RENNIE CENTER
EDUCATION RESEARCH & POLICY

POLICY BRIEF

Testing the Test

A Study of PARCC Field Trials in Two School Districts

Introduction

In spring 2014, more than one million students in public schools across the country participated in field tests of new assessments developed by the Partnership for Assessment of Readiness for College and Careers (PARCC).[1] These assessments are designed to measure students' knowledge in English language arts (ELA) and mathematics as defined by the Common Core State Standards. The field tests were conducted to ensure the assessments—including new computer-based assessments—are valid and reliable, while providing an opportunity for state and local administrators to gain insight into the management and use of new technologies to support computer-based testing.

Massachusetts is one of the 10 states currently in the PARCC consortia. Roughly 81,000 students in districts and schools across the Commonwealth participated in the spring 2014 field tests. The field test was an initial step in the two-year timeline established by the Board of Elementary and Secondary Education (BESE)[2] to consider whether PARCC will replace the existing statewide Massachusetts Comprehensive Assessment System (MCAS). Prior to the 2014-15 school year, all Massachusetts districts were given the option to administer either PARCC or MCAS to students in grades 3-8. Districts choosing PARCC could use either a computer-based or a paper-based test, and elect to do so on a school-by-school basis. In fall 2015, BESE plans to vote on whether to adopt computer-based PARCC assessments statewide. If BESE votes to adopt PARCC, the first required administration of PARCC for students in grades 3-8 would occur in spring 2016. In future years, there is potential for PARCC to serve as the high school diploma competency assessment in grade 10.[3]

PARCC Trials in Burlington and Revere

During the spring 2014 field test, a certain number of classrooms in a given school/district were selected by PARCC to take either a paper-and-pencil or computer-based version of the PARCC assessment. Of the 81,000 students who took a PARCC field test in spring 2014, about 70 percent of these students participated in a computer-based administration. Two districts—Burlington Public Schools and Revere Public Schools—volunteered to administer PARCC ELA and math computer-based tests to all students in testing grades, or in selected schools.

In Burlington, all students enrolled in grades 3-8 and 10 participated in PARCC field tests; in Revere, two elementary and one middle school of the district's 11 schools administered PARCC tests school-wide (see Table 1). All tested students took both the Performance-based Assessment (PBA) and the End of Year (EOY)[4] assessments. The decision of these two districts to administer PARCC tests district- or school-

1 For more information visit: http://www.parcconline.org/about-parcc.

2 Massachusetts is the only PARCC consortia member implementing this two-year timeline. All other consortia states will be implementing PARCC tests in spring 2015.

3 Massachusetts Department of Elementary and Secondary Education. (May 2014). MCAS or PARCC. Retrieved from: http://www.doe.mass.edu/mcas/2014/news/MCASorPARCC.pdf.

4 The PBA is a summative test that occurs after 75 percent of the school year to measure student knowledge. The EOY occurs after the completion of about 90 percent of the school year. Results from both tests are combined to produce students' summative assessment scores.

wide presented an opportunity to examine PARCC administration at a scale reflective of actual testing procedures, providing critical information on administration practices and pitfalls prior to key decision-making points at state and local levels.

Table 1. Student enrollment and participation in Burlington and Revere

	Burlington	Revere
Total schools tested	6 schools	3 schools
Total students tested	2,200 students	950 students
Total enrollment	3,579 students	6,831 students

The emergence of Burlington and Revere as leaders in a process designed to examine the adaptability and use of computer-based technologies in schools is not a surprise. Both districts have devoted resources over the last several years to improving technology integration in classroom instruction. In partnership with their local municipalities, the districts have developed sophisticated information technology (IT) systems that include fiber optic network connections between school facilities, high-speed connectivity, and the latest generation devices to support student learning.

In addition, the importance of both districts' commitment to recruiting and hiring highly-qualified IT staff cannot be overstated. Recognizing staff capacity to support technological innovation as a clear priority, the districts have been creative in finding funds to support new positions. Burlington Public Schools shares with the Town of Burlington a director-level IT position that oversees technology infrastructure. In Revere, the district has applied for the maximum amount of services or funding available through the Universal Service Program for Schools and Libraries (E-rate) for several years.[5] The district uses these funds for annual upgrades or expansion of equipment and services, freeing up district funds to support staff positions. IT staff in both districts have a diverse set of roles, including building and maintaining central systems, facilitating training on new equipment and devices, and working collaboratively with classroom educators on technology integration issues.

However, despite a shared emphasis on IT investments, substantial differences exist between Burlington and Revere in the educational challenges they confront. Burlington Public Schools is a suburban district with a less diverse student population compared to the Commonwealth's general student population. The district is high-performing with approximately 94 percent of high school students completing their high school diploma in four years.[6] Revere Public Schools in a large urban district, and enrolls a more diverse student population than that of the state. Approximately 82 percent of students are classified as high-needs, nearly double the state average.[7] The district has a four-year graduation rate of approximately 77 percent.[8] Table 2 provides demographic data for each of the districts, as well as for Massachusetts.

Table 2. District populations, as compared to state totals

	Burlington	Revere	Mass.
Enrollment	3,579	6,831	955,739
High-needs students	25%	82%	49%
Four-year graduation rate	94%	77%	85%

Examining strategies employed by Burlington and Revere can provide a fuller sense of the range of options available to, and challenges faced by, other districts considering the use of computer-based tests. For example, districts may consider new investments needed to improve IT infrastructure, as well as additional staff capacity and expertise. It was this learning opportunity, in fact, that motivated both districts to participate in district-and school-wide trials. As Revere Public Schools Superintendent Paul Dakin noted: "I wanted to tackle some [school] management questions. For example, should a principal or an assistant principal do scheduling? And once we figure this out, I want principals who did this to tell the other principals [in my district] about it." Eric Conti, Burlington Public Schools' Superintendent, expressed value beyond his own district's preparation process: "I saw the value for us and others…I wanted to be device-agnostic. I wanted to involve students in the process as well; they're great consumers." Documenting and sharing these types of lessons can raise important questions about the effect of these tests on school operations, particularly teaching and learning.

5 The nation's largest education technology program administered through the Federal Communications Commission, the E-rate Service Program provides discounted telecommunications, internet access/service and internal connections to schools and school districts—including broadband service.

6 Massachusetts Department of Elementary and Secondary Education. (2013). School and District Profiles: 2013 4-year district graduation rate report for all students. Retrieved from: http://profiles.doe.mass.edu/state_report/gradrates.aspx

7 Massachusetts Department of Elementary and Secondary Education. (2013). School and District Profiles. Retrieved from: http://profiles.doe.mass.edu/profiles/student.aspx?orgcode=02480000&orgtypecode=5&leftNavId=305&

8 Massachusetts Department of Elementary and Secondary Education. (2013). School and District Profiles: 2013 4-year district graduation rate report for all students. Retrieved from: http://profiles.doe.mass.edu/state_report/gradrates.aspx.

This case study, prepared by the Rennie Center for Education Research & Policy, examines the experiences of Burlington and Revere Public Schools in administering PARCC field tests district- or school-wide. It offers insights for other districts considering the implementation of computer-based assessments in technology use and adaptability, decision-making, scheduling, staffing, and student data management. The case study activities were guided by a steering committee including the superintendents of the Burlington and Revere Public Schools, the Burlington Educators' Association and the Revere Teachers Association, along with the Massachusetts Department of Elementary and Secondary Education, the Massachusetts Association for School Superintendents, and the Massachusetts Teachers Association.

Research overview

The potential use of computer-based assessments has raised concerns from educators, policymakers, and parents about information technology infrastructure in school districts and the preparation of staff and students to use new technologies for assessment purposes, and the potential impact of testing activities on core school functions, particularly teaching and learning. This case study documents lessons learned in the district- or school-wide administration of computer-based student assessments in the Burlington and Revere School Districts during the spring 2014 PARCC field test. The case study focused on three research questions:

- What was the preparation process for district- and school-wide implementation of an online student assessment, including decision making on scheduling, staffing, professional development, technology and hardware, and test materials management?
- What successes and challenges were discovered through administration of computer-based assessments? What role did test-taking instructions, appropriateness of physical space, facility with technology, as well as the quality of professional development play in these discoveries?
- What was the reported experience of student test-takers? What were educators' (e.g., school leaders, teachers, test administrators) perspectives on students' test-taking experience?

To adequately answer these research questions, the Rennie Center team conducted the following research activities in both Burlington Public Schools and Revere Public Schools:

- Interviews with district leadership and district technology staff;
- Focus groups with principals, teachers and students from all testing schools (i.e., elementary, middle and high schools), accounting for nearly 170 leaders, teachers and students;
- Survey of staff prior to the administration of the PBA tests (i.e., pre-test survey); and
- Survey of staff after the administration of the PBA tests (i.e., post-test survey).

Almost 400 staff members, across the two districts, responded to the pre-test survey and about 250 to the post-test survey. The overall response rate for the pre-test survey was about 60%; 99% of Revere educators in the testing schools completed a survey. In Burlington, where all educators across the district received the questionnaire, 55% of educators completed a pre-test survey. For the post-test survey, response rates were about 42% overall (88% in testing schools in Revere; and 34% in Burlington). At Burlington High School, fewer teachers were directly involved in test administration since only 10th grade students were tested in English language arts and math, but not in other subjects. Additional information about the survey respondents is provided in Appendix A.

All data was then compiled and analyzed according to key implementation issues. The findings section presents themes that were common across respondents regardless of role or district affiliation, and offers more detailed descriptions of specific implementation issues.

Case study findings

The research findings below describe the preparation for and administration of PARCC field tests—both Performance-based Assessment (PBA) and End-of-Year (EOY) administrations—in Burlington and Revere. Given the nature of findings discussed, it is important to note that both Burlington and Revere possess sophisticated information technology (IT) systems, with features and resources designed to support student learning. In documenting and analyzing the strategies employed by these districts, the Rennie Center team has chosen to highlight challenges that will likely be common to other districts that elect to implement computer-based PARCC at scale, including:

- technology infrastructure,
- device use,
- scheduling,
- staffing,
- training educators, and
- student testing experiences.

Within each issue area, findings are organized to provide insights on Burlington's and Revere's planning processes; test administration; educators' experiences and perspectives; and these districts' decisions for spring 2015 PARCC testing.

Technology infrastructure

Burlington and Revere have both been working for many years to maintain and upgrade their IT systems to more fully integrate technology into their classrooms. Among the most important features of their existing infrastructure, both districts have fiber optic connections between school buildings that provide high-speed internet service and a connection to central servers. This type of fiber optic connectivity accommodates bandwidth in excess of the minimum requirements specified by PARCC, and allowed both districts to easily access downloaded test materials at each testing site. As a result, both districts were interested in going beyond the request for a limited number of classrooms and a paper-and-pencil administration to participate in the field test using computer-based technology, and offered to do so district- or school-wide. In addition, they utilized different testing procedures to learn about practical implementation issues. Table 3 below provides an overview of technology infrastructure features in these two districts.

- ***How did these districts plan for technology use during the spring 2014 PARCC trial?*** When opting into the district- and school-wide trials, Burlington and Revere agreed to vary their testing procedures and device use to learn as much as possible about practical implementation issues. Revere conducted the trial by proctor caching.[9] Burlington opted for live stream test administration.

  The use of central servers linked to testing sites through high-speed connections allowed both districts to update devices through a centrally-administered program. This allowed district-level IT staff in Burlington to centrally access device applications from all buildings to update mobile devices in batches (about 30 devices at a time). Similarly, because of sophisticated infrastructure, district IT staff in Revere had an analogous centrally-administered process to update laptops and desktops, with much of the preparation managed by district IT staff and executed by school-level IT staff.

- ***What happened during the trial?*** Both districts reported relatively few concerns in successfully being able to download materials; the bandwidth used for test administration did not compromise internet use for other educational purposes in schools. However, almost all test sessions were affected by test materials freezing or spooling for an extended period of time. These issues likely resulted from problems with how test materials, developed by the PARCC consortium interacted on Pearson technology applications, created as part of a suite of test administration products for PARCC tests (see additional discussion in Devise Use section below). Many Pearson-developed resources were released late, raising questions about whether products had been sufficiently tested for the scale at which they were being used, and forcing many district IT staff in both districts to scramble to complete needed updates to devices. District IT staff and test administrators were able to resolve most of these problems with a reboot of test materials.

9 Proctor cache is a test administration approach where all test materials are downloaded to a local server, from which students access test materials during a test session. Live streaming is a test administration approach where all test materials are streamed live from the internet during the test session.

Table 3. Technology infrastructure resources

	Burlington	Revere
Hardware configuration	Central server with wired connectivity to each building	Central server with wired connectivity to each building
Network configuration	Fiber optic network exists between buildings (includes all schools and town facilities)	Fiber optic network exists between buildings (includes all schools and town facilities)
Test administration approach	Live stream	Proctor cache
Internet connectivity: Bandwidth capacity	500 MB	500 MB; increasing to 1 GB for 2014-15 school year
Bandwidth used during test sessions	25-30% of total bandwidth	25-30% of total bandwidth

More significant challenges arose for Burlington due to the decision to live stream test materials; student test data was not being received due to a programming error affecting communication between Chromebooks and the Pearson server. Neither district had significant concerns after the first few days of testing, which speaks to the relative strength of their infrastructure plans. However, these issues must be resolved for the next administration of PARCC.

- ***What were educator perspectives on technology implementation?*** Overall, educators expressed confidence in their schools' technology resources, according to survey data. Figure 1 summarizes educator perspectives on school technology resources collected pre- and post-PBA administration (see Appendix A for more data). Post-test survey findings reveal increased percentages of educators in Burlington reporting technology was not ready after PBA test administration; these results may reflect frustration with initial technological glitches.

Figure 1. Percent of educators reporting on school's technology readiness.*

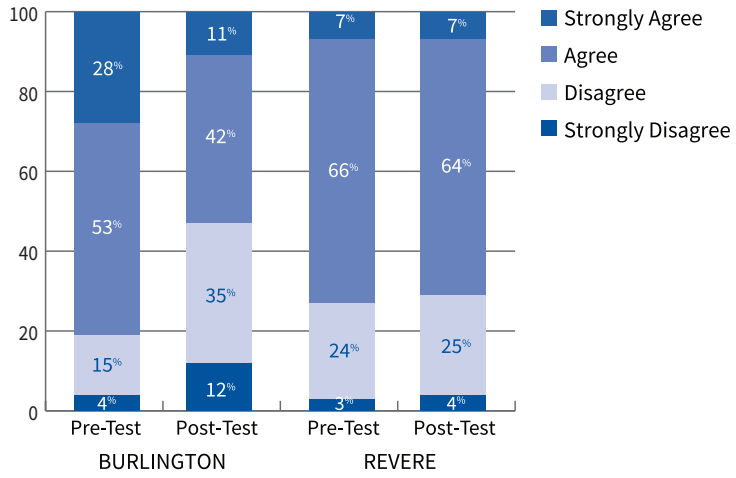

**Figure 1 reports on the percent of educators that reported at least some knowledge on technology readiness, and does not include "I don't know" responses.*

- ***What decisions about infrastructure are the districts making to prepare for 2014-15 implementation?*** Given the sophisticated technology infrastructure these two districts possess, Burlington and Revere are not planning significant changes to their IT systems in light of information gained from the district- and school-wide trials. Revere decided in spring 2014 to increase its available bandwidth to 1 GB, and to purchase additional wireless access points to support improved wireless coverage in all school buildings. Both districts have ruled out live streaming test materials; both will use proctor caching to administer test materials.

See text box below on Technology Infrastructure for a summary of district decisions, and questions for other districts to consider concerning IT infrastructure issues.

TECHNOLOGY INFRASTRUCTURE	
District decisions for 2014-15	**Key questions for other districts**
Burlington and **Revere** will opt for: ■ Computer-based testing; and ■ Proctor caching all test materials.	■ How is network access set up in your district? ■ Where are district/school servers located? ■ Are buildings networked to each other? A central server? Does each building have its own server? ■ What is the amount of bandwidth available? To the district? To each building?

Device use

Burlington and Revere used different devices as part of the spring 2014 PARCC trial. Revere conducted the trial largely on PC desktops and laptops; Burlington purposefully chose to use a variety of devices (i.e., laptops, desktops, iPads, Chromebooks) to learn about their functionality with test content, and with students of different ages and abilities. This variation between the districts' test administration plans produced some of the most illustrative examples of the challenges in implementing PARCC assessments district- and school-wide.

- ***How did districts plan for device use during the spring 2014 PARCC trial?*** Burlington's IT staff developed a testing schedule to facilitate the use of multiple devices. For elementary schools, all students in each grade used the same device as follows:
  - Grade 3: Windows/PC desktop
  - Grade 4: iPad
  - Grade 5 and 6: Chromebook

  All three devices were used in grades 7-8 and 10. Revere used Windows/PC desktops and laptops in all testing grades.

  Burlington's Director of Information Technology led a team of five other IT professionals to prepare all devices for testing. This included installing a mobile device management (MDM) application on both Chromebooks and iPads. The MDM application is used to ensure mobile devices—principally Chromebooks and iPads—would run programs needed to display test materials (e.g., TestNav) and students would not be able to navigate away from test materials.

- ***What happened during the trial?*** While Burlington found that it had a sufficient number of devices for their district-wide trial, Revere used computers from another building to complete the trial in selected schools. The need to use the district's existing inventory will have implications for implementing computer-based testing district-wide in Revere in spring 2015. See Table 4 for a detailed comparison of device use in each district, device count, and staff hours dedicated to preparing devices for test administration.

Common planning processes

Inventoried equipment. District-level IT staff inventoried devices, and determined if they met PARCC specifications.

Configured devices. IT staff determined needed upgrades, and developed appropriate workplans.

Designed test schedule. District and school leaders created a test administration schedule, factoring in device count and location.

Prepped devices for tests. IT staff installed software for test administration on all devices.

- In Revere, IT staff programmed laptops and desktops in batches, downloading files for test administration.
- In Burlington, IT staff invested significant time installing MDM programs on mobile devices to run test materials in single app mode (e.g., TestNav)

Tested equipment and connectivity. With updates/installations complete, IT staff tested all devices to determine if internet service would be interrupted during test sessions.

Table 4. Device supply and use in PARCC trials

	Burlington	Revere
Types of devices used for test administration	■ iPads ■ Chromebooks ■ Desktops (PCs and Macs)	■ Laptops (PCs) ■ Desktops (PCs)
Time invested by technology staff to prepare devices	100% of Director for Technology Integration for three weeks prior to trial, with additional 500 staff hours across five staff members on district tech team	100% of four FTEs for a period of three weeks
District-wide device count	Approximately 4200 (800 PCs and laptops; approximately 3400 iPads/Chromebooks)	Approximately 6000 (3500 PCs and laptops; approximately 2500 iPads)
Proportion of devices used for test administration	100% of computer labs in testing schools; 100% of Chromebooks, and 25% of iPads	100% of devices across testing schools plus two computer labs' worth of devices from other schools
District rotation to replace equipment	Three-year rotation on all devices	3-4 year old laptops in most classrooms and labs, some devices 6 to 7 years old

- ***What were educator perspectives on device use?*** Based on survey data, almost all educators in these two districts who had a role in test administration reported that devices were affected by various technology challenges during test sessions (see Figure 2; more data available in Appendix A). A high percentage of educators serving as test administrators reported a student's device not working during a test session or a device losing connectivity; these reported percentages were higher in Revere. Given the relative ease with which these districts handled batch updating of devices and downloads of testing materials, and the extensive quality controls that district-level IT staff performed (e.g., testing TestNav, confirming appropriate versions of software applications were downloaded), the challenges with device use would suggest that Pearson computer-based testing platforms and the test materials that ran on them were not ready for this intended scale of use.

Figure 2. Percent of test administrators reporting technology challenges in test sessions*

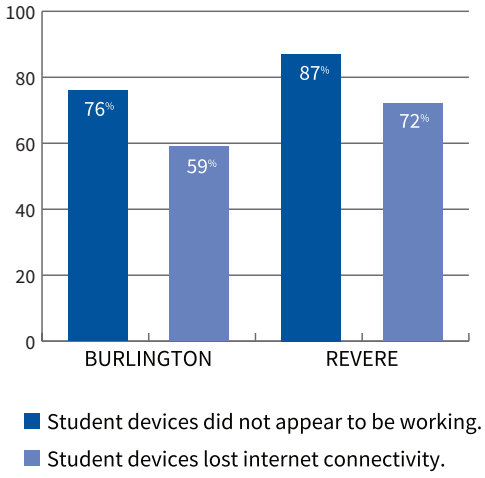

**Figure 2 reports on the percent of educators with a test administrator role during the PBA reporting on the functionality of students devices during test sessions.*

- ***What decisions are Burlington and Revere making about devices to prepare for spring 2015 testing?*** District IT staff in Burlington and Revere agreed that PC desktops performed best in terms of loading and running test materials. Desktop computers required the least time investment for preparation, given that most software could be loaded with batch updates and produced the fewest technical problems and other interruptions during test sessions. Chromebooks and iPads experienced more interruptions during testing, and test materials were more difficult to load.

  However, neither district is seriously considering purchasing additional desktop computers solely to support test administration. All planned technology purchases will be geared toward enhancing classroom instruction rather than solely addressing test administration needs. In spring 2015, Burlington is likely to use mobile devices, since the district's inventory is largely comprised of iPads; Revere is considering the purchase of Chromebooks to ensure a sufficient number of devices.

See text box below on Device Use for a summary of these district decisions, and questions for other districts to consider regarding device use.

DEVICE USE	
District decisions for 2014-15	**Key questions for other districts**
Burlington will opt for: ■ Using the entire inventory of mobile devices to support computer-based testing and limit computer-lab based sessions. **Revere** is considering: ■ Purchasing additional Chromebooks to ensure the district has the number of devices needed to administer PARCC at scale.	■ How many existing devices are available for test administration? ■ What type of devices do these include? ■ Where are these devices located? And for what are they typically used? ■ How many devices are required for instruction that will be occurring during test administration? ■ Are software and hardware features on these devices compatible with PARCC test specifications?

Scheduling

MCAS (or any paper-based test) administration is largely accomplished across a few days with most students in a grade, or school, taking the test at the same time. Devising a testing schedule for a computer-based test is almost entirely dependent on the number of existing devices that can be used to test students at any one given time. A major challenge in both districts was creating a school-level test administration schedule that maximized the number of available devices, yet minimized school disruptions.

- ***How did districts and schools plan and schedule test sessions?*** In Revere, planning for PARCC tests was a collaborative endeavor between lead district IT staff, school-level IT staff, and school principals. Principals and the Assistant Superintendent set the test administration schedule in one all-day planning session held over winter break in 2013-14. This allowed each principal sufficient time to work with district- and school-level IT staff to ensure an adequate device inventory on-site to accommodate the testing schedule. With this information about testing schedule and device needs, district IT staff created workplans for updating devices to meet PARCC specifications.

  District and school staff in Burlington pursued a very similar multi-step collaborative planning process as Revere for the PBA, but it was led and managed by the district-level IT team, with feedback on scheduling from principals. For the EOY, however, Burlington principals managed the school schedule, for which they expressed a preference. As one principal noted: "the more control you can have on schedule and time allocations the better. You can make school-level decisions".

- ***What happened during the trial?*** To test the approximately 2,200 students who participated in the field test, Burlington used nearly all 15 days of the PBA test administration window. In testing far fewer students, Revere used about the same number of testing days given the more limited number of devices available across the three testing schools. In short, Burlington's larger inventory of devices enabled a greater number of students to be tested in a shorter number of testing days.

  Successfully scheduling PARCC administration required these districts to determine which school resources and educators' time could be made available to support test administration and still allow for other core school functions to continue. Ensuring adequate staffing for regular educational activities was, perhaps, more complex than staffing test administration. Space was also a concern. For example, computer labs in testing schools in both districts were taken off-line for parts of many days during the PBA and EOY testing windows.

  Scheduling test sessions where students' course-taking patterns vary considerably was even more complex. Middle and high school teachers reported experiencing class sessions where students were missing due to the testing schedule, or having class sessions run on different timing. In focus groups, some teachers in non-tested subjects reported significant disruptions to instruction, and reported these disruptions as obstacles to adequate coverage of course curriculum during the test administration period. Overall, district and school leaders acknowledged that the desired goal of "business as usual" during the three-week testing period was difficult to achieve.

- ***What were educator perspectives on scheduling?*** Similar to data on school-level technology readiness, educators in Burlington reported less favorably on their school's administration/logistics plan after PBA administration than before (see Figure 3; additional data available in Appendix A). It is important to note that Burlington experimented with a number

Planning for PARCC test accommodations

Educators in these two districts encountered several challenges when attempting to plan for students who routinely test with accommodations. First, the PARCC field tests only made a limited number of test accommodations available. For example, during the PBA, only "read aloud" and "scribe" accommodations were available as computer-based adaptations to test materials.

Next, documentation from Pearson was not explicit on how computer-based accommodation features would work with test materials, making educators unsure of whether students should receive the same accommodations as a prior year's MCAS administration.

Finally, once student testing decisions were made, a modified test administration schedule needed to be crafted. Staff in both districts followed MCAS test administration protocols in which students with accommodations are often tested in a different room/time, including students with read-aloud and scribe accommodations, creating additional demands for space, devices and staff.

of scheduling strategies to determine the best approach moving forward. In Revere, the opposite scenario held true; more educators reported favorably on school administration/logistics plans after PBA administration was completed.

More than half of all educators reported that school resources like instructional space, equipment, and facilities were substantially impacted due to the PARCC testing schedule (see Figure 3 below, and additional data in Appendix A). For example, in Revere, where computer labs were more frequently used for test sessions, a higher proportion of educators-—nearly three-quarters—reported that school resources were substantially impacted.

Figure 3. Percent of teachers reporting significant impact on school-level logistics due to PARCC testing.*

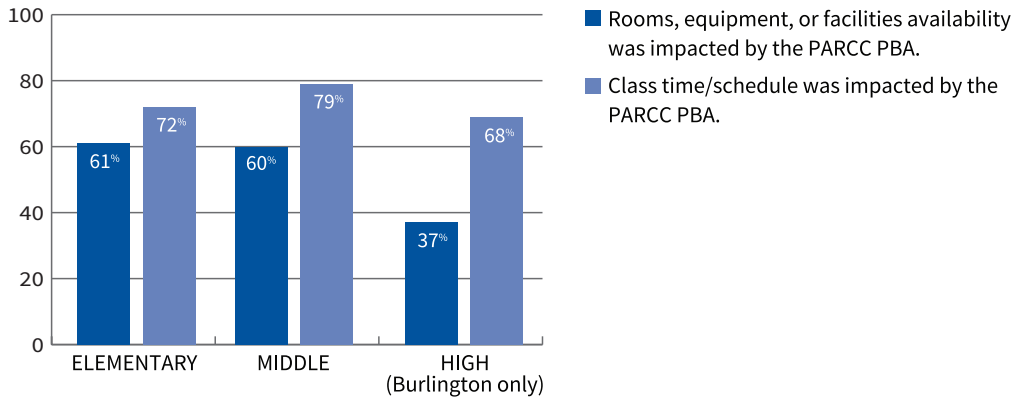

**Figure 3 reports on the percent of educators reporting some knowledge on school administration and logistics readiness, and does not include "I don't know" responses.*

A high proportion of educators across both districts reported that class time or their class schedule was substantially impacted by PARCC testing. About 70 percent of educators, across all schools, reported this to be the case (see Figure 4 below and Appendix A for additional data).[10] In focus groups, teachers discussed that quiet classroom space—located away from the cafeteria or a playground—with sufficient connectivity for multiple devices was also at a premium during the test administration window.

Figure 4. Percent of educators reporting substantial impact on school-level logistics due to PARCC testing.*

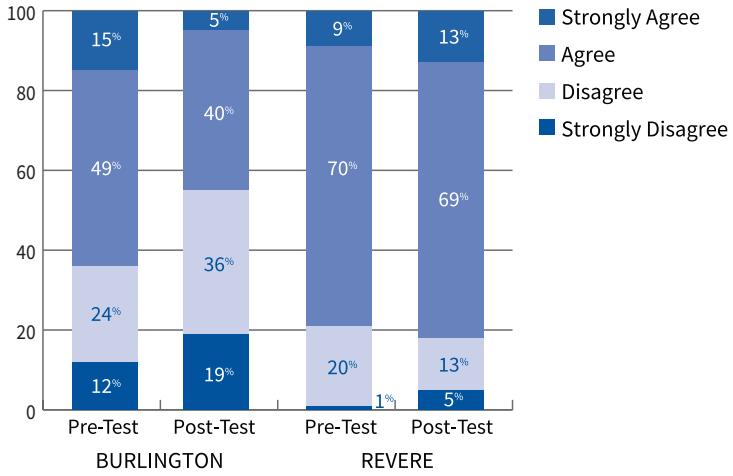

**Figure 4 reports on the percent of educators reporting significant impact on school-level logistics.*

10 To note, the sample of Burlington teachers in Figure 3 includes Burlington High School teachers. Sophomores at the high school participated in this PARCC trial, and also took the 10th grade MCAS exam during two consecutive three-week periods in March. As such, these students' schedules varied the most of any of the schools in the case study. The Burlington teacher data on school-level logistics may be linked to teacher perceptions' of these more intensive test administration schedules used at Burlington High School.

- ***What decisions are Burlington and Revere making in regard to school-level test administration?*** Both Burlington and Revere are focused on scheduling test sessions to minimize the number of days across which test administration stretches in spring 2015. Revere is weighing several scheduling scenarios, including scheduling two testing sessions per student per day (e.g., a student would take both a math and ELA session in a given day). In Burlington, the district will predominantly rely on their inventory of mobile devices plus laptops/desktops, totaling about 4000+ devices, to test students in grades 3-8 in as few days as possible. Utilizing more devices from district inventories, both districts are likely to test far more than the 600 students (Burlington) and 175 students (Revere), respectively, that were tested at one time during the spring 2014 trial.

See text box on Scheduling below for a summary of these district decisions, and questions on planning the school schedule during test administration for other districts to consider.

SCHEDULING	
District decisions for 2014-15	**Key questions for other districts**
Burlington and **Revere** will attempt to complete PARCC testing in fewer days. **Burlington** will opt for testing all students in a given grade in one day, maximizing mobile devices in use. **Revere** will likely schedule two sessions per day so that students are taking both a math and ELA session in one day.	■ How many existing devices are available for test administration? ■ What type of devices do these include? ■ Where are these devices located? And for what are they typically used? ■ How many devices are required for instruction that will be occurring during test administration? ■ Are software and hardware features on these devices compatible with PARCC test specifications?

Staffing

Administration of computer-based tests requires different staffing arrangements than what is needed for paper-and-pencil test administration. Both paper-and-pencil tests and computer-based tests require staff to be responsible for scheduling test sessions, assigning students, coordinating the staffing of test sessions, ensuring that security protocols for test materials are followed, and conducting the test (i.e., staff read instructions and monitor student progress).

With computer-based tests, however, scheduling a test session in the test administration platform and assigning students to each session are completed online. These tasks may require staff with different skills and knowledge, including familiarity with a student information management system. Staff supervising test sessions need to be able to "initiate the test session" by making sure all students can log on and access the test materials, as well as deal with basic technology issues that may occur. In addition, staff with technical expertise are needed to prepare devices for test sessions and troubleshoot more complicated technology issues. Staffing decisions ultimately involve figuring out what knowledge and experience is required for each task, which and how many staff should be assigned to perform each task.

- ***What staffing plans did Burlington and Revere use?*** Burlington and Revere used somewhat different staffing models for planning for the PBA test administration (see Table 5). In Burlington, the district's Director of Technology Integration did the majority of scheduling; the Director of Student Information Management created test sessions, and assigned students to these sessions in Pearson ACCESS, the online database management system used for managing student test data. Further, Burlington's Director of Information Technology led a team of five other IT professionals to prepare all devices, district-wide, for testing. This included installing a mobile device management (MDM) application on all mobile devices (described in detail in the Device Use section above). In Revere, planning for PARCC test administration was a collaborative endeavor between lead district staff and school principals. School level staff worked with district IT staff to plan how to use available devices, create the testing and training schedule and coordinate the test administration.

Table 5. Staffing

	Burlington	Revere
Test administration: Staff in the classroom	District technology staff initiated test sessions; school staff supervised and monitored students and provided basic troubleshooting. At Burlington High School, permanent and per diem substitutes (often retired teachers), who typically serve as MCAS proctors, performed these tasks.	Teachers served as test administrators, and were responsible for initiating test sessions.
Test administration: Staff at the school	At least two technology staff on-site at each building during test sessions (one district-level tech lead and a school-level library and media specialist).	Two or three technology staff leads on site at each building during test sessions (a mix of school-level tech leads and at least one district-level tech lead).
Number of technology staff district-wide	Eighteen staff: district team of 6 (including district/town IT positions), plus two school-level positions per building and additional district-level director.	Nine staff: combination of district-level and school-level staff.

- ***How did Burlington and Revere staff test sessions?*** In both districts, staffing decisions focused on the number of staff needed to administer the tests properly, to handle technology issues, and what expertise these staff needed. During the first days of the PBA administration, each district assigned two school staff to each testing session. One person supervised and monitored the test session, reading the instructions to students and ensuring test protocols were followed. Another staff member was typically assigned specifically to be available for "first-line" technology support. However, in many cases, this second staff member was assigned to as many as two to three classrooms. This support ranged from assisting students with log in problems, swapping equipment as needed, rebooting devices, and dealing with freezing or spooling issues. In addition, each district assigned two to three technology staff (both district- and school-level IT staff) to a testing building to be available for more complicated technology issues.

  Although staffing levels were similar, Burlington and Revere handled test session initiation in different ways. In Burlington, school- and district-level technology staff initiated the test session in the Pearson software interface to allow students to log-on. After starting the online test session, classroom teachers, special education teachers, and guidance counselors supervised test sessions,[11] while library and media specialists, district-level IT staff, and instructional technology specialists provided basic technology support.

  In Revere, classroom teachers had responsibility for initiating a test session, and prompting/assisting students to login, and monitoring test protocols.

Student information management in PARCC testing

In implementing district- and school-wide trials, Burlington and Revere had to create test sessions in Pearson ACCESS—the online student information/database management system for PARCC tests—for all testing students. A key decision was how to best manage this process. While ESE prepared formatted files for districts to use in uploading student data, districts then needed to create the actual test sessions from grade-level files and make adjustments for any students requiring accommodations or make-ups. As a district technology staff member reported: "touching each student [record] was incredibly time-consuming, and we wanted to make sure we got it right."

In Burlington, student assignment to test sessions was managed centrally by the district's Director of Student Information Management; principals had a role in the quality control of these assignments. This process took the equivalent of three weeks of staff time. In Revere, principals completed these processes, resulting in about 20-30 hours of principals' time each week for about three weeks. District leaders reported that the entire process was quite time-consuming and required more time than was initially expected.

In both districts, staff responsible for creating test sessions did not receive extensive training on the Pearson ACCESS system; Pearson documentation was described as "thin." Principals in Revere responsible for creating test sessions did not have much, if any, previous experience in online data management. With computer-based testing, these student information management responsibilities will be more central to test administration. If computer-based testing is adopted, training in online data management will be essential for district and school leadership.

- ***What happened during the trial?*** Staff in both districts almost unanimously reported that technology staff and teachers seamlessly worked together to get students re-logged into test sessions in the case of technology delays or failures. Districts began from the first days of testing to routinize some of the processes that worked well to support teachers in new roles. For example, principals in Revere reported that most classroom teachers who served as test administrators became adept at serving as first-line technology support, knowing when to re-start test sessions due to continual spooling or freezing. Teachers who conducted test sessions on the first day of testing then became responsible for troubleshooting for a test session occurring on a subsequent day of testing.

- ***What were educator perspectives on their role in staffing test sessions?*** Principals and teachers alike reported having "no expectations of what computer-based testing would be like until that first session." Many teachers approached their test administration assignments with anxiety due to a lack of information about what to expect. In both districts, teachers participating in focus groups reported little confidence in being able to answer questions from students on how they would use devices, submit answers, or complete a test session. However, despite the uncertainty staff had prior to test administration, most agreed that they were able to handle the test administration challenges after the first few days of testing.

- ***What are key staffing decisions that Burlington and Revere are considering?*** During EOY test administration, Burlington pulled back the number of district-level IT staff on-site to experiment with how many staff are needed during a given test session. In spring 2015, the district is likely to operate with district-level IT staff on-call, but not on-site. School-level technology staff—including library and media specialists—will likely provide troubleshooting support. Revere hopes to have two to three tech-trained educators working with a school-level IT staff person in each building during future test administrations (see additional details in Training section below); district-level IT staff would be available to support multiple buildings during test administration.

See text box on Staffing below for a summary of these district decisions, and questions other districts can consider in light of staffing PARCC test sessions.

STAFFING	
District decisions for 2014-15	**Key questions for other districts**
Both districts are discussing: ■ Designating fewer district IT staff to PARCC to ensure less drain on IT capacity. ■ Initiating ongoing staffing and training conversations. ■ Relying on school staff who are supervising test sessions to provide basic troubleshooting rather than assigning additional staff to that role.	■ Who is qualified to perform the sophisticated IT tasks needed to prepare a district for computer-based test administration? ■ Who will make decisions on scheduling test sessions? ■ Who will take lead responsibility for managing devices, including needed updates? ■ Who will staff test sessions as test administrators? ■ How many staff are needed for each test session?

Orientation and professional learning for educators

Prior to PARCC testing, most educators reported that they did not have extensive experience with computer-based testing or software. According to survey data, about 40 percent of educators in Burlington and Revere reported giving computer-based tests within the last school year. Among those that did, educators reported giving one or two computer-based tests during the past school year.

- ***How did districts prepare educators for computer-based testing?*** District teams primarily focused on orienting teachers to PARCC computer-based testing. In Burlington, district IT staff held orientation meetings with school leaders and teachers. These groups watched the PARCC tutorial video together, and district IT staff answered questions. The Burlington Educators' Association conducted an afternoon training session for teachers to practice with the tools and share feedback and an evening session for parents—co-hosted by Burlington Public Schools—that included demonstrations of computer-based test materials. In Revere, school principals held their own building-level orientation meetings for teachers and instructional staff. Revere principals tried to focus on getting the most critical information about how the test would function to their colleagues, creating "cheat sheets" from the voluminous materials put out by Pearson. Similar to Burlington, Revere also held a parent information meeting to inform parents about the PARCC field test.

11 The staffing of test sessions at Burlington High School was different than what is described for the rest of the district. At Burlington High School, permanent and per diem substitutes supervised test sessions.

- ***What were educator perspectives on the usefulness of the test administration training and materials?*** Educators reported that neither training materials made publicly-available by PARCC, nor district-based orientation activities, created a sense of how to troubleshoot technology issues. More than 60 percent of educators who served as test administrators reported that the PARCC online trainings did not provide preparation to resolve basic technology issues (see Figure 5; Appendix A offers additional data). As one teacher attending a focus group said: "I feel like an online simulation would have been better that what was offered [from Pearson]. And there were so many tech problems on the first day, that I don't feel like [the training] was a full-scale simulation."

  Some teachers reported value in taking the student tutorial with colleagues to identify test administration challenges, and what possible solutions existed. Both districts engaged in this type of training: at the district-level in Burlington, and at each school in Revere.

Figure 5. Percent of test administrators reporting on effectiveness of PARCC orientation.*

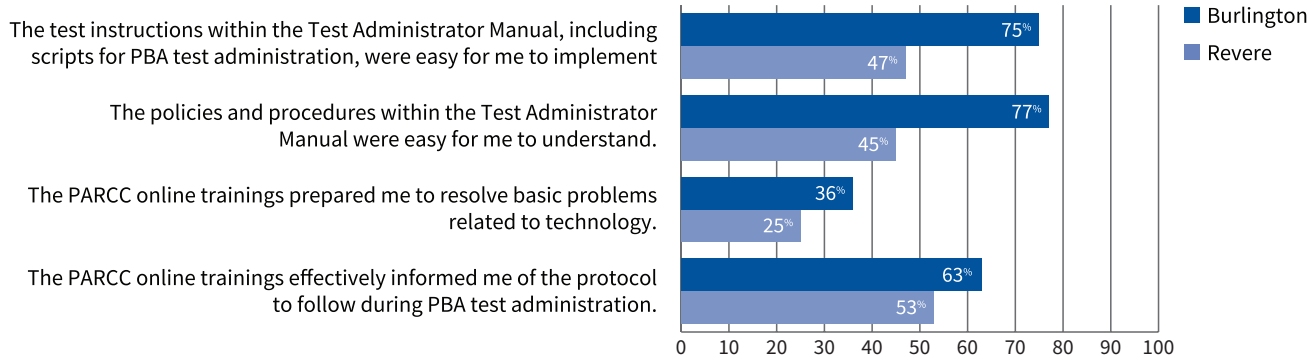

**Figure 5 reports on the percent of educators with a test administration role who responded "Strongly agree" or "Agree" with statements on PARCC trainings.*

- ***What are key training decisions that Burlington and Revere are considering?*** Both Burlington and Revere are planning to provide more IT training to teachers in order to reduce the number of IT staff assigned to schools during the testing. In Revere, district-level IT staff are considering how to train a select number of teachers to be "tech trouble shooters" during future test sessions. In both cases, these teachers would serve as a "first line" of on-site IT support, bolstering support provided by school-level IT staff, and freeing up district IT staff assigned to the school during the field test.

See text box on Training below for a summary of these district decisions, and questions other districts can consider in light of offering educators new, or additional, training.

TRAINING	
District decisions for 2014-15	**Key questions for other districts**
Burlington is planning to differentiate training options for district IT staff, building IT staff, and teachers. All training will include a focus on which staff members are responsible for what level of troubleshooting. **Revere** will opt to provide a small cohort of teachers basic IT training so that they can assist in troubleshooting.	■ Who is responsible for training educators? ■ What kinds of training—content and format—will test administrators receive? ■ How and when will the training be provided?

Student experience with PARCC tests

While both PARCC and MCAS are aligned with the Common Core, the skills required of students to take the computer-based PARCC assessment are different from MCAS. The PARCC field test enabled students and teachers in Burlington and Revere to make some very preliminary observations about student preparation for, and reaction to, computer-based PARCC tests. In opting to conduct district- and school-wide trials, Burlington and Revere sought to strike a balance; school leaders and teachers wanted students to be informed about PARCC, and take the tests seriously, but not have the trial overtake all other learning activities and commitments. Using this approach, school leaders and teachers worked together to set expectations for students about computer-based test sessions.

- ***How did educators prepare students for computer-based testing prior to the trial?*** Educators reported investing class time in publicly-available PARCC preparation activities and materials. According to survey data, about three-quarters of educators across both districts reported using class time to have students watch the PARCC tutorial, and 70 percent reviewed publicly-released test items themselves. Finally, nearly a quarter of educators reported using publicly-released PARCC items to design a lesson.

  Burlington and Revere educators communicated with students about the purpose of the PARCC tests. Educators in Burlington told students that the tests did not "count," and this was their opportunity to "test the test" and "preview" new expectations for their learning. In Revere, students were expected "to do their best," but they expressed an innate sense that the test did not bear the same weight as MCAS. One student reported: "I knew it was not going to be graded in the same way."

- ***What happened during the trial?*** Students who participated in focus groups reported on what it was like to take PARCC tests on a device, as well as the content of the tests. In regard to using new technologies, student opinions varied largely by age. Older students preferred the paper and pencil "MCAS format," while younger students reported that testing on the computer was "fun" and that it was "easier to type" than write, even though many students have not yet taken a keyboarding/typing class.

  When considering the content of the PARCC tests, student opinions gathered from focus groups also varied. Students reported that practice items—which they took as part of the online tutorial with their class—were not very helpful as the content of these did not seem representative of questions on the actual test. Students participating in the focus groups reported that the math questions were more challenging than MCAS test items, and reported on the challenges of using math test tools, like the equation editor. Some students reported being confused by what the test was asking them to do, for example, "[not] knowing how much work to show" when entering math answers, whether work on their scrap paper would "count like it had on MCAS," and "...to write in the box" when referring to the writing prompts on the English Language Arts test."

- ***What were educator perspectives on students' readiness to take PARCC?*** On the pre-test, more educators at the elementary- and middle-school levels reported students having needed skills to take a computer-based test than on the post-test survey (see Figure 6, and Appendix A for additional data). Similarly, teachers participating in focus groups reported seeing students using "computer skills" as needed to manipulate devices, and witnessed students easily using features like a mouse or keyboard keys to answer questions.

- ***What decisions are Burlington and Revere considering to support students' test-taking experiences?*** In the focus groups, Burlington and Revere teachers discussed different strategies to increase the use of technology in their classrooms. Importantly, their focus is on building skills and competencies to support student learning, not test preparation. Teachers also want to make sure that classroom practice is adjusted to incorporate computer skills that would, in fact, enhance student learning. Since these districts have tackled fundamental issues like investments in technology infrastructure and staff capacity, these conversations about classroom integration are possible.

Figure 6. Percent of educators reporting on students' technology readiness.

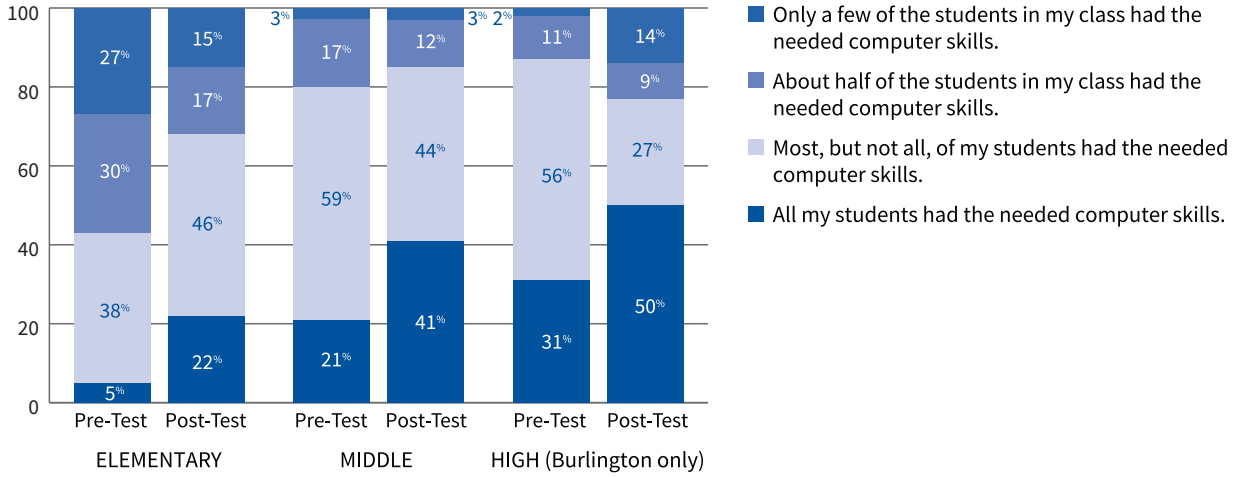

**Figure 6 reports on the percent of educators that reported at least some knowledge on students' technology readiness, and does not include "I don't know" responses.*

See text box on Technology Integration below for a summary of district decisions, and key questions for other districts to consider when considering issues technology integration in classrooms.

TECHNOLOGY INTEGRATION	
District decisions for 2014-15	**Key questions for other districts**
Both districts have focused on classroom-level technology integration, making this a priority by: ■ investing in technology resources, ■ offering teachers professional development, and ■ using technology more regularly as part of instructional activities.	■ How routinely are instructional tasks or classroom assessments performed by students using technology? ■ What types of devices are used for these types of activities? ■ Which educators in your district are addressing issues of technology in the classroom? ■ To what extent is technology integration for classroom instruction a critical issue for district leaders?

Lessons learned from the 2014 PARCC trials

District- and school-wide trials in Burlington and Revere produced important information that can help districts weigh the pros and cons of computer-based testing. A careful review of lessons learned from both districts' decision-making processes reveals a number of key issues that warrant analysis by all school districts across the Commonwealth considering computer-based PARCC tests.

Determining technology infrastructure capacity and the inventory and location of PARCC-ready devices ahead of time is critical. Burlington and Revere have prioritized the use of technology in schools. Over multiple years, they committed resources to strengthening infrastructure, improving high-speed connectivity, and hiring experienced IT staff. To achieve these goals, both districts have established effective partnerships with their communities, or accessed additional federal or private resources. As such, both of these districts had more than adequate technology infrastructure features to support a district- or school-wide trial.

However, Burlington and Revere both expressed concern with maximizing the number of devices that can be used for student testing. While PC desktops were considered optimal for testing, neither district is considering this type of expansion in their technology inventory. Burlington is likely to use mobile devices to test students in their grade-level classrooms in spring 2015. Revere is considering the purchase of Chromebooks to ensure a sufficient number of testing devices to complete test administration within the three week window and minimize over-reliance on computer labs. Perhaps most importantly, both districts preferred mobile devices for the ability to support student learning activities outside of testing.

Burlington and Revere will also focus on improving wireless internet coverage in what will be high-demand sections of buildings; during the trial, both districts tried to cluster test administration in certain wings of school buildings, and will continue to do so to the extent possible in future test administrations. This may require the purchase of additional wireless access points. For example, Revere noted some classroom locations within testing buildings had lower levels of wireless connectivity during Performance-based Assessment test sessions. The district purchased more wireless access points for buildings, which were used successfully during End-of-Year tests.

School-level management of test administration is challenging. Districts want to minimize the number of days that are dedicated to testing in each building, and across the district. The total time devoted to testing entirely depends on the inventory, type, and location of available devices; unlike MCAS, not all students can be tested at one time. School leaders in Burlington and Revere needed to create a school-wide schedule to maintain and carry out "regular" school functions for multiple days during the testing period. This required planning for instances when space, staff and technology resources were often limited or unavailable due to test administration.

Looking ahead to spring 2015, Burlington is likely to use their full inventory of mobile devices plus laptops and desktops, totaling over 4000 devices, to test students in grades 3-8 in as few days as possible. The district will try to achieve this target by testing, in grade-level groups, as many students as possible in concurrently scheduled sessions (e.g., all third graders across the district will take the first session of PBA math at a particular date/time). Revere is weighing several scheduling scenarios. District leaders are determining different configurations to concurrently test as many students as possible to maximize device use across buildings. Revere is also considering the purchase of additional Chromebooks to complete testing sessions more quickly, and as a "back-up inventory."

Creating a variety of test administration roles for staff will require more support and training. During PBA and EOY test administrations, Burlington and Revere had educators and IT staff handling new and different responsibilities than what had been the case during MCAS test administrations. District IT staff were heavily involved in planning test administration, and in some cases, training colleagues; teachers were involved in troubleshooting some technological issues during test sessions. District teams experimented with informal training protocols to simultaneously increase staff knowledge toward new responsibilities, and to determine how much IT staff capacity is needed once teachers became more comfortable with technology. Burlington ultimately pulled back the number of district IT staff on-site during EOY test sessions administered by teachers, relying on building-level IT staff as a first line of support for technology challenges.

In Revere, district-level IT staff are considering how to train a select number of teachers to serve as "tech trouble shooters" during test sessions. The district desires to have two to three tech-trained staff per building to ensure that district-level IT staff are free to support multiple buildings during test administration. Regardless of approach, teachers in these two districts will likely have new technological responsibilities in test administration, and district-level IT staff will have more responsibility in planning for test administration as well as training colleagues. Therefore, new supports for teachers and IT staff are a critical priority.

Investments in technology were and will continue to be focused on instruction. Burlington and Revere opted into PARCC district- and school-wide trials based on the view of district leadership that technology-enhanced instruction and assessment is "the wave of the future." The PARCC field test provided an opportunity to determine how to manage a computer-based test in terms of planning for test sessions, staffing, assessing needed training, preparing students and managing district- and school level resources. District leadership has clearly articulated to their respective teams, however, that assessment is only one of the educational activities where technology will play an increasingly expanded role; both districts are determined to ensure that the primary focus of all decisions about technology is the improvement of student learning.

Given that most students did not report significant roadblocks utilizing technology during the PARCC field test, many educators in these districts are optimistic about the integration of technology into classroom practice. Educators in Burlington and Revere were vocal about keeping the focus on student learning as they spoke about the field test and its implications. Teachers were positive and thoughtful about the potential of technology for improving classroom instruction and classroom-based assessment, so long as the goal of technology integration remains on improving student learning.

Questions for Further Investigation

The Burlington and Revere school districts have an established track record of substantial investments in infrastructure, equipment and staff to support classroom-level integration of technology. Despite their technology capacity, however, both districts recognized the challenges of implementing computer-based assessments at scale, and opted into school- and district-wide field testing to learn as much as possible about how test administration would affect regular school operations.

During the field test, these districts experienced challenges with PARCC administration including delivery glitches in the first days of testing, disruptions to classroom instruction, and the need to assign staff to perform additional and new roles. Both district leaders, however, focused on what learning could be gained from overcoming these challenges, for the dual purposes of completing test administration and improving technology implementation in the classroom. This case study raises questions about the intersection of technology for testing and technology for teaching and learning, and suggests that districts looking to adopt computer-based testing carefully review how technology for testing impacts:

- technology infrastructure and capacity;
- budgetary resources for upgrading and expanding equipment inventory;
- facilities, including classroom space, and their availability during testing windows;
- staffing requirements and capacity, in light of new and different assignments for educators and technology staff, alike;
- professional development needs; and
- student learning in classrooms.

These important questions about technology needs warrant more study given that the Commonwealth of Massachusetts is facing important decisions on the future of computer-based testing.

Finally, the case study raises questions beyond the implementation of computer-based testing that concern the impact of technology on teaching and learning, and resource equity. Both districts viewed the field test as a first step toward a better understanding for them of how to integrate technology more effectively into classroom instruction. There is no dispute that differences exist in resources, including infrastructure and devices, among school districts. Further investigation of these questions would inform future steps Massachusetts may take to more fully equip schools and classrooms—across the Commonwealth—with improved digital capacity and access. Only in reaching greater levels of digital parity will the potential of technology to support teaching and learning be possible.

APPENDIX A:

Key findings from the PARCC educator survey

Reported below are selected findings from the pre-test and post-test surveys administered to educators as part of the case study documenting computer-based testing during the PARCC field test in Burlington Public Schools and Revere Public Schools. This case study, focusing on the these two districts' experiences in implementing computer-based testing district- and school-wide, was conducted by the Rennie Center for Education Research & Policy.

Important information to note about survey results presented below:

- In Burlington, all teachers and instructional staff were surveyed.
- In Revere, all teachers and instructional staff in the three testing schools were surveyed.
- Responses are reported for all teachers who responded to the survey.
- Tables 5-8 present findings from survey questions where teachers indicated that they had some role in test administration (i.e., test administrator, proctor, test coordinator) for the PARCC Performance-based Assessment (PBA)[1], and therefore does not represent results from the full sample of teachers who completed the survey.

Table A1. Number of survey participants

	PRE-TEST			POST-TEST		
Item	Burlington	Revere	Total	Burlington	Revere	Total
In which district do you work?	293	90	383	179	78	257

Table A2. How many years have you been teaching in this district?

	PRE-TEST			POST-TEST		
Response	Burlington	Revere	Total	Burlington	Revere	Total
In which district do you work?	293	90	383	179	78	257
1-3 years	16%	14%	15%	13%	36%	15%
4-10 years	39%	40%	39%	39%	37%	38%
More than 10 years	38%	35%	37%	41%	9%	40%

Table A3. Do you teach in a content or grade tested by the PARCC performance-based assessment?

Response	Burlington	Revere	Total
Yes	59%	72%	63%
No	41%	26%	36%

1 The PARCC PBA is a summative test that occurs after 75 percent of the school year to measure student knowledge. The PARCC End-of-Year assessment (EOY) occurs after the completion of about 90 percent of the school year. Results from both tests are combined to produce students' summative assessment scores.

Table A4. Prior to test administration, did you review any PARCC test items/materials?

	PRE-TEST			POST-TEST		
Response	Burlington	Revere	Total	Burlington	Revere	Total
Yes	57%	79%	68%	60%	90%	69%
No	43%	21%	32%	39%	9%	30%
If yes, How much time did you spend reviewing such materials?						
30 minutes or less	32%	9%	20%	4%	25%	17%
More than 30 minutes to about an hour	28%	20%	24%	17%	32%	26%
More than an hour, but less than 2 hours	25%	39%	32%	31%	27%	29%
More than 2 hours, but less than 3 hours	8%	13%	10%	20%	6%	11%
3 hours or more	7%	20%	13%	26%	9%	16%

Table A5. Among those who had some assigned role in test administration: The PARCC online trainings effectively informed me of the protocol to follow during PBA test administration. (Post-test data only)

Response	Burlington	Revere	Total
Strongly agree	6%	4%	5%
Agree	47%	59%	52%
Disagree	32%	33%	33%
Strongly disagree	4%	3%	3%
N/A (I did not review these resources before PBA administration)	9%	1%	6%

Note: This item was administered only to those who responded they had a specific role in the PBA test administration in spring 2014.

Table A6. Among those who had some assigned role in test administration: The PARCC online trainings prepared me to resolve basic problems related to technology. (Post-test data only)

Response	Burlington	Revere	Total
Strongly agree	2%	1%	2%
Agree	24%	35%	28%
Disagree	42%	44%	43%
Strongly disagree	20%	19%	20%
N/A (I did not review these resources before PBA administration)	12%	1%	8%

Note: This item was administered only to those who responded they had a specific role in the PBA test administration in spring 2014.

Table A7. Among those who had some assigned role in test administration: The device a student was using did not appear to be working during test administration. (Post-test data only)

Response	Burlington	Revere	Total
Yes	76%	87%	80%
No	19%	12%	16%
No technology-related problems occurred during test administration	4%	1%	3%

Note: This item was administered only to those who responded they had a specific role in the PBA test administration in spring 2014.

Table A8. Among those who had some assigned role in test administration: The device a student was using lost internet connectivity during test administration. (Post-test data only)

Response	Burlington	Revere	Total
Yes	59%	72%	64%
No	37%	24%	32%
No technology-related problems occurred during test administration	4%	3%	3%

Note: This item was administered only to those who responded they had a specific role in the PBA test administration in spring 2014.

Table A9. Class time/schedule was impacted by the PARCC PBA. (Post-test data only)

Response	Burlington	Revere	Total
No impact	4%	1%	4%
Minor impact	18%	29%	21%
Significant impact	77%	69%	75%

Table A10. Room, equipment, or facilities availability was impacted by the PARCC PBA. (Post-test data, only)

Response	Burlington	Revere	Total
No impact	24%	6%	19%
Minor impact	25%	21%	24%
Significant impact	49%	72%	56%

Table A11. About how many instructional minutes did you devote to PBA test administration this school year, including student preparation and practice, as well as test administration time?

	PRE-TEST			POST-TEST		
Response	Burlington	Revere	Total	Burlington	Revere	Total
1 hour or less	31%	8%	19%	25%	6%	19%
More than 1 hour, but less than 2 hours	47%	28%	38%	11%	10%	11%
More than 2 hours, but less than 3 hours	17%	35%	26%	3%	8%	4%
More than 3 hours, but less than 4 hours	3%	17%	10%	3%	12%	5%
4 hours or more	3%	12%	7%	17%	41%	25%
I don't teach in a grade or content area in which the PARCC PBA was administered	0%	0%	0%	42%	23%	36%

Table A12. How does this amount of time on PARCC preparation and administration compare to the time devoted to MCAS preparation and administration? (Post-test data only)

Response	Burlington	Revere	Total
More time working on PARCC preparation this school year than MCAS in previous school years.	7%	37%	16%
About the same amount of time with PARCC and MCAS items	13%	26%	17%
More time preparing for MCAS in previous school years than PARCC this school year.	33%	15%	28%
N/A (e.g., I have had different roles/responsibilities in preparing for MCAS and PARCC tests)	46%	21%	39%

Table A13. How does the amount of time spent reviewing PARCC test items compare to time spent working with MCAS publicly-released items and practice tests? (Pre-test data only)

Response	Burlington	Revere	Total
More time working on PARCC preparation this school year than MCAS in previous school years	23%	33%	28%
About the same amount of time with PARCC and MCAS items	11%	26%	18%
More time preparing for MCAS in previous school years than PARCC this school year	28%	29%	28%
N/A (e.g., I have had different roles/responsibilities in preparing for MCAS and PARCC tests)	38%	13%	26%

Table A14. In your opinion, how ready are/were students to take the PARCC PBA administration?

	PRE-TEST			POST-TEST		
Response	Burlington	Revere	Total	Burlington	Revere	Total
All my students had the computer skills they needed to take a computer-based test	14%	8%	11%	28%	27%	28%
Most, but not all, of my students had the computer skills they needed to take a computer-based test	34%	50%	42%	27%	51%	35%
About half of the students in my class had the computer skills they needed to take a computer-based test	13%	26%	19%	9%	17%	11%
Only a few of the students in my class have the computer skills they needed to take a computer-based test	9%	10%	9%	8%	4%	7%
I don't know enough about test administration protocols	30%	7%	18%	26%	1%	19%

Table A15. In your opinion, how ready are/were students to take the PARCC PBA administration? (Results reported by grade-level taught)

	PRE-TEST				POST-TEST			
Response	Elem.	Middle	High	Total	Elem.	Middle	High	Total
All my students had the computer skills they needed to take a computer-based test	4%	16%	23%	14%	18%	36%	29%	28%
Most, but not all, of my students had the computer skills they needed to take a computer-based test	29%	45%	41%	38%	37%	39%	16%	31%
About half of the students in my class had the computer skills they needed to take a computer-based test	23%	13%	8%	15%	14%	11%	5%	10%
Only a few of the students in my class have the computer skills they needed to take a computer-based test	20%	3%	1%	8%	12%	3%	8%	7%
I don't know enough about test administration protocols	24%	23%	27%	25%	19%	11%	42%	24%

Table A16. I believe the technology resources in my school [are ready for/worked well during] PARCC PBA administration.

	PRE-TEST			POST-TEST		
Response	Burlington	Revere	Total	Burlington	Revere	Total
Strongly agree	23%	6%	15%	9%	6%	8%
Agree	44%	57%	51%	35%	63%	44%
Disagree	12%	20%	16%	29%	24%	28%
Strongly disagree	3%	2%	3%	10%	4%	8%
I don't know enough about the administration protocols	16%	15%	15%	16%	1%	12%

Table A17. I believe the plan for administration and logistics in my school [are ready for/worked well during] PARCC PBA administration.

	PRE-TEST			POST-TEST		
Response	Burlington	Revere	Total	Burlington	Revere	Total
Strongly agree	13%	8%	11%	4%	12%	6%
Agree	41%	64%	52%	35%	67%	44%
Disagree	20%	18%	19%	31%	13%	25%
Strongly disagree	10%	1%	5%	17%	5%	13%
I don't know enough about the administration protocols	17%	9%	13%	14%	4%	11%

Research conducted and brief produced by the Rennie Center for Education Research & Policy

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Support for this project provided by

Massachusetts Teachers Association
Massachusetts Association of School Superintendents
Massachusetts Department of Elementary and Secondary Education

Acknowledgements

The Rennie Center would like to express its gratitude to the PARCC case study Steering Committee, including members representing Burlington and Revere Public Schools, the Burlington Educators' Association, the Revere Teachers Association, the Massachusetts Teachers Association, the Massachusetts Association of School Superintendents and the Massachusetts Department of Elementary and Secondary Education. We would like to recognize and thank them for their guidance in conducting this case study, and their contributions to this project. We would also like to thank the district staff, school leaders, educators and students in Burlington Public Schools and Revere Public Schools for their participation in this study. We are grateful for their time, candor, and commitment to sharing what they have learned for the sake of other educators and students across the Commonwealth. Finally, we are particularly grateful to Superintendents Eric Conti and Paul Dakin. These leaders provided valuable support and feedback through all phases of this project, including unfettered access to their schools during PARCC field test administration.

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Suggested Citation

Rennie Center for Education Research & Policy. (March 2015). *Testing the Test: A Study of PARCC Field Tests in Two Districts.* Boston, MA: Rennie Center for Education Research & Policy.