test Taking Skills	11	8	14
Reading	6	8	6
Thinking Skills	5	4	6
Science	5	4	6
Writing	5	6	5
Vocabulary	4	1	5
Social Studies	2	2	2
There is no special topic	21	26	17
Other topic	11	14	8

EXHIBIT READS: In spring 2011, across all ELT schools, 31 percent of students reported that math was the "one special topic every student is supposed to learn this year."

Source: Abt Associates' Surveys of MA ELT School Students, Spring 2011, Item 7.

Sample: 2,300 students from ELT schools. Nonresponse rate was 5.6 percent.

[76] Given the small number of ELT schools overall and by cohort, the discussion presents information in terms of number of schools rather than percentages.

[77] Students were asked on surveys to report on "the one special topic every student in your school is supposed to learn this year." Students could choose one of eight topics listed, indicate there was no special topic, or write in another topic if their response was not listed.

All Cohort 3 schools had a focus. The majority of teachers (81 percent) reported that their school had an academic focus, with no substantial differences across cohorts. As reported by teachers, school academic focus areas varied somewhat by cohort (see Exhibit D.4). Cohort 3 teachers reported literacy more often than Cohorts 1 and 2 (46, 31 and 35 percent, respectively).

Exhibit D.4: Teacher Reports of Academic Focus, By Cohorts, 2010-11

	Percent of Teachers Reporting			
	Overall	Cohort 1	Cohort 2	Cohort 3
Literacy	36%	31%	35%	46%
Math	14	17	13	10
Higher Order Thinking Skills	11	10	6	19
Vocabulary	3	3	0	5
Science	0	-	1	-
Test Taking Skills	2	3	3	1
Writing	9	13	8	3
Social Studies	0	-	-	1
Other	24	22	34	16
Literacy	36	31	35	46

EXHIBIT READS: In spring 2011, across all ELT schools, 36 percent of teachers reported that literacy described "the school's primary academic focus this year"

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 7.

Sample: 918 teachers from ELT schools. Nonresponse rate was 5.6 percent.

According to principals, the academic focus was posted publicly at most schools (13 of 16). Principal interviews and site visits revealed that the academic focus was most frequently publicly available at Cohort 3 schools and least available at Cohort 1 schools. For example, all Cohort 3 schools posted the focus in the hallways, and three-quarters posted it in classrooms as well. Cohort 1 schools were most likely to report that the focus was not posted anywhere (3 schools compared to 0 schools in the other two cohorts).

Enrichment

Time

According to principals, time for enrichment at ELT schools during 2010-11 ranged from 0 to 340 minutes (or 5 hours and 40 minutes) per week, and schools allocated approximately 2 hours and 20 minutes each week (139 minutes) for a typical student, on average. Cohort 1 allocated 181 minutes on average (approximately 3 hours), nearly an hour more than schools in Cohorts 2 and 3 (which allocated 138 minutes and 120 minutes, respectively).

Collaborative Planning Time

There were modest differences in the frequency of participation in Collaborative Planning Time across Cohorts. As Exhibit D.5 displays, more cohort 2 teachers reported participating in collaborative planning time more frequently than once a week, than did teachers in cohorts 1 or 3.

Exhibit D.5: Frequency of Teacher Participation in Collaborative Planning Time, By Cohort, 2010-11

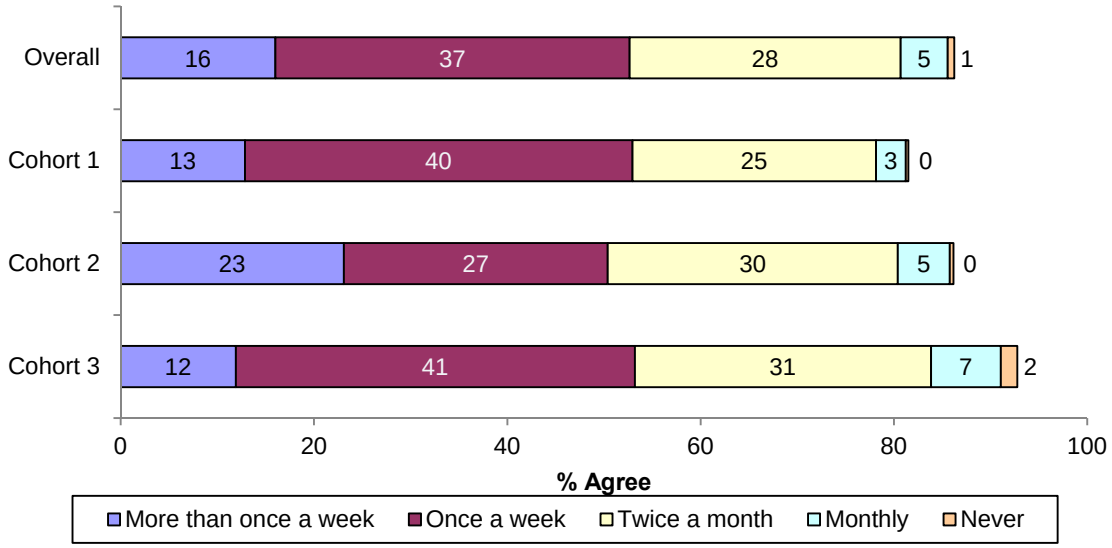


EXHIBIT READS: In spring 2011, across all ELT schools, 16 percent of teachers reported that they participated in collaborative planning time more than once a week.

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 23.

Sample: 918 teachers from ELT schools. Nonresponse rate was 3.7 percent.

Teacher satisfaction with the amount of time available for collaborative planning was fairly consistent across cohorts and school configurations, with about 60 percent of teachers indicating that they were satisfied.

Professional Development

Time and Frequency

Across cohorts and school configurations, about 85 percent of teachers participated in at least 10 hours of professional development over the course of the year. Exhibit D.6 shows the distribution of teachers' reported hours of professional development participation by cohort. Overall, half of teachers surveyed reported having completed more than 26 hours of professional development over the course of the school year. There were some differences in levels of reported participation across cohorts; 40 percent of Cohort 2 teachers, compared to nearly 60 percent of cohort 1 teachers, reported having participated in 26 or more hours of professional development. A similar pattern was observed for teachers who had participated in 50 hours or more of professional development, with considerably more teachers from Cohorts 1 than Cohort 2 teachers reporting participation (27 percent of Cohort 1 teachers and 17 percent of Cohort 2 teachers). Nearly twice as many Cohort 2 teachers as Cohort 1 or 3 teachers reported having engaged in under 10 hours of professional development.

Exhibit D.6: Teacher Time Spent in Professional Development, by Cohort, 2010-11

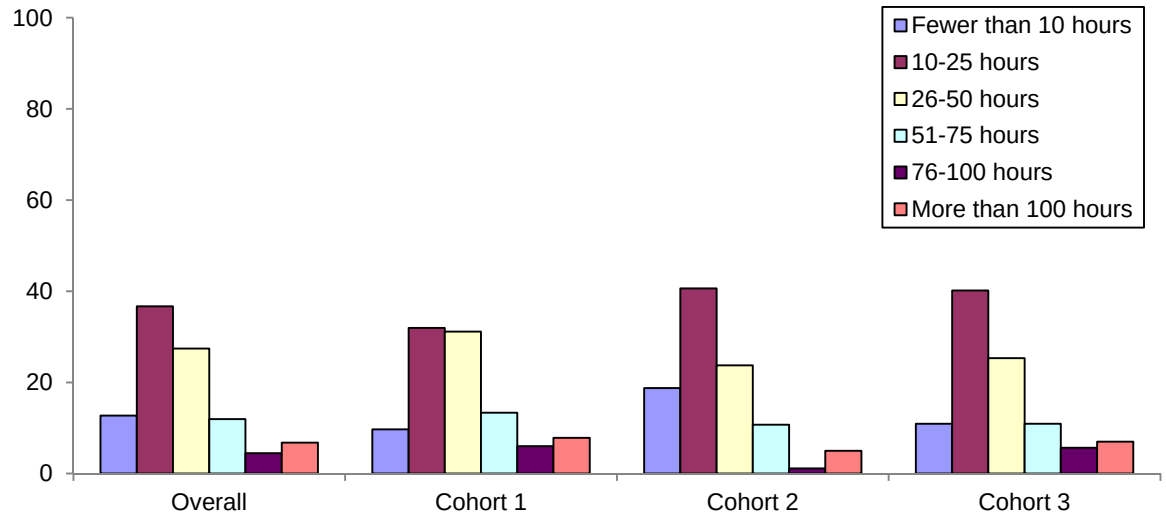


EXHIBIT READS: In spring 2011, across all ELT schools, 13 percent of teachers reported participating in fewer than 10 hours of professional development over the course of the 2010-11 school year.

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 29.

Sample: 918 teachers from ELT schools. Nonresponse rate was 5.0 percent.

Across all three of the most common professional development activities, fewer cohort 2 teachers than cohort 1 or 3 teachers reported participating in professional development. See Exhibit D.7 below.

Exhibit D.7: Sources Used by ELT Teachers to Support Instruction, by Cohort, 2010-11

	Percent Used			
	Overall	**Cohort 1**	**Cohort 2**	**Cohort 3**
Out-of-school professional development	53%	58%	45%	56%
Peer support (e.g., peer coaching, peer modeling, peer demonstration lessons)	49	55	37	53
Academic coaches in school	48	51	40	52
Principal and/or other administrative support (e.g., coaching, modeling)	27	29	24	30
Special education aide	27	22	33	30
Partner staff	26	23	28	28
Technical assistance from outside district	9	12	8	5
Other	3	3	3	3

EXHIBIT READS: In spring 2011, across all ELT schools, 53 percent of teachers reported using out-of-school professional development to support instruction during the 2010-11 school year.

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 28.

Sample: 918 teachers from ELT schools. The binary nature of the survey items does not allow for the reporting of nonresponse rates.

Teachers' satisfaction with the amount of time for PD, however, varied across cohorts, with 55 percent of cohort 2 teachers reporting satisfaction, and 75 percent of cohort 1 teachers reporting satisfaction. Cohort 3 fell between these two, with 64 percent of teachers satisfied.

Exhibit D.8: Teacher Satisfaction with Professional Development, by Cohort, 2010-11

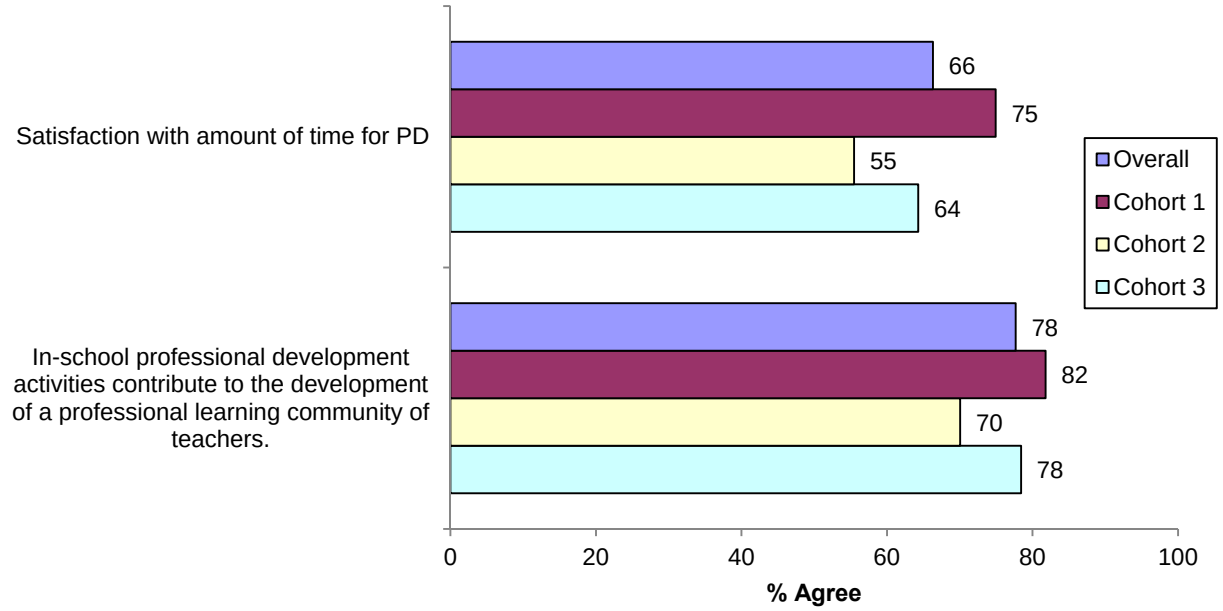


EXHIBIT READS: In spring 2011, across all ELT schools, 66 percent of teachers reported being satisfied with the amount of time for professional development in their school.

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 32c and 27c.

Sample: 918 teachers from ELT schools. Nonresponse rates across items ranged from 9.2 to 24.8 percent.

Leadership

Teacher Perceptions of District Leadership

There were some modest differences across cohorts and school types; as Exhibit D.9 shows, Cohort 3 and elementary teachers' responses were more positive, on average, about district leadership than others.

Exhibit D.9: Teacher Attitudes about District Leadership, by School Type. 2010-11

	Percent Agree			
	Overall	Cohort 1	Cohort 2	Cohort 3
The district leadership effectively manages our schools.	62%	60%	56%	70%
The district leadership communicates a clear vision for our district's schools.	73	73	65	80
The district leadership is interested in the professional development of teachers at this school.	69	72	58	76
The district leadership provides timely guidance on instructional practice, curriculum, etc.	60	64	51	65
The district leadership is responsive to this school and teacher concerns.	51	55	40	57
The district leadership actively supports ELT implementation at this school.	85	85	83	89

EXHIBIT READS: In spring 2011, across all ELT schools, 62 percent of teachers agreed that "The district leadership effectively manages our schools."

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 7cc through 7hh.

Sample: 918 teachers from ELT schools. Nonresponse rate ranged from 13.7 to 21.1 percent.

Teacher Perceptions of Principal Leadership

Over two-thirds of teachers generally agreed that their principals provided quality leadership, evidenced by communication, expectations, engagement with student progress, and receptiveness to feedback. Of note, fewer teachers in Cohort 3 indicated that their principals were effective managers who made the school run smoothly; that their principals were instructional leaders; and/or that their principals provided opportunities for staff leadership or recognition of staff success than did teachers in Cohorts 1 and 2 (see Exhibit D.10).

Exhibit D.10: Teacher Perceptions of Principal Leadership, by School Type, 2010-11

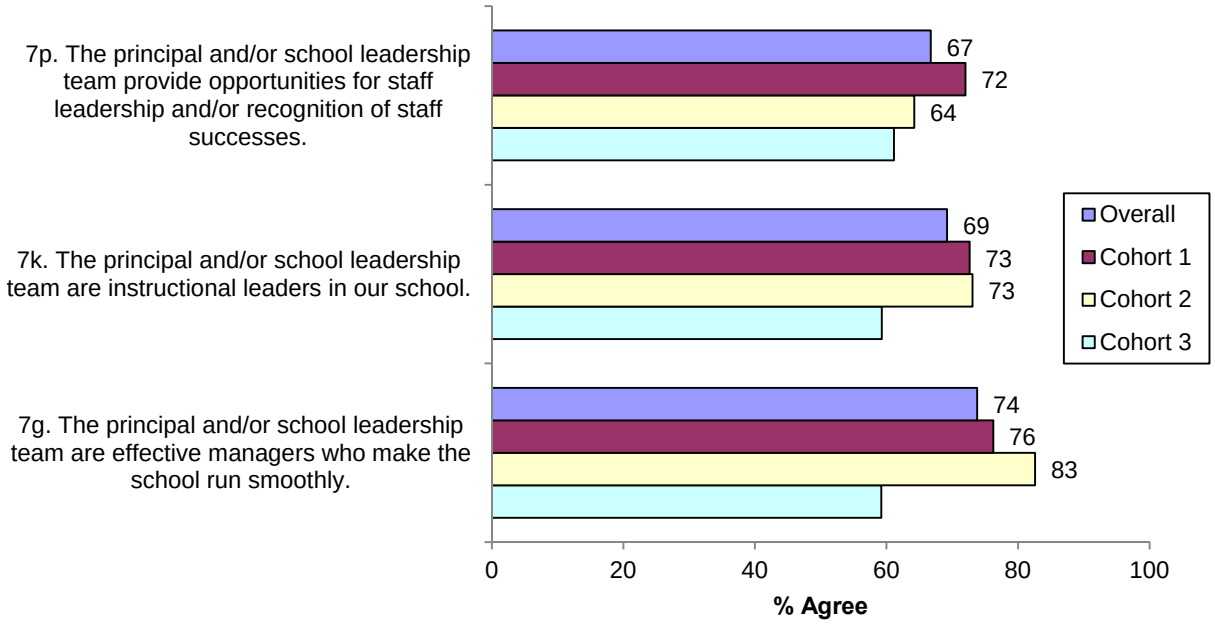


EXHIBIT READS: In spring 2011, across all ELT schools, 74 percent of teachers agreed that "The principal and/or school leadership team were effective managers who make the school run smoothly."

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 7g, 7k, and 7p.

Sample: 918 teachers from ELT schools. Nonresponse rates across items ranged from 4.0 to 7.6 percent.

Homework Policies in ELT Schools

Another important issue related to core academic instruction is homework, which can allow students to practice what they learn in their academic classes and further their skills. One potential challenge for ELT schools is balancing the value of practice or learning via homework with the reduced amount of time students have to complete homework once they get home, coupled with the possibility that students may be more fatigued when they leave school. On the other hand, a potential benefit of students being at school for longer each day is that they may have the opportunity to complete homework before they leave school.

Overall, about two-thirds of teacher survey respondents (65 percent) reported that their school had a homework policy such that homework was regularly assigned. About one-third of teachers reported that there was no school-wide homework policy or that the school-wide homework policy was that little or no homework is assigned.

Student responses about homework policies appeared to be consistent with those of teachers. Just over two-thirds (71 percent) of student survey respondents reported that they had homework on the last day they were in school.

Overall, the majority of students who had homework reported that they did their homework (83 percent). Of students who did their homework, as shown in Exhibit D.11, overall, about 40 percent reported

spending less than 30 minutes and about 40 percent reported spending between 30 and 60 minutes doing homework *at home*. About 40 percent reported spending no time and about 40 percent reported spending less than 30 minutes doing homework *in school*. In general, relatively few students reported spending more than an hour on homework whether at home or in school.

Exhibit D.11: Student Reports of Total Time Spent on Homework on a Typical Day, 2010-11

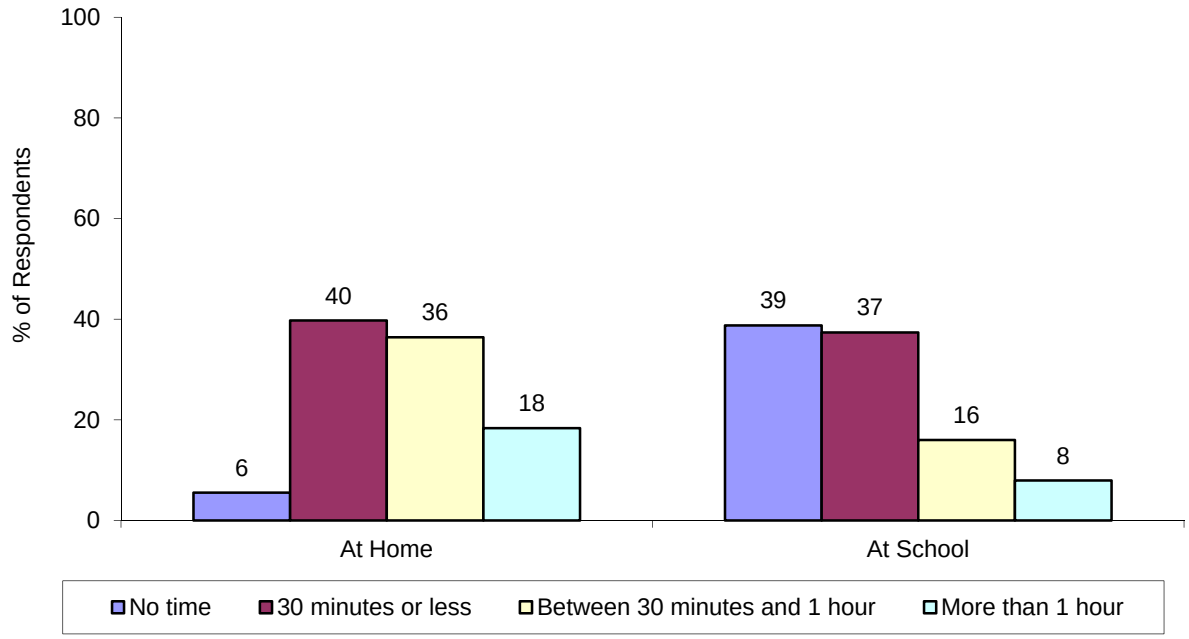


EXHIBIT READS: In spring 2011, across ELT schools, 40 percent of students reported that they spent a total of 30 minutes or less working on homework at home on a typical day.

Source: Abt Associates' Surveys of MA ELT School Students, Spring 2011, Item 6c.

Sample: 2,300 students from ELT schools. Nonresponse rate was 54.3 percent.

More than two-thirds (70 percent) of teachers indicated that homework completion rates were a problem area at their school, and more middle than elementary school teachers reported homework completion was problematic (85 percent and 57 percent).

Exhibit D.12: Teacher Perceptions of Students' Homework Completion Rates as a Problem Area, by School Configuration, 2010-11

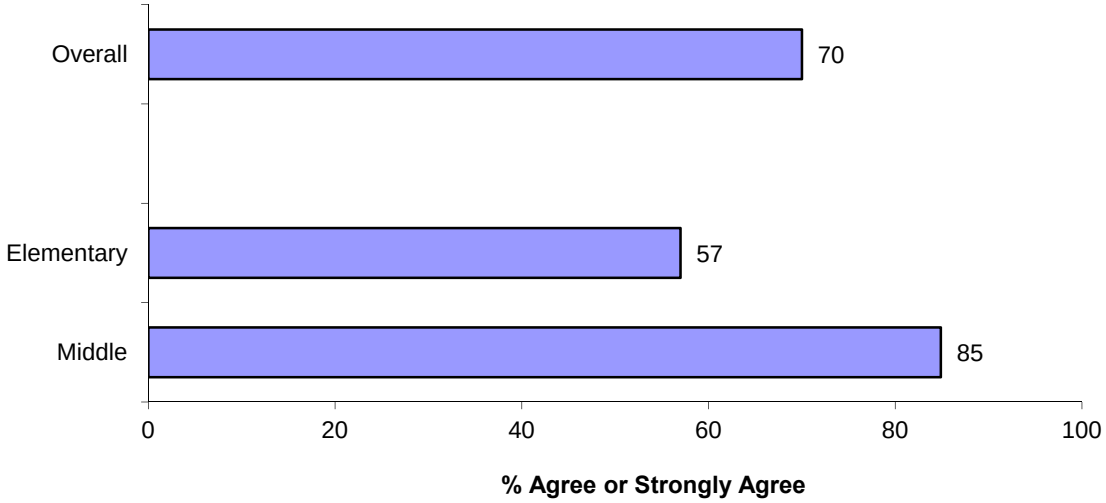


EXHIBIT READS: In spring 2011, across all ELT schools, 70 percent of teachers reported that they agreed or strongly agreed that homework completion rates were problematic.

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 6c.

Sample: 918 teachers from ELT schools. Nonresponse rate was 19.7 percent.

As shown in Exhibit D.13, more Cohort 1 and 2 teachers reported regular homework assignment than Cohort 3 teachers.

Exhibit D.13: Homework Policy in ELT Schools, by Cohort, 2010-11

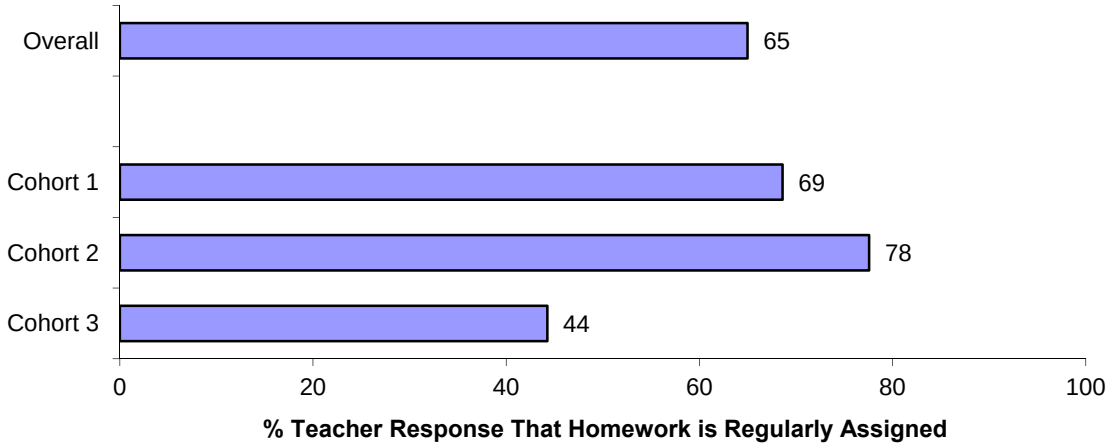


EXHIBIT READS: In spring 2011, across all ELT schools, 65 percent of teachers reported that they have a homework policy and that the homework policy is that homework is regularly assigned.

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 11.

Sample: 918 teachers from ELT schools. Nonresponse rate was 5.5 percent.

Student responses about homework policies appeared to be consistent with those of teachers. The majority of Cohort 1 and 2 students reported having homework, and just slightly more than half of Cohort 3 students reported having homework (78, 81, and 57 percent, respectively, not shown).

Among the three cohorts, more Cohort 2 than Cohort 1 and 3 students reported that they did their homework (91, 80 and 83 percent, respectively, not shown).

As shown in Exhibit D.14, in general, relatively few students reported spending more than an hour on homework whether at home or in school; the one notable difference between cohorts is that more Cohort 1 than Cohort 2 and 3 students reported spending more than an hour on homework at home (24, 13, and 14 percent, respectively).

Exhibit D.14: Student Reports of Total Time Spent on Homework on a Typical Day, by Cohort, 2010-11

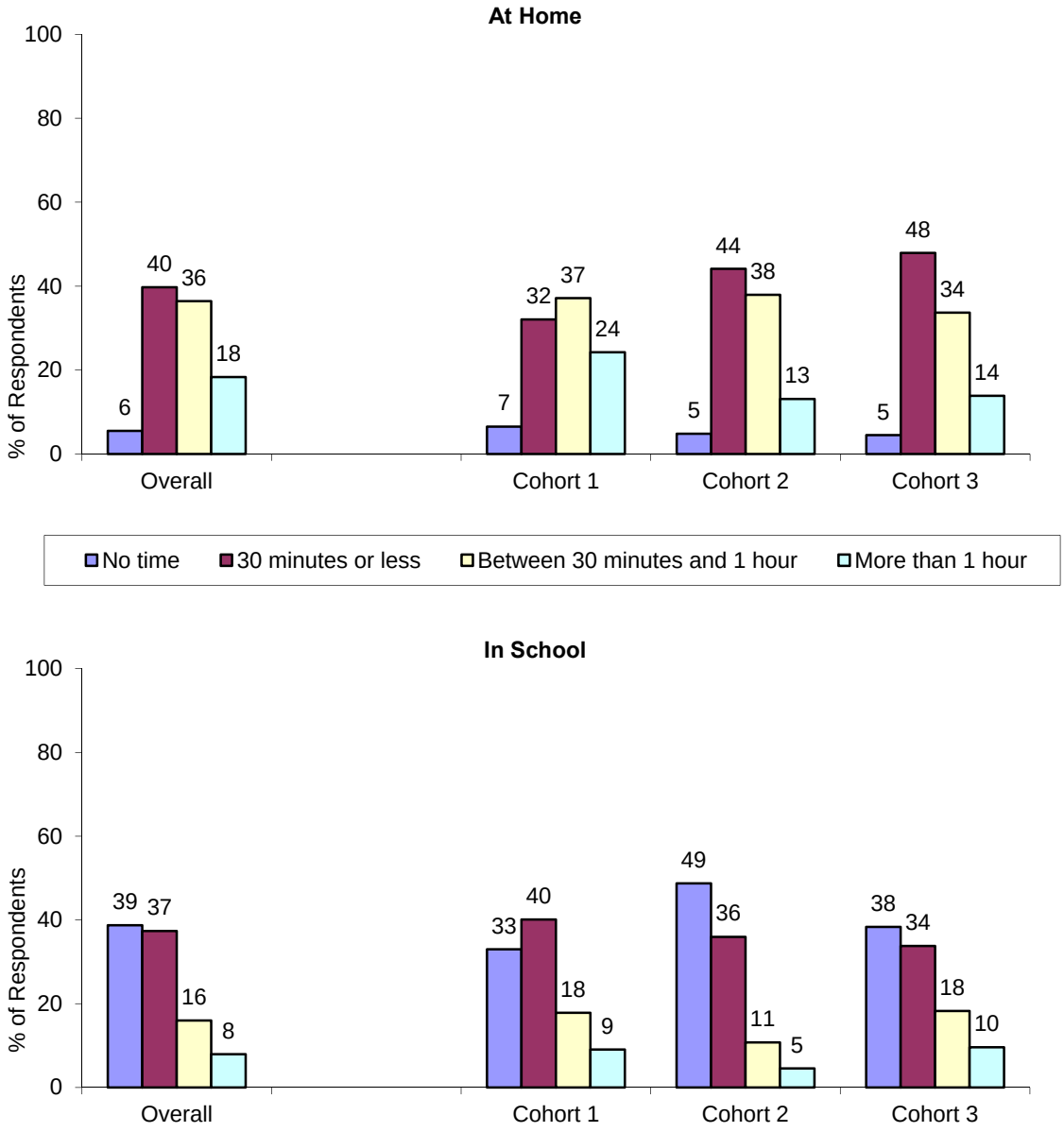


EXHIBIT READS: In spring 2011, across ELT schools, 40 percent of students reported that they spent a total of 30 minutes or less working on homework at home on a typical day.

Source: Abt Associates' Surveys of MA ELT School Students, Spring 2011, Item 6c.

Sample: 2,300 students from ELT schools. Nonresponse rate was 54.3 percent.

As shown in Exhibit D.15, more Cohort 3 than Cohorts 1 and 2 teachers (80 percent, 69 percent, and 63 percent, respectively) agreed that homework completion rates were problematic.

Exhibit D.15: Teacher Agreement on Whether Homework Completion Rates Were Problematic, by Cohort, 2010-11

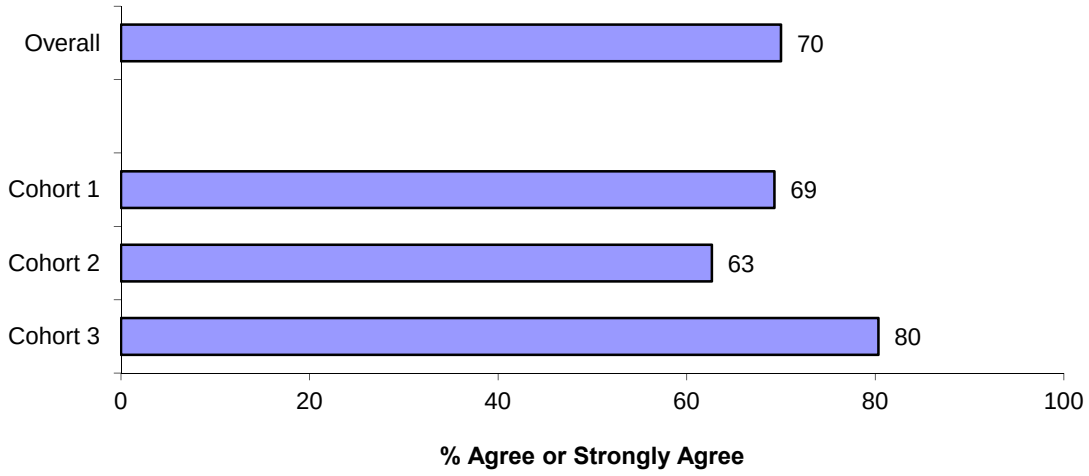


EXHIBIT READS: In spring 2011, across all ELT schools, 70 percent of teachers reported that they agreed or strongly agreed that homework completion rates were problematic.

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 6c.

Sample: 918 teachers from ELT schools. Nonresponse rate was 19.7 percent.

Appendix E. Exhibits for Chapter 5

Exhibit E.1: Participation in Non-instructional Activities, 2010-11

	Percent of Respondents			
	Actual ELT Mean	Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Participation in Structured Extracurricular Activities				
Attending an academic club (science club, math club, etc.)	12%	17%	-5.7 *	0.020
Participating in an Honor Society	10	12	-2.0	0.517
Participating in student government	11	13	-1.9	0.467
Attending a non-academic club (chess club, cheerleading, computer club)	23	24	-1.4	0.653
Playing on a sports team, practicing a sport, or exercising	70	71	-0.6	0.860
Participating in arts, music, theater, or dance lessons/activities	57	57	-0.3	0.950
Working on a school newspaper or magazine	12	11	0.1	0.940
Participation in After-School Activities				
Do you go to any after-school activities this school year?	39	50	-11.7 *	0.025
How often do you usually go to any after-school activity?	53	61	-8.0	0.204
How much time do you usually spend at after-school activities each day you attend?	86	79	6.6	0.055
Participation in Recreational or Leisure Activities				
Playing outside for fun	82	88	-6.4 *	0.014
Spending time online using a computer	80	78	2.6	0.520
Texting or talking to friends	87	85	1.7	0.521
Watching TV or playing video games	88	89	-0.5	0.864
Spending time with friends	90	90	-0.1	0.972
Time Spent At Home With Friends And Family				
Home alone or with younger siblings	43	39	3.6	0.316
With your friends and no adults	47	49	-1.4	0.701
With an older sibling or parent	70	69	0.7	0.818

EXHIBIT READS: Twelve percent of students in ELT schools indicated that they participated in an academic club, compared to an estimated 17 percent in the absence of ELT. The difference between the two groups was statistically significant.

Notes:
* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Abt Associates' Surveys of MA ELT and Matched Comparison School Students, Spring 2011, Items 12n, 12l, 12g, 12o, 12a, 12b, 12f, 13, 13b, 13c, 12h, 12r, 12p, 12q, 12d, 15a, 15b, 15c.

Sample: 4840 students. Nonresponse rates across ELT and matched comparison student survey items ranged from 2.6 to 21.1 percent.

Exhibit E.2: Teacher Perceptions of School and District Leadership

	Percent of Respondents		Estimated Difference	Statistical Significance (p-value)
	ELT Mean	Non-ELT Mean		
Leadership				
The principal and/or school leadership team are effective managers who make the school run smoothly	75%	80%	-4.4	0.620
The principal and/or school leadership team are instructional leaders in our school	70	72	-2.4	0.701
Level of Adaptability				
The principal and/or school leadership team are actively engaged in school improvement initiatives	90	94	-4.2	0.343
The principal and/or school leadership team adapt or refine school policies and/or practices as needed	78	82	-3.9	0.519
The principal and/or school leadership team monitors progress of students	90	87	3.3	0.535
Communication				
The principal and/or school leadership team are receptive to feedback on teacher morale/school culture	68	78	-10.2	0.229
The principal and/or school leadership team provide feedback about teacher performance	72	80	-8.1	0.157
The principal and/or school leadership team communicate effectively about improving instructional practices	74	76	-1.6	0.828
Support for Staff Development				
The principal and/or school leadership team provide opportunities for staff leadership and/or recognition of staff successes	67	80	-12.6	0.136
The principal and/or school leadership team encourages the development of a professional learning community	85	83	2.3	0.650
The principal and/or school leadership team are supportive of staff growth and development	86	86	0.3	0.950
Perceptions of District Leadership				
District leadership effectively manages our schools	62	56	6.6	0.396
District leadership provides timely guidance on instructional practices	61	55	6.0	0.283
District leadership communicates a clear vision for our district's schools	73	69	3.9	0.571
District leadership is interested in professional development of teachers at this school	70	66	3.3	0.613
District leadership is responsive to this school and teacher concerns	52	49	2.6	0.748

EXHIBIT READS: Seventy-five percent of teachers in ELT schools reported that the principal and/or school leadership team were effective managers who made the school run smoothly, compared to an estimated 80 percent in the absence of ELT. The difference between the two groups was not statistically significant.

Notes:
* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Items 7g, 7k, 7h, 7i, 7n, 7j 7m, 7l, 7p, 27e, 7o, 7cc, 7ff, 7dd, 7ee, 7gg; Matched Comparison Teacher Surveys, Items 7e, 7i, 7f, 7g, 7l, 7h, 7k, 7j, 7n, 26e, 7m, 7v, 7y, 7w, 7x, 7z.

Sample: 1609 teachers. Nonresponse rates across ELT and matched comparison teacher survey items ranged from 5.8 to 20.7 percent.

Exhibit E.3: Time Available for Instructional Activities

	Percent of Respondents			
	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Teacher Perceptions of Instructional Time				
Students have sufficient time to learn about subjects	76%	47%	28.4 ***	<.0001
Length of day allows me time to accomplish teaching goals	80	66	13.7 *	0.024
This year, I am able to cover the amount of instructional material my students need to learn	74	63	10.9 *	0.028
This year, I am able cover the amount of instructional material my school expects	82	75	6.5	0.261
Time Available for Instructional Activities				
Time available for enrichment activities	68	39	29.3 **	0.002
Time available for instruction in science	81	54	26.0 **	0.001
Time available for dedicated academic support	64	45	19.5 *	0.020
Time available for students to pursue topics of interest	44	28	16.3 *	0.015
Time available for instruction in ELA	89	74	15.5 *	0.010
Time available for instruction in social studies	71	56	15.2	0.060
Time available for instruction in math	92	78	13.6 **	0.008
Time available for physical activity for students	41	42	-1.7	0.808
Time Available for Differentiated Instruction				
This year, I am able to differentiate instruction for students of multiple abilities	89	86	2.9	0.311
This year, I am able to use a variety of instructional strategies (e.g., project-based learning, small-group learning) to teach my students	92	91	1.0	0.692

EXHIBIT READS: Seventy-six percent of teachers in ELT schools indicated that students have sufficient time to learn about subjects, compared to an estimated 47 percent in the absence of ELT. The difference between the two groups was statistically significant.

Notes:
* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Items 7w, 5f, 9c, 9b, 10e, 10c, 10f, 10h, 10a, 10d, 10b, 10g, 9d, 9a; Matched Comparison Teacher Surveys, Items 7p, 5f, 8c, 8b, 9e, 9c, 9f, 9h, 9a, 9d, 9b, 9g, 8d, 8a.

Sample: 1609 teachers. Nonresponse rates across ELT and matched comparison teacher survey items ranged from 6.7 to 24.6 percent.

Exhibit E.4: Teacher Perception of Time Available for Planning and Professional Development

	Percent of Respondents			
	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Time Available for Planning				
This year, this topic is a problem area: Amount of collaborative planning time	46%	66%	-19.6 **	0.004
Length of day allows coordination of instruction	70	53	16.7 **	0.008
Time available for collaborative planning	57	43	14.1 *	0.038
This year, this topic is a problem area: Amount of individual planning time	53	60	-6.6	0.317
Time available for individual planning time	59	55	3.8	0.532
Time available for professional development				
Time available for professional development	67	72	-4.8	0.538
This year, this topic is a problem area: Professional development opportunities	41	38	3.4	0.556

EXHIBIT READS: Forty-six percent of teachers in ELT schools reported that the amount of time for collaborative planning was a problem area this year, compared to an estimated 66 percent in the absence of ELT. The difference between the two groups was statistically significant.

Notes:
* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Items 6i, 5g, 32b, 6h, 32a, 32c, 6j; Matched Comparison Teacher Surveys, Items 6i, 5g, 31b, 6h, 31a, 31c, 6j.

Sample: 1609 teachers. Nonresponse rates across ELT and matched comparison teacher survey items ranged from 7.0 to 13.4 percent.

Exhibit E.5: Teacher Job Satisfaction

	Percent of Respondents		Estimated Difference	Statistical Significance (p-value)
	Actual ELT Mean	Estimated Non-ELT Mean		
Satisfaction With Teaching				
I plan to stay in the teaching profession until I retire	89%	96%	-6.2 *	0.0325
If I could start over again, I would still become a teacher	88	89	-1.1	0.761
Overall, I am very satisfied with being a teacher	95	96	-0.4	0.764
Stress and challenges are not worth it	15	15	0.2	0.941
Satisfaction With Teaching at This School				
Satisfied with salary	61	54	7.1	0.261
Satisfied with teaching at this school	87	85	1.5	0.725
Think about transferring	34	34	-0.4	0.935

EXHIBIT READS: Eighty-nine percent of teachers in ELT schools reported that they planned to stay in the teaching profession until retirement, compared to an estimated 96 percent in the absence of ELT. The difference between the two groups was statistically significant.

Notes:
* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Items 5e, 5c, 5a, 5h, 5j, 5b, 5d; Matched Comparison Teacher Surveys, Items 5e, 5c, 5a, 5h, 5j, 5b, 5d.

Sample: 1609 teachers. Nonresponse rates across ELT and matched comparison teacher survey items ranged from 5.5 to 13.8 percent.

Exhibit E.6: Student and Teacher Relationships

	Percent of Respondents			
	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Student-Teacher Relationship				
I get along well with my teachers	59%	65%	-5.9	0.283
Students treat teachers with respect[1]	49	44	5.8	0.472
The teachers at my school care about the students	84	88	-3.8	0.412
My teachers care about their students	69	73	-3.7	0.519
None of my teachers know me	12	14	-2.0	0.478
I feel like I can talk to a teacher about my problems	39	41	-1.7	0.693
I know at least three teachers who I could ask for help with a problem	58	59	-1.2	0.798
My teachers know a lot about me	39	39	-0.6	0.881
This year, this topic is a problem area: Relationship with students[1]	9	10	-0.4	0.862
Teacher-Student Relationship				
Teachers and students spend sufficient instructional time together[1]	92	68	24.1 ***	<.0001
My teachers take time to explain what they are teaching so I understand it	72	76	-4.2	0.297
I get my questions answered in this class	80	83	-2.5	0.318
I have teachers who criticize me in class	23	22	1.9	0.461
My teachers can tell if I'm not concentrating on school work	62	63	-1.1	0.754
Adult-Student Relationship				
There are other people besides my regular teachers in the school who have time to give extra help	48	51	-2.8	0.390
If I do not understand something in this class, there is someone in this school I can ask to explain it later	75	76	-0.9	0.718
Peer Relationship				
Students at my school treat each other well	43	41	2.4	0.593
Students treat each other with respect[1]	40	38	1.9	0.793

EXHIBIT READS: Fifty-nine percent of students in ELT schools indicated that they get along well with their teachers, compared to an estimated 65 percent in the absence of ELT. The difference between the two groups was not statistically significant.

Notes: [1] Denotes an item from the teacher survey. All other items are from the student survey.
* statistically significant at p < .05 level
** statistically significant at p < .01 level
*** statistically significant at p < .001 level

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Items 7z, 6k, 7a, 7aa; Matched Comparison Teacher Surveys, Items 7s, 6k, 7a, 7t. Abt Associates' Surveys of MA ELT and Matched Comparison School Students, Spring 2011, Items 11c, 8l, 11e, 11j, 11i, 11k, 11h, 11a, 9m, 11f, 11g, 11l, 9t, 8m.

Sample: 1609 teachers, 4840 students. Nonresponse rates across ELT and matched comparison teacher survey items ranged from 4.6 to 6.0 percent. Nonresponse rates across ELT and matched comparison student survey items ranged from 1.7 to 4.1 percent.

Exhibit E.7: Student Satisfaction and Engagement

	Percent of Respondents			
	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
General Satisfaction With School				
I look forward to going to school	54%	66%	-12.3 ***	<.0001
I like being at my school	56	67	-11.1 *	0.037
I am bored in school	55	47	8.4	0.090
I get to do things at school that are fun and new	67	71	-4.2	0.347
Kids at my school like being here	33	35	-1.7	0.755
I learn a lot in school	91	92	-1.0	0.599
I am getting a good education at my school	88	88	0.3	0.914
Satisfaction With Teachers/Instruction				
My teachers help to make learning fun	45	53	-7.6	0.225
I think the teachers in my school would be better teachers if they had more time to teach their subjects	36	43	-7.3 *	0.048
I have trouble figuring out the answers in this class	39	33	6.1	0.072
I feel like my teachers go too slowly when they are teaching	27	31	-4.9	0.097
I would like school better if I had different teachers	27	24	3.3	0.292
I learn a lot in this class	83	86	-2.4	0.418
The teacher of this class helps explain difficult concepts well	82	84	-2.1	0.545
It matters to my teacher that all the students in this class work hard to learn	89	87	1.9	0.447
My teacher knows a lot about the subject matter of this class	93	93	0.2	0.921
Satisfaction With Length of School Day				
I like the length of my school day this year	22	38	-16.5 **	0.006

EXHIBIT READS: Fifty-four percent of students in ELT schools indicated that they looked forward to going to school, compared to an estimated 66 percent in the absence of ELT. The difference between the two groups was statistically significant.

Notes:
* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Abt Associates' Surveys of MA ELT and Matched Comparison School Students, Spring 2011, Items 8d, 8b, 8c, 8j, 8k, 8a, 8e, 11d, 8p, 9r, 8q, 11b, 9q, 9n, 9u, 9p, 5.

Sample: 4840 students. Nonresponse rates across ELT and matched comparison student survey items ranged from 1.1 to 3.2 percent.

Exhibit E.8: Student Academic Engagement

	Percent of Respondents			
	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Academic Engagement				
This year, this topic is a problem area: Student academic performance[1]	68%	83%	-15.1 *	0.011
This year, this topic is a problem area: Homework completion rates[1]	70	82	-12.1 *	0.028
Students take their work seriously[1]	51	41	10.1	0.144
All of my classes are important to me	65	73	-7.9 *	0.032
This year, this topic is a problem area: Student engagement[1]	67	74	-7.1	0.210
When I am in this class, I cannot wait for it to end	55	48	6.4	0.215
If you had homework yesterday, did you do it?	83	89	-5.8	0.108
I get good grades in this class	77	83	-5.8	0.113
I check my work in this class for mistakes	65	71	-5.6	0.135
I pay attention in this class	85	89	-4.1	0.185
I am interested in the work I get to do in this class	68	71	-3.0	0.351
I try to get out of going to this class	14	16	-2.3	0.338
Learning new things at school is important to me	86	88	-1.3	0.676
When I am in this class, I only pretend to be working	12	13	-0.9	0.668
My classes seem like a waste of time	22	22	-0.7	0.810
I try my best in this class	86	86	0.3	0.892

EXHIBIT READS: Sixty-eight percent of teachers in ELT schools indicated that student academic performance was a problem area this year, compared to an estimated 83 percent in the absence of ELT. The difference between the two groups was statistically significant.

Notes: [1] Denotes an item from the teacher survey. All other items are from the student survey.
* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Items 6a, 6c, 7y, 6b; Matched Comparison Teacher Surveys, Items 6a, 6c, 7r, 6b. Abt Associates' Surveys of MA ELT and Matched Comparison School Students, Spring 2011, Items 8i, 9s, 6b, 9i, 9h, 9c, 9a, 9j, 8o, 9e, 8f, 9d.

Sample: 1609 teachers, 4840 students. Nonresponse rates across ELT and matched comparison teacher survey items ranged from 7 to 19 percent. Nonresponse rates across ELT and matched comparison student survey items ranged from 1.6 to 3.1 percent.

Exhibit E.9: Behavioral Engagement from Survey Items

	Percent of Respondents			
	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Behavioral Engagement				
This year, this topic is a problem area: Student behavior[1]	76%	84%	-7.4	0.336
I follow the rules in this class	87	89	-2.0	0.452
I get in trouble in this class	26	25	0.9	0.706
I skip (cut) this class	4	5	-0.8	0.478

EXHIBIT READS: Seventy-six percent of teachers in ELT schools indicated that student behavior was a problem area this year, compared to an estimated 84 percent in the absence of ELT. The difference between the two groups was not statistically significant.

Notes: [1] Denotes an item from the teacher survey. All other items are from the student survey.
* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Abt Associates' Surveys of MA ELT School Teachers, Spring 2011, Item 6d; Matched Comparison Teacher Surveys, Item 6d. Abt Associates' Surveys of MA ELT and Matched Comparison School Students, Spring 2011, Items 9k, 9b, 9l.

Sample: 1609 teachers, 4840 students. The nonresponse rate across ELT and matched comparison teachers for survey item 6d equaled 5.5 percent. Nonresponse rates across ELT and matched comparison student survey items ranged from 1.8 to 2.3 percent.

Exhibit E.10: Behavioral Engagement from SIMS Data

	Percent of Respondents			
	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Year 5				
Attendance rate	93.88%	94.37%	-0.49 ***	<0.001
In-school suspension rate	0.07	-0.03	0.10 ***	<0.001
Out-of-school suspension rate	0.10	0.06	0.04 ***	<0.001
Truancy rate	0.66	0.53	0.12 **	0.010

EXHIBIT READS: At the end of the fifth year of ELT implementation, the average attendance rate at ELT schools was 93.88 percent, compared to an estimated 94.37 percent in the absence of ELT. The difference between the two groups was statistically significant.

Notes:
* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Individual student records obtained from MA ESE.

Sample: Student records from ELT and matched comparison schools, cohorts 1-3 (n=49) from 2001-02 to 2010-11 for attendance and 2003-04 to 2010-11 for other measures: 257,348 records for attendance and 205,990 for other measures. Fewer than 1 percent of students were eliminated from the analytic sample due to missing covariates.

Appendix F. Exhibits for Chapter 6

Exhibit F.1: Effect of ELT on Student and Teacher Characteristics, across Cohorts, after Five Years of Implementation

	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	p-value
Implementation Year 5				
Student Population				
Student enrollment	574	624	-50.17	0.355
Percent low income	77%	84%	-7.35	0.054
Percent minority	77	77	-0.12	0.971
Percent male	51	52	-1.14	0.393
Percent special education	21	21	-0.38	0.856
Percent limited English proficient	23	18	4.35	0.283
Percent first language not English	42	41	1.4	0.778
Teacher Population				
Number of FTE Teachers	45	47	-2.16	0.555
Percent of teachers licensed in their teaching assignment	95	99	-3.93	0.223
Percent of core academic teachers highly qualified	95	98	-3.3	0.087
Student-teacher ratio	12	12	0.53	0.459

EXHIBIT READS: After the fifth year of ELT implementation, ELT schools had an average enrollment of 574 students, compared to an estimated 624 students in the absence of ELT. The difference was not statistically significant.

Source: School-level data tables downloaded from the MA ESE website (http://profiles.doe.mass.edu).

Sample: Full sample of 49 schools, including 24 ELT and 25 matched comparison schools. Student population outcomes are based on data from 2001-2002 to 2010-2011, including 496 records. Teacher population outcomes are based on data from 2003-2004 to 2010-2011, including on 396 records.

Exhibit F.2: Percent of Students who Attended the Same School in the Prior Year, after Five Years of Implementation

	Actual ELT Mean	Actual MC Mean	Statistical Significance (p-value)
Implementation Year 5			
Percent of Students	82%	78%	0.214

EXHIBIT READS: After five years of ELT implementation, 82 percent of ELT students in non-entry grades attended the same school as in the previous year, compared to 78 percent of students in matched comparison schools. The difference between the two groups was not statistically significant

Notes: Students whose grade level in the previous year was not available at their current school are excluded. P-values are from two-tailed independent samples t-tests that compare school-level mobility percentages by ELT status.

* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Individual student records obtained from MA ESE.

Sample: 6,433 students (3,448 ELT, 2,985 matched comparison).

Exhibit F.3: Effect of ELT on MCAS Subject/Grade Tests across Cohorts, by Implementation Year

	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Implementation Year 1				
Reading/ELA				
Grade 3	-0.52	-0.44	-0.07	0.542
Grade 4	-0.39	-0.40	0.01	0.918
Grade 7	-0.43	-0.47	0.04	0.559
Math				
Grade 4	-0.43	-0.41	-0.02	0.808
Grade 6	-0.48	-0.43	-0.05	0.396
Grade 8	-0.47	-0.42	-0.05	0.350
Science				
Grade 5	-0.49	-0.53	0.04	0.503
Grade 8	-0.55	-0.55	-0.00	0.986
Implementation Year 2				
Reading/ELA				
Grade 3	-0.52	-0.41	-0.11	0.321
Grade 4	-0.50	-0.39	-0.11	0.211
Grade 7	-0.61	-0.56	-0.05	0.565
Math				
Grade 4	-0.44	-0.39	-0.06	0.405
Grade 6	-0.50	-0.45	-0.05	0.355
Grade 8	-0.50	-0.44	-0.05	0.548
Science				
Grade 5	-0.50	-0.57	0.08	0.263
Grade 8	-0.74	-0.69	-0.05	0.441
Implementation Year 3				
Reading/ELA				
Grade 3	-0.47	-0.38	-0.09	0.317
Grade 4	-0.35	-0.30	-0.04	0.703
Grade 7	-0.55	-0.56	0.01	0.940
Math				
Grade 4	-0.38	-0.33	-0.05	0.526
Grade 6	-0.48	-0.51	0.03	0.741
Grade 8	-0.50	-0.40	-0.10	0.499
Science				
Grade 5	-0.56	-0.64	0.09	0.224
Grade 8	-0.66	-0.64	-0.03	0.751

Exhibit F.3: Effect of ELT on MCAS Subject/Grade Tests across Cohorts, by Implementation Year

	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Implementation Year 4				
Reading/ELA				
Grade 3	-0.48	-0.51	0.03	0.811
Grade 4	-0.31	-0.22	-0.09	0.614
Grade 7	-0.53	-0.56	0.03	0.803
Math				
Grade 4	-0.26	-0.30	0.04	0.708
Grade 6	-0.37	-0.50	0.13	0.105
Grade 8	-0.36	-0.33	-0.03	0.867
Science				
Grade 5	-0.30	-0.58	0.28***	<0.001
Grade 8	-0.60	-0.70	0.10	0.324

EXHIBIT READS: After the first year of ELT implementation students in ELT schools, on average, score 0.52 standard deviations below the statewide mean on the 3rd grade ELA portion of the MCAS test, as compared to 0.44 standard deviations below the mean in the absence of ELT. This difference was not statistically significant.

Note:

* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Individual student records obtained from MA ESE.

Samples: Student MCAS records from ELT and matched comparison schools from 2001-2002 to 2010-2011. The sample sizes vary by cohort, implementation year, subject, and grade. The minimum number of schools is 29 and the maximum number of schools is 38. The minimum number of test records is 17,293 and the maximum number of test records is 39,242.

Exhibit F.4: Effect of ELT on MCAS Subject/Grade Tests after Five Years of Implementation

	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Implementation Year 5				
Reading/ELA				
Grade 3	-0.57	-0.49	-0.09	0.706
Grade 4	-0.50	-0.29	-0.21	0.421
Grade 7	-0.64	-0.73	0.09	0.648
Math				
Grade 4	-0.32	-0.39	0.07	0.337
Grade 6	-0.38	-0.57	0.19	0.171
Grade 8	-0.45	-0.36	-0.09	0.630
Science				
Grade 5	-0.63	-0.84	0.21	0.109
Grade 8	-0.75	-0.69	-0.06	0.673

EXHIBIT READS: After the five years of ELT implementation students in ELT schools, on average, score 0.57 standard deviations below the statewide mean on the 3rd grade ELA portion of the MCAS test, as compared to 0.49 standard deviations below the mean in the absence of ELT. This difference was not statistically significant.

Note:

* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Individual student records obtained from MA ESE.

Samples: Student MCAS records from ELT and matched comparison schools from 2001-2002 to 2010-2011. The sample sizes vary by cohort, subject, and grade. The minimum number of schools is 29 and the maximum number of schools is 38. The minimum number of test records is 17,293 and the maximum number of test records is 39,242.

Exhibit F.5 presents findings from a sensitivity test conducted to check the robustness of the estimated effects of ELT on MCAS student achievement outcomes under a model specification that includes pre-ELT group achievement trends (ELT versus matched comparison) to account for possible group differences in any potential trends in the pre-ELT period, which would be captured by neither school fixed effects (since they are time-varying) nor year fixed effects (since they are not common to ELT and non-ELT schools).

In the study's Year Three report, tests for differences in pre-ELT group trends revealed that, across the majority of MCAS outcomes tested, the achievement of the ELT and matched comparison schools in the sample were on similar trajectories prior to the implementation of ELT. This suggested that the model specification used in analyses, which did not control for any potential differences in the pre-ELT group trends, were not likely to be affected by pre-ELT differences in achievement trends. This finding of no pre-ELT trend effects was confirmed in the year 4 outcomes report. Since the only change to the models in this report is the addition of one more post-ELT year of data, the estimates expected using the pre-ELT trend models will remain similar to the estimates produced in the main analytic models without pre-ELT trends.

To be sure, the study directly tested whether there were differences in the pre-ELT group achievement trends, exploring whether and how the estimated effects of ELT differed under this alternative specification. This model specification differs from the primary model specification by the inclusion of a linear "time" variable that increases by 1 each year, an interaction between the time variable and an indicator for ELT status, and year fixed effects interacted with cohort status (as necessary) in the post-ELT years to constrain the fitted trends to pre-ELT years.

Overall, the alternative specification does not change the conclusions drawn from the primary analytic model of no effect of ELT on the majority of the MCAS outcomes tested. There was not a statistically significant difference detected in the trends in performance of ELT and matched comparison schools among seven of the eight MCAS outcomes. While there does appear to be a statistically significant difference in the pre-ELT group trends of ELT and MC schools on the grade 4 ELA MCAS test, the result in terms of the effect of ELT on grade 4 ELA MCAS scores remains insignificant when the model controls for the pre-ELT group trend. The majority of estimated differences were similar in magnitude and direction across both approaches, with greater variation between the approaches evident within the math outcomes in general, and in the progression of implementation years.

Exhibit F.5: Model Specification Sensitivity Test--Results of ELT Effect on MCAS Subject/Grade Tests Estimated with Pre-ELT Group Trends, across Cohorts and by Implementation Year

Model Features:	Inclusion of Pre-ELT Group Trends					Without Group Trends	
	Actual ELT Mean (1)	Estimated Non-ELT Mean (2)	Estimated Difference (3)	Statistical Significance (p-value) (4)	Pre-ELT Trend Difference (5)	Estimated Difference (6)	Statistical Significance (p-value) (7)
Implementation Year 1							
Reading/ELA							
Grade 3	-0.52	-0.43	-0.09	0.565	0	-0.07	0.542
Grade 4	-0.39	-0.41	0.02	0.816	-0.04*	0.01	0.918
Grade 7	-0.43	-0.43	-0.00	0.987	0	0.04	0.559
Math							
Grade 4	-0.43	-0.39	-0.04	0.615	-0.02	-0.02	0.808
Grade 6	-0.48	-0.55	0.07	0.446	-0.04	-0.05	0.396
Grade 8	-0.47	-0.36	-0.11	0.098	0	-0.05	0.350
Science							
Grade 5	-0.49	-0.56	0.07	0.410	-0.02	0.04	0.503
Grade 8	-0.55	-0.55	-0.00	0.939	-0.01	-0.00	0.986
Implementation Year 2							
Reading/ELA							
Grade 3	-0.52	-0.37	-0.15	0.302	0	-0.11	0.321
Grade 4	-0.50	-0.50	0.00	0.987	-0.04*	-0.11	0.211
Grade 7	-0.61	-0.55	-0.07	0.567	0	-0.05	0.565
Math							
Grade 4	-0.44	-0.44	-0.01	0.957	-0.02	-0.06	0.405
Grade 6	-0.50	-0.58	0.08	0.439	-0.04	-0.05	0.355
Grade 8	-0.50	-0.39	-0.11	0.348	0	-0.05	0.548
Science							
Grade 5	-0.50	-0.61	0.11	0.196	-0.02	0.08	0.263
Grade 8	-0.74	-0.67	-0.07	0.336	-0.01	-0.05	0.441
Implementation Year 3							
Reading/ELA							
Grade 3	-0.47	-0.36	-0.11	0.418	0	-0.09	0.317
Grade 4	-0.35	-0.48	0.14	0.404	-0.04*	-0.04	0.703
Grade 7	-0.55	-0.57	0.01	0.901	0	0.01	0.940
Math							
Grade 4	-0.38	-0.43	0.04	0.722	-0.02	-0.05	0.526
Grade 6	-0.48	-0.70	0.22	0.101	-0.04	0.03	0.741
Grade 8	-0.50	-0.38	-0.12	0.424	0	-0.10	0.499
Science							
Grade 5	-0.56	-0.71	0.15	0.101	-0.02	0.09	0.224
Grade 8	-0.66	-0.68	0.01	0.894	-0.01	-0.03	0.751

Exhibit F.5: Model Specification Sensitivity Test--Results of ELT Effect on MCAS Subject/Grade Tests Estimated with Pre-ELT Group Trends, across Cohorts and by Implementation Year

Model Features:	Inclusion of Pre-ELT Group Trends					Without Group Trends	
	Actual ELT Mean (1)	Estimated Non-ELT Mean (2)	Estimated Difference (3)	Statistical Significance (p-value) (4)	Pre-ELT Trend Difference (5)	Estimated Difference (6)	Statistical Significance (p-value) (7)
Implementation Year 4							
Reading/ELA							
Grade 3	-0.48	-0.49	0.01	0.972	0	0.03	0.811
Grade 4	-0.31	-0.45	0.14	0.568	-0.04*	-0.09	0.614
Grade 7	-0.53	-0.58	0.05	0.716	0	0.03	0.803
Math							
Grade 4	-0.26	-0.43	0.17	0.304	-0.02	0.04	0.708
Grade 6	-0.37	-0.73	0.36*	0.016*	-0.04	0.13	0.105
Grade 8	-0.36	-0.31	-0.05	0.781	0	-0.03	0.867
Science							
Grade 5	-0.30	-0.66	0.36**	0.001***	-0.02	0.28***	<0.001
Grade 8	-0.60	-0.76	0.16	0.140	-0.01	0.10	0.324
Implementation Year 5							
Reading/ELA							
Grade 3	-0.57	-0.47	-0.10	0.699	0	-0.09	0.706
Grade 4	-0.50	-0.57	0.07	0.828	-0.04*	-0.21	0.421
Grade 7	-0.64	-0.75	0.11	0.555	0	0.09	0.648
Math							
Grade 4	-0.32	-0.57	0.24	0.172	-0.02	0.07	0.337
Grade 6	-0.38	-0.84	0.47*	0.031	-0.04	0.19	0.171
Grade 8	-0.45	-0.34	-0.10	0.618	0	-0.09	0.630
Science							
Grade 5	-0.63	-0.94	0.31	0.060	-0.02	0.21	0.109
Grade 8	-0.75	-0.77	0.02	0.896	-0.01	-0.06	0.673

EXHIBIT READS: After the first year of ELT implementation students in ELT schools, on average, score 0.52 standard deviations below the statewide mean on the 3rd grade ELA portion of the MCAS test, as compared to 0.43 standard deviations below the mean in the absence of ELT, using a model specification that controls for trends in achievement before ELT in both ELT and matched comparison schools (columns 1 and 2). This difference was not statistically significant (column 3). The estimated difference in pre-ELT group trends between ELT and matched comparison schools was 0.00 standard deviations per year (column 5); not a statistically significant difference. In the primary analytic model, without the inclusion pre-ELT group trends, the estimated effect of ELT on the 3rd grade ELA portion of the MCAS test was -0.07 standard deviations (column 6) and was not statistically significant (column 7).

Note:
* statistically significant at p< .05 level
** statistically significant at p<.01 level
*** statistically significant at p<.001 level.

Source: Individual student records obtained from MA ESE.

Samples: Student MCAS records from ELT and matched comparison schools from 2001-2002 to 2010-2011. The sample sizes vary by cohort, implementation year, subject, and grade. The minimum number of schools is 29 and the maximum number of schools is 38. The minimum number of test records is 17,293 and the maximum number of test records is 39,242.

Exhibit F.6 fits the model on a sample that includes all initial ELT schools in the model regardless of whether or not they continued to implement ELT in every year. This model relies on a sample that includes the three schools that discontinued ELT in 2009-10 as well as the three additional schools that discontinued ELT in 2010-11 and the matched comparison schools of these six schools. Including these schools in the sample made essentially no difference in terms of the estimated effects of ELT on MCAS results.

Exhibit F.6: Alternate Sample Sensitivity Test—Results of the Effect of ELT on MCAS Subject/Grade Tests Including Schools that Discontinued ELT, across Cohorts and by Implementation Year

	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Implementation Year 1				
Reading/ELA				
Grade 3	-0.52	-0.44	-0.08	0.524
Grade 4	-0.39	-0.39	-0.00	0.988
Grade 7	-0.43	-0.47	0.04	0.606
Math				
Grade 4	-0.43	-0.42	-0.01	0.823
Grade 6	-0.48	-0.43	-0.05	0.340
Grade 8	-0.47	-0.42	-0.06	0.316
Science				
Grade 5	-0.49	-0.54	0.04	0.468
Grade 8	-0.55	-0.56	0.00	0.965
Implementation Year 2				
Reading/ELA				
Grade 3	-0.52	-0.39	-0.13	0.279
Grade 4	-0.53	-0.40	-0.13	0.087
Grade 7	-0.53	-0.51	-0.02	0.829
Math				
Grade 4	-0.44	-0.40	-0.04	0.517
Grade 6	-0.48	-0.42	-0.06	0.249
Grade 8	-0.45	-0.38	-0.07	0.398
Science				
Grade 5	-0.49	-0.58	0.09	0.168
Grade 8	-0.63	-0.60	-0.03	0.641
Implementation Year 3				
Reading/ELA				
Grade 3	-0.49	-0.38	-0.11	0.194
Grade 4	-0.43	-0.31	-0.12	0.220
Grade 7	-0.53	-0.49	-0.04	0.641
Math				
Grade 4	-0.39	-0.33	-0.07	0.379
Grade 6	-0.48	-0.47	-0.01	0.853
Grade 8	-0.47	-0.36	-0.11	0.391
Science				
Grade 5	-0.56	-0.65	0.10	0.148
Grade 8	-0.59	-0.58	-0.01	0.878

Exhibit F.6: Alternate Sample Sensitivity Test—Results of the Effect of ELT on MCAS Subject/Grade Tests Including Schools that Discontinued ELT, across Cohorts and by Implementation Year

	Actual ELT Mean	Estimated Non-ELT Mean	Estimated Difference	Statistical Significance (p-value)
Implementation Year 4				
Reading/ELA				
Grade 3	-0.52	-0.54	0.01	0.918
Grade 4	-0.36	-0.29	-0.08	0.633
Grade 7	-0.53	-0.57	0.04	0.752
Math				
Grade 4	-0.34	-0.34	0.00	0.991
Grade 6	-0.38	-0.51	0.13	0.083
Grade 8	-0.36	-0.34	-0.02	0.889
Science				
Grade 5	-0.43	-0.71	0.28**	0.001
Grade 8	-0.60	-0.72	0.12	0.249
Implementation Year 5				
Reading/ELA				
Grade 3	-0.57	-0.48	-0.09	0.681
Grade 4	-0.50	-0.30	-0.20	0.432
Grade 7	-0.64	-0.71	0.07	0.681
Math				
Grade 4	-0.32	-0.36	0.03	0.660
Grade 6	-0.38	-0.56	0.18	0.193
Grade 8	-0.45	-0.37	-0.08	0.683
Science				
Grade 5	-0.63	-0.84	0.21	0.111
Grade 8	-0.75	-0.73	-0.02	0.860

EXHIBIT READS: After the first year of ELT implementation students in ELT schools, on average, score .52 standard deviations below the statewide mean on the 3rd grade ELA portion of the MCAS test, as compared to .44 standard deviations below the mean in the absence of ELT. This difference was not statistically significant.

Note:

* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Individual student records obtained from MA ESE.

Samples: Student MCAS records from ELT and matched comparison schools from 2001-2002 to 2010-2011. The sample sizes vary by cohort, implementation year, subject, and grade. The minimum number of schools is 29 and the maximum number of schools is 38. The minimum number of test records is 17,804 and the maximum number of test records is 41,027.

Exhibit F.7 fits the models with only five and only three years of pre-ELT implementation data for each cohort, using both the primary model specification and the alternative specification including pre-ELT group trends in achievement.

The primary analytic sample was constructed using all available data, which included MCAS test score data beginning in 2002 (or 2003 for science outcomes), regardless of cohort. Because the ELT program had a staggered implementation, with new schools added in subsequent years to a second and then third cohort, this meant that there were different numbers of years of pre-ELT data available for different cohorts: up to five years for Cohort 1, six years for Cohort 2, and seven years for Cohort 3. With no consistent recommendation in the literature about the number of pre-program years of data necessary or reasonable to use for fitting the interrupted time-series model used for analysis, the study tested the effect of limiting the sample to five and three years of pre-program data for all cohorts. This sample was tested using both the primary analytic model, and the additional model (discussed above) that included terms to fit differential pre-ELT group trends for the ELT and matched comparison schools.

Consistent with the other specification and sensitivity tests, the overall findings from these tests do not call into question the findings of no estimated effects of ELT on the MCAS outcomes tested, except for grade 5 science. Using the primary model without fitted pre-ELT group trends, the results from each alternate sample are extremely consistent with the original results (column 1). The only difference is that in the model where the sample is confined to three pre-ELT years of data (column 3), the effect of ELT on grade 6 math MCAS scores reaches statistical significance after four years of ELT implementation.

There is generally greater variation from these samples when tested using the model including pre-ELT group-specific trends, and the statistically significant result found in the model without trends using only three years of pre-ELT data (column 3) is mirrored in the results for the model with pre-ELT group trends that uses the analytic sample (column 4). In all model specifications and using all sample configurations except for the pre-ELT group trend model that confines the sample to three years prior to ELT (column 6) there is a statistically significant effect of ELT on grade 5 science MCAS scores after four years of ELT implementation.

Exhibit F.7: Alternate Samples Sensitivity Test—Results of the Effect of ELT on MCAS Subject/ Grade Tests when Sample is Reduced to Only Five or Three Years of Pre-ELT Implementation Data for each Cohort, across Cohorts and by Implementation Year

Model Features:	No Pre-ELT Trends			Including Pre-ELT Trends		
	Analytic Sample Estimate	Using 5 Years Pre-ELT Data	Using 3 Years Pre-ELT Data	Analytic Sample Estimate	Using 5 Years Pre-ELT Data	Using 3 Years Pre-ELT Data
	(1)	(2)	(3)	(5)	(6)	(7)
Implementation Year 1						
Reading/ELA						
Grade 3	-0.07	-0.07	-0.07	-0.09	-0.09	-0.13
Grade 4	0.01	0.02	0.03	0.02	0.02	0.08
Grade 7	0.04	0.05	0.05	-0.00	-0.01	-0.04
Math						
Grade 4	-0.02	-0.00	-0.02	-0.04	-0.06	0.04
Grade 6	-0.05	-0.03	-0.02	0.07	0.06	0.08
Grade 8	-0.05	-0.05	-0.03	-0.11	-0.09	-0.06
Science						
Grade 5	0.04	0.04	0.04	0.07	0.10	0.11
Grade 8	-0.00	0.00	0.02	-0.00	0.02	-0.03
Implementation Year 2						
Reading/ELA						
Grade 3	-0.11	-0.11	-0.12	-0.15	-0.15	-0.23
Grade 4	-0.11	-0.10	-0.10	0.00	-0.00	0.08
Grade 7	-0.05	-0.04	-0.05	-0.07	-0.07	-0.12
Math						
Grade 4	-0.06	-0.04	-0.07	-0.01	-0.03	0.10
Grade 6	-0.05	-0.04	-0.02	0.08	0.08	0.11
Grade 8	-0.05	-0.04	-0.02	-0.11	-0.08	-0.01
Science						
Grade 5	0.08	0.07	0.07	0.11	0.16	0.16
Grade 8	-0.05	-0.05	-0.03	-0.07	-0.03	-0.11
Implementation Year 3						
Reading/ELA						
Grade 3	-0.09	-0.09	-0.10	-0.11	-0.10	-0.23
Grade 4	-0.04	-0.04	-0.04	0.14	0.12	0.22
Grade 7	0.01	0.02	0.02	0.01	0.02	-0.04
Math						
Grade 4	-0.05	-0.05	-0.08	0.04	0.01	0.16
Grade 6	0.03	0.04	0.06	0.22	0.21	0.25
Grade 8	-0.10	-0.08	-0.05	-0.12	-0.07	0.05
Science						
Grade 5	0.09	0.07	0.07	0.15	0.21	0.19
Grade 8	-0.03	-0.02	-0.00	0.01	0.06	-0.02

Exhibit F.7: Alternate Samples Sensitivity Test—Results of the Effect of ELT on MCAS Subject/ Grade Tests when Sample is Reduced to Only Five or Three Years of Pre-ELT Implementation Data for each Cohort, across Cohorts and by Implementation Year

Model Features:	No Pre-ELT Trends			Including Pre-ELT Trends		
	Analytic Sample Estimate	Using 5 Years Pre-ELT Data	Using 3 Years Pre-ELT Data	Analytic Sample Estimate	Using 5 Years Pre-ELT Data	Using 3 Years Pre-ELT Data
	(1)	(2)	(3)	(5)	(6)	(7)
Implementation Year 4						
Reading/ELA						
Grade 3	0.03	0.03	0.02	0.01	0.02	-0.14
Grade 4	-0.09	-0.09	-0.11	0.14	0.13	0.23
Grade 7	0.03	0.05	0.05	0.05	0.07	-0.01
Math						
Grade 4	0.04	0.03	-0.03	0.17	0.12	0.30
Grade 6	0.13	0.14	0.16*	0.36*	0.35	0.40
Grade 8	-0.03	0.00	0.04	-0.05	0.04	0.18
Science						
Grade 5	0.28***	0.27***	0.23**	0.36**	0.43**	0.39
Grade 8	0.10	0.11	0.13	0.16	0.22	0.11
Implementation Year 5						
Reading/ELA						
Grade 3	-0.09	-0.08	-0.08	-0.10	-0.07	-0.25
Grade 4	-0.21	-0.23	-0.26	0.07	0.07	0.18
Grade 7	0.09	0.11	0.12	0.11	0.14	0.06
Math						
Grade 4	0.07	0.06	-0.00	0.24	0.18	0.41
Grade 6	0.19	0.21	0.23	0.47*	0.45	0.52
Grade 8	-0.09	-0.05	-0.01	-0.10	-0.00	0.17
Science						
Grade 5	0.21	0.19	0.12	0.31	0.39*	0.32
Grade 8	-0.06	-0.05	-0.02	0.02	0.10	-0.03

EXHIBIT READS: At the end of the first year of ELT implementation, the estimated effect of ELT on 3rd grade ELA MCAS scores was -0.07 standard deviations, which was not statistically significant, using a model without pre-ELT trends. Confining each cohort to five and three years of pre-ELT data, using the same model, produced the same estimated effect of -0.07 standard deviations, which again was not statistically significant. Using a model specification including pre-ELT trends, at the end of the first year of ELT implementation, the estimated effect of ELT on grade 3 ELA scores was -0.09 standard deviations; the effect was not statistically significant. Using the same model and confining the sample to five and three years of pre-ELT trend data for each cohort produced estimated effects of -0.09 and -0.13 standard deviations, respectively, neither of which was statistically significant.

Notes: Columns 2 and 5, labeled "Using 5 Years Pre-ELT Data," indicate that the sample was limited to only five years of pre-ELT implementation data for each cohort; columns 3 and 6, labeled "Using 3 Years of Pre-ELT Data," indicate that the sample was limited to only three years of pre-ELT implementation data for each cohort. Models in columns 1-3, labeled "No Pre-ELT Trends," fit a specification identical to the model used to generate primary estimates of the effect of ELT on MCAS scores (see exhibit E.3); models in columns 4 to 6, labeled "Including Pre-ELT Trends" fit a specification that included additional terms to allow for the pre-ELT implementation MCAS trends to differ between ELT and matched comparison schools (see exhibit F.5).

* statistically significant at p< .05 level
** statistically significant at p<.01 level
*** statistically significant at p<.001 level.

Source: Individual student records obtained from MA ESE.

Samples: Student MCAS records from ELT and matched comparison schools from 2001-2002 to 2010-2011. The sample sizes vary by model specification, cohort, implementation year, subject, and grade. The minimum number of schools is 29 and the maximum number of schools is 38. The minimum number of test records is 12,111 and the maximum number of test records is 39,242.

Exhibit F.8: Difference in the Effect of ELT on MCAS Subject/Grade Tests between Higher and Lower Implementing Schools after Five Years of Implementation

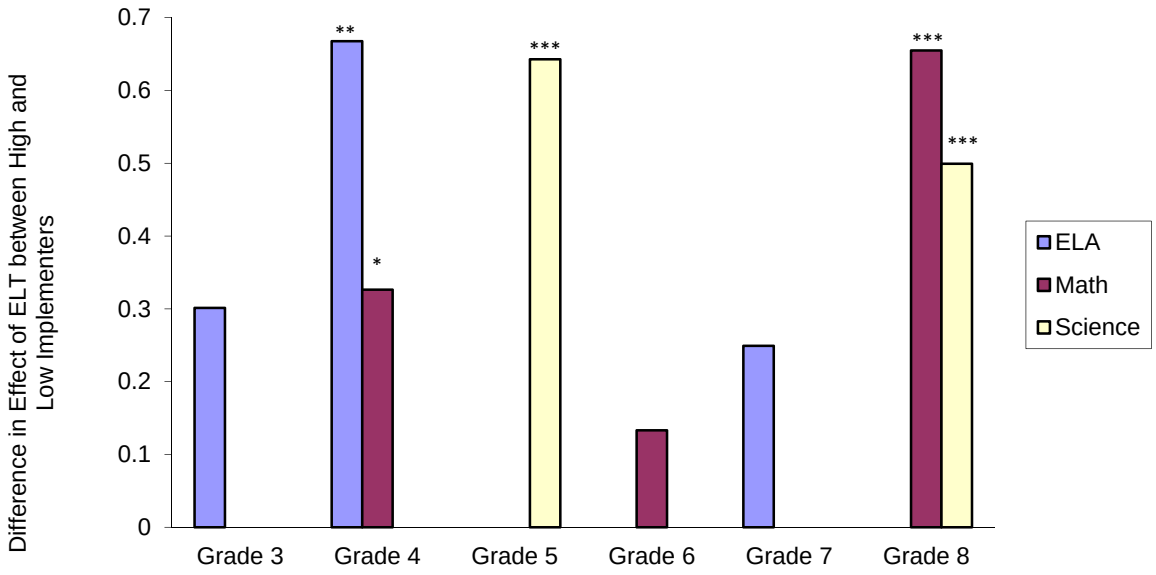


EXHIBIT READS: After five years of ELT implementation, the effect of ELT in higher implementing schools on grade 3 ELA MCAS scores was, on average, 0.30 standard deviations higher than the effect of ELT on grade 3 ELA MCAS scores in lower implementing schools. This difference was not statistically significant.

Notes:

* statistically significant at $p < .05$ level
** statistically significant at $p < .01$ level
*** statistically significant at $p < .001$ level

Source: Individual student records obtained from MA ESE; Abt Associates' Interviews of MA ELT and Matched Comparison School Principals, Spring 2011; Abt Associates' Surveys of MA ELT and Matched Comparison School Teachers, Spring 2011.

Sample: Student MCAS records from ELT and matched comparison schools from 2001-2002 to 2010-2011. Only ELT schools and their matched comparison schools with full data on the implementation index are included in these analyses. The sample sizes vary by cohort, subject, and grade. The minimum number of schools is 7 and the maximum number of schools is 14. The minimum number of test records is 4,821 and the maximum number of test records is 13,995.

Exhibit F.9: Effect of ELT on MCAS Subject/Grade Tests between Higher and Lower Implementing Schools across Cohorts, by Implementation Year

	Higher Implementing Schools		Lower Implementing Schools		Difference between Higher and Lower Implementing Schools	
	Estimated ELT Effect	Statistical Significance (p-value)	Estimated ELT Effect	Statistical Significance (p-value)	Estimated ELT Effect	Statistical Significance (p-value)
Implementation Year 1						
Reading/ELA						
Grade 3	-0.038	0.61	0.12	0.234	-0.16	0.229
Grade 4	0.12	0.345	0.04	0.596	0.08	0.599
Grade 7	0.069	0.123	0.17	0.070	-0.10	0.362
Math						
Grade 4	0.083	0.466	-0.02	0.850	0.10	0.501
Grade 6	-0.019	0.797	-0.01	0.883	-0.01	0.955
Grade 8	-0.074	0.128	-0.09	0.436	0.01	0.920
Science						
Grade 5	0.142	0.234	0.01	0.799	0.13	0.316
Grade 8	-0.111	0.119	0.03	0.687	-0.14	0.187
Implementation Year 2						
Reading/ELA						
Grade 3	-0.06	0.481	0.19	0.218	-0.25	0.179
Grade 4	-0.182	0.277	-0.08	0.666	-0.11	0.673
Grade 7	-0.046	0.589	0.07	0.239	-0.12	0.278
Math						
Grade 4	-0.059	0.503	0.00	0.988	-0.06	0.664
Grade 6	-0.165	0.115	0.02	0.727	-0.18	0.134
Grade 8	0.118	0.173	-0.12	0.201	0.24	0.078
Science						
Grade 5	0.258	0.001***	0.07	0.340	0.19	0.099
Grade 8	0.05	0.657	-0.07	0.446	0.12	0.419
Implementation Year 3						
Reading/ELA						
Grade 3	-0.173	0.037*	-0.01	0.942	-0.16	0.383
Grade 4	0.041	0.786	-0.01	0.964	0.05	0.842
Grade 7	0.035	0.744	0.09	0.245	-0.05	0.705
Math						
Grade 4	0.052	0.561	0.10	0.415	-0.05	0.761
Grade 6	0.025	0.835	-0.01	0.885	0.04	0.803
Grade 8	0.168	0.24	-0.24	0.011*	0.41	0.028*
Science						
Grade 5	0.176	0.121	0.10	0.062	0.08	0.521
Grade 8	0.078	0.362	-0.07	0.471	0.15	0.265

Exhibit F.9: Effect of ELT on MCAS Subject/Grade Tests between Higher and Lower Implementing Schools across Cohorts, by Implementation Year

	Higher Implementing Schools		Lower Implementing Schools		Difference between Higher and Lower Implementing Schools	
	Estimated ELT Effect	Statistical Significance (p-value)	Estimated ELT Effect	Statistical Significance (p-value)	Estimated ELT Effect	Statistical Significance (p-value)
Implementation Year 4						
Reading/ELA						
Grade 3	-0.133	0.194	0.06	0.774	-0.20	0.428
Grade 4	-0.077	0.751	-0.21	0.374	0.13	0.703
Grade 7	0.069	0.645	0.05	0.573	0.02	0.895
Math						
Grade 4	0.162	0.161	-0.06	0.588	0.23	0.190
Grade 6	0.099	0.323	0.16	0.069	-0.06	0.644
Grade 8	0.302	0.001***	-0.21	0.048*	0.51	0.002**
Science						
Grade 5	0.398	0.005**	0.18	0.014*	0.22	0.185
Grade 8	0.141	0.002**	0.08	0.461	0.07	0.556
Implementation Year 5						
Reading/ELA						
Grade 3	0.007	0.937	-0.29	0.122	0.30	0.173
Grade 4	0.133	0.384	-0.54	<0.001***	0.67	0.008**
Grade 7	0.266	0.145	0.02	0.804	0.25	0.219
Math						
Grade 4	0.186	0.012*	-0.14	0.176	0.33	0.02*
Grade 6	0.297	0.165	0.16	0.069	0.13	0.573
Grade 8	0.266	0.002**	-0.39	<0.001***	0.66	<0.001***
Science						
Grade 5	0.611	<0.001***	-0.03	0.495	0.64	<0.001***
Grade 8	0.204	0.01**	-0.30	<0.001***	0.50	<0.001***

EXHIBIT READS: After the first year of ELT implementation, students in higher implementing schools scored, on average, 0.38 standard deviations below what they were predicted to score in the absence of ELT; students in lower implementing schools scored, on average, 0.12 standard deviations above what they were predicted to score in the absence of ELT; the effect of ELT in high implementing schools on grade 3 ELA MCAS scores was, on average, 0.16 standard deviations lower than the effect of ELT on grade 3 ELA MCAS scores in lower implementing schools. These differences were not statistically significant.

Notes:
* statistically significant at p< .05 level
** statistically significant at p<.01 level
*** statistically significant at p<.001 level.

Source: Individual student records obtained from MA ESE; Abt Associates' Interviews of MA ELT and Matched Comparison School Principals, Spring 2011; Abt Associates' Surveys of MA ELT and Matched Comparison School Teachers, Spring 2011.

Sample: Student MCAS records from ELT and matched comparison schools from 2001-2002 to 2010-2011. Only ELT schools and their matched comparison schools with full data on the implementation index are included in these analyses. The sample sizes vary by cohort, subject, and grade. The minimum number of schools is 7 and the maximum number of schools is 14. The minimum number of test records is 4,821 and the maximum number of test records is 13,995.

Exhibit F.10: Median Student Growth Percentile (SGP) 2011 MCAS Scores and ELT Implementation Index Scores, ELT Schools

Panel 1: ELA

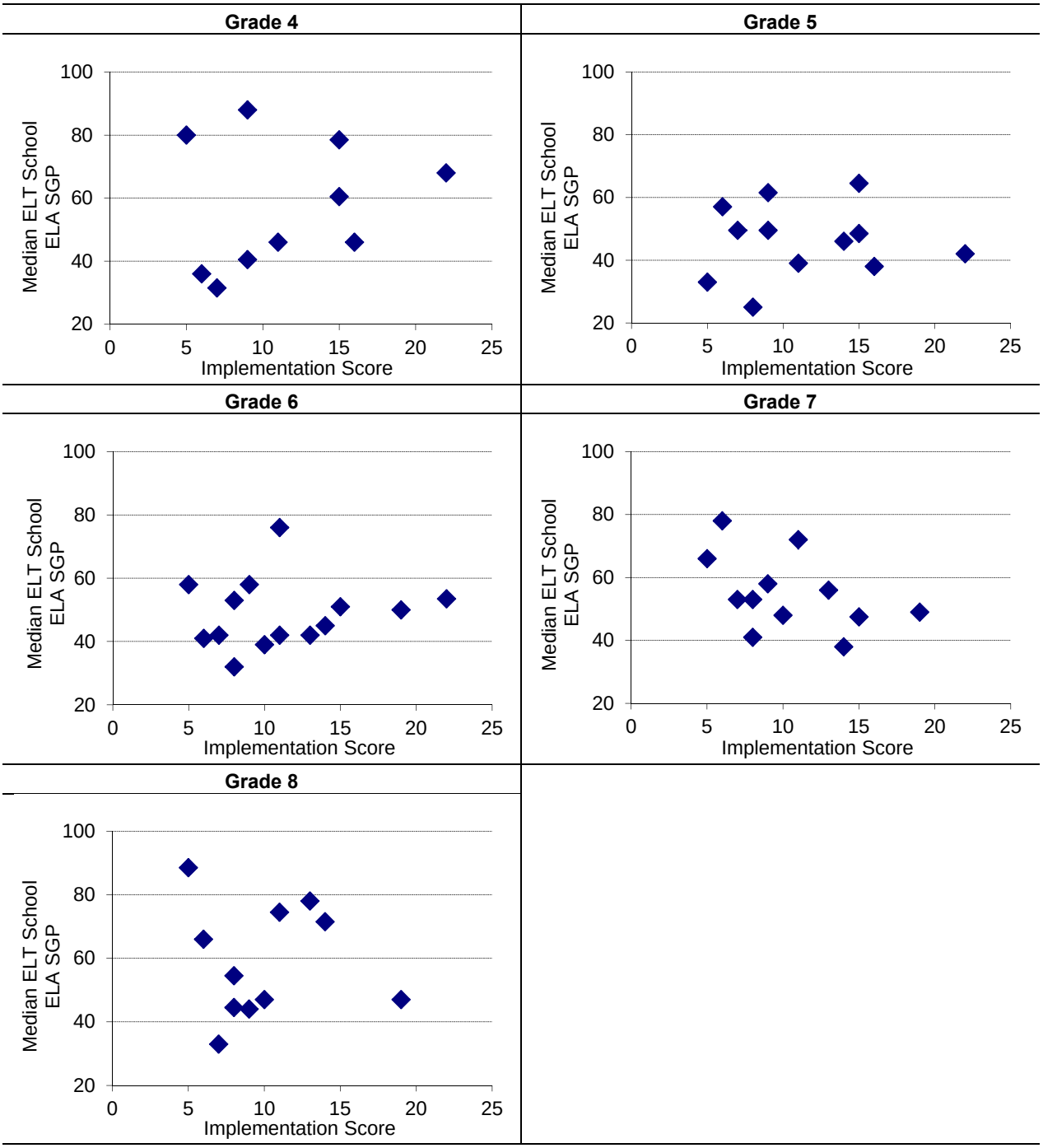


EXHIBIT READS: The grade 4 ELA graph indicates, for each ELT school, the median SGP on the 4th grade ELA portion of the MCAS test in 2010-11 (y-axis) and the school's total score on the implementation index developed for the study (x-axis).

Note: Each point on each graph represents a single ELT school. MA ESE does not calculate SGPs for science MCAS tests or for 3rd grade tests.

Source: Individual student records obtained from MA ESE; Abt Associates' Interviews of MA ELT School Principals, Spring 2011; Abt Associates' Surveys of MA ELT School Teachers, Spring 2011.

Sample: Current ELT schools as of the 2010-11 school year.

Exhibit F.10: Median Student Growth Percentile (SGP) 2011 MCAS Scores and ELT Implementation Index Scores, ELT Schools

Panel 2: Math

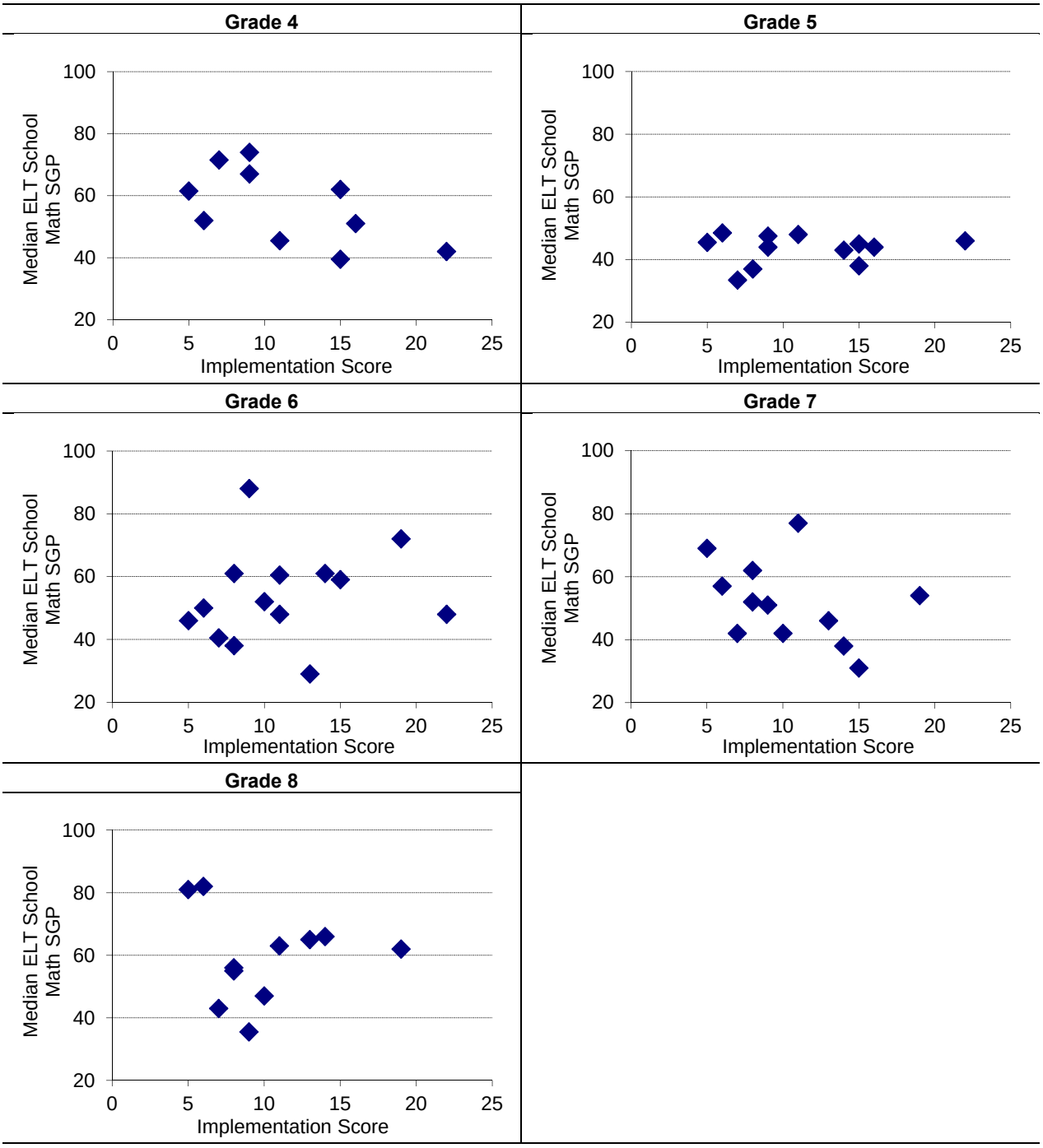


EXHIBIT READS: The grade 4 Math graph indicates, for each ELT school, the median SGP on the 4th grade Math portion of the MCAS test in 2010-11 (y-axis) and the school's total score on the implementation index developed for the study (x-axis).

Note: Each point on each graph represents a single ELT school. MA ESE does not calculate SGPs for science MCAS tests or for 3rd grade tests.

Source: Individual student records obtained from MA ESE; Abt Associates' Interviews of MA ELT School Principals, Spring 2011; Abt Associates' Surveys of MA ELT School Teachers, Spring 2011.

Sample: Current ELT schools as of the 2010-11 school year.